**Florida Department of Education**
**Curriculum Framework**

**Program Title:** **Radiation Therapy Specialist**
**Career Cluster:** **Health Science**

| CCC | |
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| CIP Number | 0351090703 |
| Program Type | College Credit Certificate (CCC) |
| Program Length | 43 credit hours |
| CTSO | HOSA: Future Health Professionals |
| SOC Codes (all applicable) | 29-1124 Radiation Therapists |

## Purpose

This certificate program is part of the Radiation Therapy AS degree program (1351090701).

A College Credit Certificate consists of a program of instruction of less than sixty (60) credits of college-level courses, which is part of an AS or AAS degree program and prepares students for entry into employment (Rule 6A-14.030, F.A.C.).

This program offers a sequence of courses that provides coherent and rigorous content aligned with challenging academic standards and relevant technical knowledge and skills needed to prepare for further education and careers in the Health Science career cluster; provides technical skill proficiency, and includes competency-based applied learning that contributes to the academic knowledge, higher-order reasoning and problem-solving skills, work attitudes, general employability skills, technical skills, and occupation-specific skills, and knowledge of all aspects of Health Science career cluster.

The purpose of this program is to prepare students for employment as radiation therapy technologist SOC Code 29-1124 (Radiation Therapists), or to provide supplemental training for persons previously or presently employed in these occupations.

The content includes but is not limited to administer the prescribed radiation therapy treatments of the highest caliber, thereby providing the patient treatments of the highest quality and accuracy; to become members of the health care team that contributes to the physical and psychological comfort of the patient, to provide radiation protection to the patient, self and health care team; to work with the health care team to improve radiotherapeutic health care in the hospital and community; and to understand the importance of maintaining membership in the professional organizations and keeping abreast of the changes in the field of radiation therapy.

**Additional Information** relevant to this Career and Technical Education (CTE) program is provided at the end of this document.

**Regulated Programs**

**This program is regulated by the Florida Department of Health; Bureau of Radiation Control.**

This program meets the Department of Health's education requirements for HIV/AIDS, Domestic Violence and Prevention of Medical Errors. Although not a requirement for initial licensure, it is a requirement for renewal, therefore the instructor may provide a certificate for renewal purposes to the student verifying these requirements have been met.

If students in this program are seeking a licensure, certificate or registration through the Department of Health, please refer to 456.0635 F.S. for more information on disqualification for a license, certificate, or registration through the Department of Health.

The program must be accredited by the Joint Review Committee on Education in Radiologic Technology (JRCERT), 20 North Wacker Drive, Suite 900, Chicago, Illinois 60606-2901, (312) 704-5300, or by the Southern Association of Colleges and Schools to enable graduates to become candidates for examination in Radiation Therapy Technology by the American Registry of Radiologic Technologists. It may also be approved by the Department of Health, Bureau of Radiation Control so that the graduate is eligible for licensure in Florida as a certified Radiation Therapy Technologists. As specified in Chapter 468 Part IV F.S. and 64E-3 F.A.C.

The designation of PSV-C requires that the student have an associate degree in a related field of study (i.e. radiologic technology, etc.). Upon the successful completion of the program the student will receive a Radiation Therapy Specialist Certificate.

Program completers will be eligible to make application to take the National Registry examination. For further information contact:

American Registry of Radiologic Technologists (ARRT)
1255 Northland Drive
St. Paul, MN 55120
(612) 687-0048

**Standards**

After successfully completing this program, the student will be able to perform the following:

01.0 Demonstrate the proficiency in the skills and knowledge required of clinical practice.
02.0 Convey an understanding of the ethics that impact radiation therapy at both the state and federal levels.
03.0 Demonstrate proficiency in imaging and processing in radiation oncology.
04.0 Demonstrate a basic understanding of laws related to radiation therapy at both the state and federal levels.
05.0 Demonstrate a functional knowledge of medical terminology required in radiation therapy.
06.0 Demonstrate knowledge of procedures and techniques related to the resolution of operational issues in radiation therapy.
07.0 Demonstrate knowledge of the foundational principles and practices of radiation therapy.
08.0 Demonstrate knowledge of essential concepts related to pathophysiology.
09.0 Demonstrate knowledge of the fundamental principles of radiation therapy.
10.0 Demonstrate knowledge of the principles of radiation therapy as it relates to the management of neoplastic disease.
11.0 Demonstrate the skills, procedures and knowledge required for effective quality management.
12.0 Demonstrate an understanding of the integral aspects of radiation biology required of a radiation therapist.
13.0 Demonstrate proficient knowledge of physics pertinent to the understanding of radiations used in the clinical setting.
14.0 Demonstrate the principles of radiation protection and safety for the radiation therapist.
15.0 Demonstrate knowledge of the foundational concepts and competencies in assessment and evaluation of the patient for service delivery.
16.0 Demonstrate an advanced understanding of the concepts and theories of radiation therapy physics.
17.0 Demonstrate proficiency in research methods and information literacy.
18.0 Demonstrate the skills, techniques and knowledge required for medical imaging methods to capture sectional anatomy.
19.0 Demonstrate the skills, techniques and knowledge required for the clinical planning of patient treatment.

**Florida Department of Education**
**Student Performance Standards**

**Program Title:** Radiation Therapy Specialist
**CIP Number:** 0351090703
**Program Length:** 43 credit hours
**SOC Code(s):** 29-1124



| **This certificate program is part of the Radiation Therapy AS degree program (1351090701). At the completion of this program, the student will be able to:** | |
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| 01.0 | Demonstrate the proficiency in the skills and knowledge required of clinical practice. - The student will be able to: |
| 01.01 | Operate within the radiation therapy scope of practice. |
| 01.02 | Demonstrate values and attitudes congruent with the profession's standards and ethics. |
| 01.03 | Formulate priorities in daily clinical practice. |
| 01.04 | Apply concepts of teamwork. |
| 01.05 | Adapt to dynamic clinical situations. |
| 01.06 | Establish patient-centered, clinically effective service delivery strategies. |
| 01.07 | Deliver a prescribed course of treatment adhering to acceptable departmental, institutional, governmental, and professional standards. |
| 01.08 | Assess the patient's status and condition in order to deliver a prescribed course of radiation therapy. |
| 01.09 | Use critical thinking for accurate treatment delivery by demonstrating knowledge of didactic concepts. |
| 01.10 | Demonstrate the principles of radiation protection. |
| 01.11 | Monitor tumor lethal dose and normal tissue tolerance dose. |
| 01.12 | Evaluate the patient's clinical response to treatment parameters as prescribed to determine if medical intervention by the doctor is necessary. |
| 01.13 | Apply the principles of total quality management. |

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| 01.14 | Detect equipment malfunctions and take appropriate action. |
| 01.15 | Construct and prepare immobilization, beam alignment and beam modification devices. |
| 01.16 | Design, evaluate and implement treatment plans. |
| 01.17 | Validate manual and computer dosimetric calculations. |
| 01.18 | Perform simulation, localization and therapeutic procedures as they pertain to radiation therapy in accordance with national patient safety standards. |
| 01.19 | Demonstrate appropriate and effective communication. |
| 01.20 | Demonstrate safe, ethical and legal practices. |
| 01.21 | Evaluate the significance of the patient's unique diagnosed cancerous pathology to formulate appropriate simulations and treatment actions. |
| 01.22 | Apply appropriate safety, transfer and immobilization principles. |
| 01.23 | Apply concepts of teaching and learning theories in design, implementation and evaluation in the education of patient, family, colleagues, and the community. |
| 01.24 | Describe departmental resources that are designed to meet the health and wellness of patient needs. |
| 01.25 | Demonstrate appropriate interaction with patients and patients' family and friends. |
| 01.26 | Assess patient side effects and complications to create an interdisciplinary management strategy that fosters prevention, healing and comfort. |
| 01.27 | Document all aspects of patient care and management in the appropriate record. |
| 01.28 | Document and communicate errors and discrepancies in accordance with institutional and national quality management procedures. |
| 01.29 | Demonstrate knowledge of situations where life support procedures would be necessary. |
| 01.30 | Document knowledge of the institution's procedures in response to emergencies, disasters and accidents. |
| 01.31 | Apply strategies that ensure professional development at a level of clinical practice consistent with acceptable standards. |
| 01.32 | Demonstrate quality assurance procedures for all treatment delivery equipment and accessories. |
| 01.33 | Evaluate outcomes to continuously improve radiation therapy services. |
| 01.34 | Incorporate Health Insurance Portability and Accountability Act (HIPAA) requirements into clinical practice. |
| 01.35 | Interpret treatment planning prior to and during a course of treatment. |

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| 02.0 | Convey an understanding of the ethics that impact radiation therapy at both the state and federal levels. - The student will be able to: |
| 02.01 | Identify theories and principles that guide ethical decision making for practice situations. |
| 02.02 | Define practice situations that carry high potential for dilemmas that require ethical scrutiny. |
| 02.03 | Discuss basic ethical duties of health care providers. |
| 02.04 | Demonstrate an awareness of and sensitivity to various cultural and ethnic differences among various client groups. |
| 02.05 | Discuss the concept of patient advocacy in support of patients' rights. |
| 02.06 | Discuss ethical theories and models. |
| 02.07 | Discuss the radiation therapy scope of practice, code of ethics and practice standards. |
| 02.08 | Examine concepts of personal honesty, integrity, accountability and professional compassion as ethical imperatives in professional practice. |
| 02.09 | Differentiate between distributive, compensatory and retributive justice. |
| 02.10 | Differentiate between provider and patient relationships. |
| 02.11 | Discuss the duty of the radiation therapist to take responsibility for actions and decisions. |
| 02.12 | Discuss the elements of an informed consent. |
| 02.13 | Discuss standards of disclosure. |
| 02.14 | Analyze issues related to the use and flow of patient information to determine confidentiality. |
| 02.15 | Explain ethical issues related to different age groups. |
| 02.16 | Identify current ethical issues in health care. |
| 02.17 | Demonstrate application of a system of examination, clarification, determination, the doctrine of informed consent and other issues related to patient rights. |
| 02.18 | Explain ethical issues related to the profession. |
| 02.19 | Discuss the relationship between ethics and health care policy. |
| 02.20 | Examine ethical issues arising daily in a radiation therapy department. |
| 03.0 | Demonstrate proficiency in imaging and processing in radiation oncology. - The student will be able to: |
| 03.01 | Define terminology associated with digital imaging systems. |

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| 03.02 | Describe the various types of digital receptors. |
| 03.03 | Discuss the fundamentals of digital imaging. |
| 03.04 | Discuss image acquisition on the simulator and linear accelerator. |
| 03.05 | Describe the evaluative criteria for imaging detectors on the simulator and linear accelerator. |
| 03.06 | Describe the histogram and the process or histogram analysis as it relates to automatic rescaling and determining an exposure indicator. |
| 03.07 | Identify the exposure indices for digital imaging receptors on the simulator and linear accelerator. |
| 03.08 | Discuss the response of digital imaging systems to background and scatter radiation on the simulator ad linear accelerator. |
| 03.09 | Identify appropriate measures to control scatter in the simulation and linear accelerator rooms. |
| 03.10 | Explain methods to avoid histogram analysis errors. |
| 03.11 | Describe image processing employed for digital images. |
| 03.12 | Associate the impact of image processing parameters to the image appearance. |
| 03.13 | Associate the effects of inappropriate processing on image clarity or conspicuity. |
| 03.14 | Describe and apply the fundamental physical principles of exposure for digital detectors. |
| 03.15 | Describe the selection of technical factors to ensure appropriate receptor exposure levels for digital detectors. |
| 03.16 | Describe the conditions that cause quantum mottle in a digital image. |
| 03.17 | Explain methods to avoid poor quality images in simulation and treatment planning. |
| 03.18 | Examine the potential impact of digital imaging systems on patient exposure and methods of practicing the as low as reasonably achievable (ALARA) concept with digital systems. |
| 03.19 | Describe picture archiving and communications system (PACS) and its function. |
| 03.20 | Identify components of a PACS system. |
| 03.21 | Describe patient benefits gained through the use of telemedicine. |
| 03.22 | Identify modality types that may be incorporated into a PACS. |
| 03.23 | Define digital imaging and communications in medicine (DICOM). |
| 03.24 | Describe data flow for a DICOM image from an imaging modality to a PACS. |

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| 03.25 | Describe HIPAA concerns with electronic information. | |
| 03.26 | Identify common problems associated with retrieving/viewing images. | |
| 03.27 | Analyze relationships of factors affecting image contrast, density and resolution to determine optimal image quality. | |
| 03.28 | Apply techniques to enhance image details and reduce image distortion. | |
| 03.29 | Determine artifact types, cause and preventive measures. | |
| 03.30 | Explain the basic principles of image formation for each of the following modalities: magnetic resonance (MR), ultrasound imaging, and nuclear medicine. | |
| 03.31 | Describe and explain functions of the components of the computed tomography (CT) imaging system. | |
| 03.32 | Differentiate between conventional and spiral/helical CT scanning. | |
| 03.33 | List the CT computer data processing steps. | |
| 03.34 | Name the functions of the array processor used for image reconstruction. | |
| 03.35 | Explain the difference between reconstructing and reformatting an image. | |
| 03.36 | Describe the application of the following terms to CT: | |
| | 03.36.01 | Pixel. |
| | 03.36.02 | Matrix. |
| | 03.36.03 | Voxel. |
| | 03.36.04 | Linear attenuation coefficient. |
| | 03.36.05 | CT/Hounsfield number. |
| | 03.36.06 | Partial volume averaging. |
| | 03.36.07 | Window width (ww) and window level (wl). |
| | 03.36.08 | Spatial resolution. |
| | 03.36.09 | Contrast resolution. |
| | 03.36.10 | Noise. |
| | 03.36.11 | Annotation. |

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| | 03.36.12 | Region of interest (ROI). |
| | 03.36.13 | Standard vs. volumetric data acquisition. |
| 03.37 | Identify the types and appearance of artifacts most commonly affecting CT images. | |
| 03.38 | Explain how artifacts can be reduced or eliminated. | |
| 03.39 | Describe current data storage techniques used in CT. | |
| 03.40 | Name the radiation protection devices that can be used to reduce patient dose in CT and describe the correct application of each. | |
| 04.0 | Demonstrate a basic understanding of laws related to radiation therapy at both the state and federal levels. - The student will be able to: | |
| 04.01 | Apply concepts related to social, political, economic and historical issues to analyze the different sources of law. | |
| 04.02 | List the steps in a civil legal procedure and identify the potential role of a radiation therapist. | |
| 04.03 | Assess the role of effective communication skills in reducing legal action. | |
| 04.04 | Analyze negligence related to clinical practice issues of simulation, treatment delivery, patient assessment, patient education and quality assurance to determine if negligence is present. | |
| 04.05 | Examine the role of the radiation therapist in the informed consent process, patient rights and practice standards. | |
| 04.06 | Analyze safety programs to reduce patient injury. | |
| 04.07 | Examine the importance of documentation and maintenance of clinical practice records. | |
| 04.08 | Formulate a risk management program. | |
| 04.09 | Analyze the role of code of ethics, radiation therapy scope of practice and radiation therapy practice standards as guides to assess the appropriateness of professional actions. | |
| 04.10 | Discuss the practice of lifelong learning in maintaining professional competence | |
| 05.0 | Demonstrate a functional knowledge of medical terminology required in radiation therapy. - The student will be able to: | |
| 05.01 | Identify primary language sources from which medical terms are derived. | |
| 05.02 | Define medical terms according to basic elements. | |
| 05.03 | Interpret language, abbreviations and symbols in the medical record. | |
| 06.0 | Demonstrate knowledge of procedures and techniques related to the resolution of operational issues in radiation therapy. - The student will be able to: | |
| 06.01 | Identify CQI opportunities. | |

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| | 06.02 Explain the differences between CQI and QA. |
| | 06.03 Select appropriate CQI tools for specific situations. |
| | 06.04 Apply CQI principles to specific situations. |
| | 06.05 Discuss human resources' role in the work environment. |
| | 06.06 Discuss the need for organizational and departmental accreditation. |
| | 06.07 Recognize accreditation effects on radiation therapy operations. |
| | 06.08 Use appropriate current procedural terminology (CPT) codes for professional and technical charges. |
| | 06.09 Summarize the various types of insurance and the mechanisms necessary for approval of care. |
| | 06.10 Discuss reimbursement for radiation therapy services. |
| | 06.11 Compare the components and methods of developing and managing a departmental budget. |
| 07.0 | Demonstrate knowledge of the foundational principles and practices of radiation therapy. - The student will be able to: |
| | 07.01 Discuss the policies and procedures of the educational program. |
| | 07.02 Discuss the policies and procedures of clinical education settings. |
| | 07.03 Identify the responsibilities of a radiation therapy student. |
| | 07.04 Use library/Internet resources pertinent to radiation oncology. |
| | 07.05 Discuss maintaining patient and student confidentiality. |
| | 07.06 Analyze the importance of multidisciplinary care of cancer patients. |
| | 07.07 Discuss the philosophy and mission of health care delivery systems and educational programs. |
| | 07.08 Incorporate key terms used in the principles and practice of radiation therapy. |
| | 07.09 Identify the contents/sections of the patient's records. |
| | 07.10 Explain radiation safety procedures for radiation therapy. |
| | 07.11 Explain health safety procedures for personnel and patients. |
| | 07.12 Differentiate between accreditation, credentialing, certification, registration, licensure, and regulations. |

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| | 07.13 | Explain the purposes, functions and activities of international, national, state and local professional organizations. |
| | 07.14 | Discuss the importance of professional and community commitment. |
| | 07.15 | Discuss the radiation therapist scope of practice, practice standards and professional code of ethics. |
| | 07.16 | Discuss the benefits of continuing education as related to improving the quality of patient care, professional development and personal enhancement. |
| | 07.17 | Discuss career advancement and opportunities for the radiation therapist. |
| 08.0 | Demonstrate knowledge of essential concepts related to pathophysiology. - The student will be able to: | |
| | 08.01 | Describe the physiological response in inflammation and cell injury due to pathological insult. |
| | 08.02 | Assess the predictive factors, including genetics, lifestyles, age and environment as they influence the development of cancer and associated diseases. |
| | 08.03 | Compare the body's response to hereditary, lifestyle, age and environmental factors. |
| | 08.04 | Given a specific oncologic-related disease, determine probable diagnostic, prognostic, staging, grading and the rationale for the appropriate therapeutic pathway. |
| | 08.05 | Given the histology of a neoplasm, determine the tumor characteristics. |
| | 08.06 | Given a common disease, anticipate the effects of the disease on the oncologic patient. |
| 09.0 | Demonstrate knowledge of the fundamental principles of radiation therapy. - The student will be able to: | |
| | 09.01 | Given diagnostic information about a particular cancer, determine the appropriateness of using radiation therapy as a primary treatment modality. |
| | 09.02 | Determine the medical and patient information necessary to develop a radiation therapy treatment plan. |
| | 09.03 | Determine the appropriate treatment energy for any given tumor type or location. |
| | 09.04 | Differentiate between beam modifiers and their uses with a variety of treatment energies. |
| | 09.05 | Determine the appropriate treatment setup aid, immobilization technique and beam modifier for a given treatment technique. |
| | 09.06 | Identify inconsistencies between treatment prescription and treatment plan. |
| | 09.07 | Develop a CT simulation plan for a particular tumor to include steps needed prior to, during and after the procedure. |
| | 09.08 | Critique treatment images in relation to simulation images. |
| | 09.09 | Discuss the radiation therapist scope of practice and practice standards. |
| 10.0 | Demonstrate knowledge of the principles of radiation therapy as it relates to the management of neoplastic disease. - The student will be | |

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| | able to: |
| | 10.01 Distinguishes tumor histology to determine pathways associated with cancer and neoplastic disease. |
| | 10.02 Examine the role of surgical, radiation and medical oncology to include immunotherapy (biological therapy) and personalized medicine in the management of neoplastic disease. |
| | 10.03 Discuss multidisciplinary emerging approaches to neoplastic disease management. |
| | 10.04 Discuss the role of radiation therapy in the management of all patient populations with benign and malignant diseases. |
| | 10.05 Discuss epidemiologic and etiologic information pertinent to each neoplastic site. |
| | 10.06 Discuss the clinical presentation for each anatomic neoplastic site. |
| | 10.07 Discuss preventive methods/screening tools associated with each neoplastic site. |
| | 10.08 Explain detection, diagnosis, grading and staging systems for each neoplastic site. |
| | 10.09 Implement the principles and practice of simulation to prepare a patient for treatment. |
| | 10.10 Apply the parameters of treatment field design and arrangement used to treat neoplastic diseases. |
| | 10.11 Examine the role of radiation therapy in palliative disease management. |
| | 10.12 Identify the treatment regimens and fractionalization schemes used in palliative disease management. |
| | 10.13 Describe the role of radiation therapy in the management of oncology emergencies. |
| 11.0 | Demonstrate the skills, procedures and knowledge required for effective quality management. - The student will be able to: |
| | 11.01 Discuss the components of a quality management (QM) program in developing a culture of safety in radiation oncology. |
| | 11.02 Discuss the purpose, function and member's role on a quality management team. |
| | 11.03 Explain federal, state and institutional accreditation standards and reporting regulations for quality management. |
| | 11.04 Examine outcomes of quality management in radiation oncology. |
| | 11.05 Explain the purpose, procedures and frequency for manual and electronic treatment documentation. |
| | 11.06 Identify errors in treatment documentation. |
| | 11.07 Describe the procedure for assuring accuracy of manual and electronic records. |
| | 11.08 Examine the purpose and function of record and verify systems. |

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| 11.09 | Examine the patient chart in terms of medical and legal issues. |
| 11.10 | Discuss the significance of treatment outcomes for patient care, education and research in radiation oncology. |
| 11.11 | Discuss the quality indicators to evaluate patient care areas. |
| 11.12 | Explain the purpose, procedure and frequency for all QA and QM procedures in a radiation therapy department. |
| 11.13 | Evaluate how the outcomes of QA and QM procedures impact patient care, education and research. |
| 11.14 | Examine statistical reporting available through quality assurance computerization. |
| 11.15 | Perform quality measures for computerized operation, data collection and reporting. |
| 11.16 | Determine sources of malfunction on the treatment and simulation/localization units. |
| 11.17 | Distinguish between safe and hazardous equipment operation. |
| 11.18 | Comply with acceptable quality limits for treatment operation. |
| 11.19 | Identify the source of error and determine the effect on treatment delivery, education and research. |
| 11.20 | Differentiate between quality management programs. |
| 11.21 | Discuss the importance of patient education in the quality management process. |
| 11.22 | Discuss the importance of proper patient identification and treatment field documentation. |
| 11.23 | Discuss aspects of clinical evaluation, therapeutic decision-making and informed. |
| 11.24 | Identify the key aspects of delivering a precise prescribed treatment dose. |
| 11.25 | Discuss quality control procedures and recommended tolerances for simulation equipment, megavoltage treatment units and treatment planning systems. |
| 11.26 | Discuss quality control procedures and recommended tolerances for the safe handling of brachytherapy sources and remote after loading equipment. |
| 11.27 | Defend the rational for near miss and error report. |
| 11.28 | Critique the safety in radiation oncology. |
| 12.0 | Demonstrate an understanding of the integral aspects of radiation biology required of a radiation therapist. - The student will be able to: |
| 12.01 | Integrate laws and principles of radiation biology to the clinical practice of radiation therapy. |
| 12.02 | Identify radiosensitive components of the cell. |

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| 12.03 | Distinguish between units of radiation quantities and radiobiologic measures using SI units. |
| 12.04 | Differentiate between direct and indirect effects of ionizing radiation. |
| 12.05 | Explain factors affecting relative biological effectiveness (RBE). |
| 12.06 | Discuss the effects of electromagnetic and particulate radiations on cellular interactions. |
| 12.07 | Evaluate factors influencing radiobiologic/biophysical events at the cellular and subcellular level. |
| 12.08 | Determine biologic damage due to radiation-induced chemical reactions. |
| 12.09 | Discuss radiation effects on the cell cycle. |
| 12.10 | Compare somatic and genetic effects of radiation. |
| 12.11 | Describe factors influencing radiation response of cells and tissues. |
| 12.12 | Discuss the laws of Bergonié and Tribondeau. |
| 12.13 | Interpret cell survival curves to determine radiosensitivity under numerous conditions. |
| 12.14 | Discuss the relationship of radiation quality and dose to systemic responses. |
| 12.15 | Describe radiation syndromes and factors influencing response. |
| 12.16 | Differentiate between linear, nonlinear, and threshold and non-threshold dose response curves. |
| 12.17 | Describe the 4 Rs of radiobiology. |
| 12.18 | Compare the relationship of time, dose, fractionation, volume, distance, and site to radiation effects. |
| 12.19 | Discuss the use of radiation response modifiers. |
| 12.20 | Describe the influence of chemotherapy and hyperthermia alone and in combination with radiation therapy. |
| 13.0 | Demonstrate proficient knowledge of physics pertinent to the understanding of radiations used in the clinical setting. - The student will be able to: |
| 13.01 | Define the fundamental units of the English, metric and Système International d'Unites (SI) systems. |
| 13.02 | Calculate various unit conversions. |
| 13.03 | Demonstrate applications of the general principles that relate to inertia, work, energy and momentum. |
| 13.04 | Describe Bohr's theory of atomic structure. |

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| 13.05 | Compare the characteristics and functions of a proton, neutron and electron. |
| 13.06 | Discuss the energy levels of the atom. |
| 13.07 | Define the terms relating to atomic nomenclature. |
| 13.08 | Compare covalent bonding and ionic bonding. |
| 13.09 | Describe the process of ionization. |
| 13.10 | Differentiate between the characteristics of a mixture, substance, and element. |
| 13.11 | Classify the characteristics of an element using the periodic table. |
| 13.12 | Compare the characteristics of a molecule and compound. |
| 13.13 | Describe the nature of light. |
| 13.14 | Explain the relationship between wavelength, frequency and velocity. |
| 13.15 | Differentiate between the radiations of the electromagnetic (EM) spectrum. |
| 13.16 | Explain the relationship of energy and frequency to Planck's constant. |
| 13.17 | Distinguish between electrical charge and electrical field. |
| 13.18 | Describe the methods of electrification. |
| 13.19 | Explain the laws of electrostatics and their application. |
| 13.20 | Describe the properties and laws of magnetism. |
| 13.21 | Explain the electronic spin of an element to its potential magnetic properties. |
| 13.22 | Describe the principle of magnetic induction. |
| 13.23 | Define potential difference, current, resistance, circuit and electric power. |
| 13.24 | Compare the characteristics of direct and alternating currents. |
| 13.25 | Compare electrical measuring devices. |
| 13.26 | Discuss electrical protective devices. |
| 13.27 | Discuss the interaction between electric and magnetic fields. |

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| 13.28 | Describe the characteristics and functions of a cathode and rotating anode. |
| 13.29 | Describe the construction and function of tube housing. |
| 13.30 | Identify the parts of an x-ray tube. |
| 13.31 | Determine heat units and cooling characteristics of x-ray tube housings. |
| 13.32 | Propose methods to extend tube life. |
| 13.33 | Discuss application and components of automatic exposure devices. |
| 13.34 | State the principles of x-ray production. |
| 13.35 | Compare the production of bremsstrahlung with the production of characteristic radiations. |
| 13.36 | Compare various photon interactions in terms of description of interaction, relation to atomic number and applications. |
| 13.37 | Discuss relationships of wavelength and frequency to beam characteristics. |
| 13.38 | Define units of radiation measurement and provide an example of its application. |
| 14.0 | Demonstrate the principles of radiation protection and safety for the radiation therapist. - The student will be able to: |
| 14.01 | Distinguish between somatic and genetic effects of radiation exposure. |
| 14.02 | Differentiate between stochastic and non-stochastic effects of radiation exposure. |
| 14.03 | Defend the concept of as low as reasonably achievable (ALARA). |
| 14.04 | Discuss the concept of negligible individual risk. |
| 14.05 | Describe the legal and ethical radiation protection responsibilities of radiation workers. |
| 14.06 | Use appropriate SI terminology and units when discussing radiation protection issues. |
| 14.07 | Select the correct SI units of radiation for exposure, absorbed dose, dose equivalence and radioactivity. |
| 14.08 | Discuss the interrelationship between relative biological effectiveness and quality factors. |
| 14.09 | Explain the theory, operation, applications and limitations of radiation detection devices. |
| 14.10 | State the authority, boundaries and regulations of the state and national regulatory agencies. |
| 14.11 | Discuss the requirements and responsibilities of the radiation safety officer. |

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| | 14.12 Compare the various methods used for personnel monitoring. |
| | 14.13 State the exposure limits for occupational and non-occupational individuals. |
| | 14.14 Explain techniques used to reduce unnecessary dose to the patient. |
| | 14.15 Develop an emergency action plan for equipment failure. |
| | 14.16 Discuss the principles of radiation protection room design factors. |
| | 14.17 Describe the elements of a radiation protection survey for an inpatient undergoing brachytherapy. |
| | 14.18 Calculate exposure doses based on time, distance and type of radioactivity. |
| | 14.19 Describe the procedure for the wipe test. |
| | 14.20 Describe procedures to receive and ship radioactive materials. |
| | 14.21 Evaluate a record keeping system for radioactive sources to ensure inclusion of all required elements. |
| 15.0 | Demonstrate knowledge of the foundational concepts and competencies in assessment and evaluation of the patient for service delivery. - The student will be able to: |
| | 15.01 Differentiate between the roles and responsibilities of health care team members treating cancer patients. |
| | 15.02 Demonstrate applications of professional self-care. |
| | 15.03 Examine different psychological aspects of dying. |
| | 15.04 Explain the dynamics of communicating with the cancer patient and family. |
| | 15.05 Recognize radiation side effects and complications and select the appropriate medical intervention. |
| | 15.06 Identify factors that influence a patient’s emotional responses. |
| | 15.07 Formulate content for answers to questions frequently asked by patients. |
| | 15.08 Assess the physical condition of the patient before, during and after treatment delivery. |
| | 15.09 Demonstrate application of the principles of health safety. |
| | 15.10 Discuss the principles of medication administration. |
| | 15.11 Recognize common medications and explain their actions and side effects. |
| | 15.12 Evaluate a patient for an adverse reaction to medication. |

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| 15.13 | Describe emergency response procedures. |
| 15.14 | Describe the proper care of patients with tubes. |
| 15.15 | Provide patient education for medical procedures. |
| 15.16 | Assess the patient before, during and after brachytherapy procedures. |
| 15.17 | Demonstrate the application of the principles of radiation protection during brachytherapy procedures. |
| 15.18 | Assess the nutritional status of the cancer patient to provide nutritional education or intervention. |
| 15.19 | Demonstrate proper use of the principles of patient safety and transfer. |
| 15.20 | Provide appropriate patient education following patient assessment. |
| 15.21 | Select patient education materials appropriate for patient needs. |
| 15.22 | Compare conventional and integrative medicine. |
| 16.0 | Demonstrate an advanced understanding of the concepts and theories of radiation therapy physics. - The student will be able to: |
| 16.01 | Compare and contrast atomic structure and composition among the elements, including but not limited to particles (their location, energy level and charge), atomic number, and mass number. |
| 16.02 | Compare isotope, isotone, isobar, and isomer. |
| 16.03 | Discuss nuclear stability and types of radioactive decay. |
| 16.04 | Categorize the four fundamental forces of nature. |
| 16.05 | Differentiate between electromagnetic (EM) radiation and their characteristics. |
| 16.06 | Describe the processes of ionization and excitation. |
| 16.07 | Calculate radioactivity, decay constant, activity and half-life, average life and attenuation requirements for commonly used isotopes in radiation therapy. |
| 16.08 | Differentiate between artificially produced and naturally occurring therapeutic nuclides. |
| 16.09 | Identify the radioactive series and the decay schemes for commonly used radiation therapy nuclides. |
| 16.10 | Explain the various forms of radioactive equilibrium. |
| 16.11 | Identify nuclear reactions by recognizing the projectile and radiation emitted. |
| 16.12 | Define fission and fusion. |

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| 16.13 | Discuss the activation of nuclides in terms of yield, probability, activity growth, and saturation activity. |
| 16.14 | Describe methods of artificial production of radionuclides. |
| 16.15 | Describe x-ray production for linear accelerators. |
| 16.16 | Compare and contrast the factors that influence x-ray production and output. |
| 16.17 | Compare and contrast the energy ranges and characteristics of the various radiation therapy modalities (Grenz-ray through megavoltage). |
| 16.18 | Discuss all components and function in a linear accelerator. |
| 16.19 | Discuss methods of x-ray production in alternate therapy units (e.g., tomotherapy, stereotactic radiosurgery, etc.). |
| 16.20 | Compare the characteristics of other radiation therapy beams (cyclotron and other accelerated particles). |
| 16.21 | State the gamma energies and average gamma energy of cobalt 60 (60Co). |
| 16.22 | Compare the characteristics of an isotope beam and an x-ray beam. |
| 16.23 | Explain linear energy transfer (LET). |
| 16.24 | Compare photon interactions with matter and classify radiations produced by direct and indirect ionization. |
| 16.25 | Explain major influencing factors of photon beam attenuation. |
| 16.26 | Describe the parameters of narrow beam geometry used in the measurement of attenuation. |
| 16.27 | Plot heteroenergetic and monoenergetic beam attenuation data. |
| 16.28 | Calculate half-value layer (HVL). |
| 16.29 | . Calculate the homogeneity coefficient. |
| 16.30 | Calculate attenuation requirements for beam modification devices. |
| 16.31 | Discuss activation of clinical accessories and alternate shielding materials due to photodisentigration. |
| 16.32 | Explain charged particle interactions with matter, describing dose deposition, energy loss and shielding requirements. |
| 16.33 | Define mass stopping power. |
| 16.34 | Describe a Bragg curve. |
| 16.35 | Discuss the purpose and importance of the National Institute of Standards and Technology (NIST). |

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| | 16.36 Discuss the purpose and importance of the Accredited Dosimetry Calibration Labs (ADCL). |
| | 16.37 Demonstrate use of the appropriate type of radiation detector for given clinical applications. |
| | 16.38 Calculate correction factors for chamber calibration, temperature, pressure and other factors used to correct a chamber reading. |
| | 16.39 Discuss protocols used for external beam calibration. |
| | 16.40 Analyze spot check data to make appropriate judgment decisions regarding machine treatment parameters. Describe the quality of a gamma-ray (γ) beam in terms of HVL, γ energy or mean γ energy/nuclide of origin. |
| | 16.41 Describe beam filtration for the various external beam modalities, including but not limited to purpose, types of filters and their construction, energy considerations, inherent vs. added filtration and effect on HVL. |
| | 16.42 Calculate the approximate mean energy of a megavoltage beam. |
| | 16.43 Compare absorbed dose vs. exposure. |
| | 16.44 Discuss the relationship between kinetic energy released in the medium (KERMA), exposure and absorbed dose. |
| | 16.45 Calculate air dose to absorbed dose conversions in tissue, including but not limited to, energy considerations, applicable conversion factors, necessary instrumentation and methods. |
| | 16.46 Discuss the clinical importance of phantom material and size when applying the Bragg-Gray Cavity Theory. |
| | 16.47 Critique how dose distribution measured in a phantom is used to predict dose distribution in a patient. |
| | 16.48 Compare the characteristics and composition of various phantoms. |
| | 16.49 Compare source-skin distance (SSD) and isocentric methods of calibration. |
| 17.0 | Demonstrate proficiency in research methods and information literacy. - The student will be able to: |
| | 17.01 Analyze research articles to determine the accuracy and validity of findings. |
| | 17.02 Integrate information literacy concepts into a research project. |
| | 17.03 Critique research projects to determine appropriateness and usefulness to the profession. |
| 18.0 | Demonstrate the skills, techniques and knowledge required for medical imaging methods to capture sectional anatomy. - The student will be able to: |
| | 18.01 Relate the importance of imaging with computed tomography, magnetic resonance, and PET-CT in radiation therapy. |
| | 18.02 Differentiate between sagittal, coronal and axial planes of the body. |
| | 18.03 Review the principles of imaging for imaging modalities using relevant terminology. |
| | 18.04 Compare the imaging modalities for application to radiation therapy. |

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| 18.05 | Identify normal anatomical structures on sectional images. |
| 18.06 | Identify topographic anatomy used to locate underlying internal structures. |
| 18.07 | Describe image formation and orientation for computed tomography, magnetic resonance, positron emission tomography, ultrasonography, and image fusion. |
| 19.0 | Demonstrate the skills, techniques and knowledge required for the clinical planning of patient treatment. - The student will be able to: |
| 19.01 | Compare photon isodose curves for clinically relevant photon beams. |
| 19.02 | Describe the general influencing factors that distinguish various isodose curves. |
| 19.03 | Determine internal and external patient factors that influence a beam's distribution and apply isodose correction methods. |
| 19.04 | Describe methods of determining a patient's external contour, definition of internal structures and volumes of interest used in treatment planning. |
| 19.05 | Identify organs and tissues at risk and their dose limitations using published tolerance dose tables. |
| 19.06 | Describe how biologic effective dose is influenced by prescription and treatment variables. |
| 19.07 | Compare fractionation schemes. |
| 19.08 | Discuss the integral dose concept. |
| 19.09 | Use appropriate factors for treatment calculations. |
| 19.10 | Describe the interrelationships of the various factors used in treatment calculations. |
| 19.11 | Perform dose calculations for external photon and electron beam treatments for all clinical variations. |
| 19.12 | Calculate the absorbed dose to off-axis points of interest. |
| 19.13 | Compare absorbed doses within a treatment volume with beam variations. |
| 19.14 | Explain algorithms incorporated into treatment planning computers. |
| 19.15 | Describe the clinical applications for moving beam techniques. |
| 19.16 | Describe the past pointing technique. |
| 19.17 | Calculate equivalent squares using various methods and consider the limitations of each. |
| 19.18 | Describe the effect of asymmetric beam collimation on dose distribution. |
| 19.19 | Describe methods for determining dose distribution at points outside the treatment field. |

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| 19.20 | Calculate dose under a block. |
| 19.21 | Evaluate a variety of treatment plans for clinical use. |
| 19.22 | Identify all possible techniques that may be employed to clinically match adjacent fields. |
| 19.23 | Describe the multiple junction shift methods. |
| 19.24 | Examine hot and cold regions that occur with the various matching methods, and describe the methods used to eliminate them. |
| 19.25 | Describe procedures for permanent record and legal documentation of matching fields. |
| 19.26 | Analyze dose distributions to determine the need for beam modifiers. |
| 19.27 | Compare various methods of tissue compensation and the dosimetric impact. |
| 19.28 | Examine the fabrication of 2-D and 3-D compensators. |
| 19.29 | Construct manual and computerized isodose curves. |
| 19.30 | Differentiate between isodose distributions for all clinical variations. |
| 19.31 | Evaluate possible corrections for treatment errors to correct misadministration of prescribed dose. |
| 19.32 | Differentiate between the treatment planning terms: maximum, minimum, mean, modal and median dose. |
| 19.33 | Describe International Commission on Radiological Units (ICRU) recommendations on dose variance within a target volume and the effect that variances may have on cure rates, local control, and tolerance. |
| 19.34 | Analyze dose volume histograms relative to treatment planning. |
| 19.35 | Evaluate patient changes to determine the integrity of a treatment plan. |
| 19.36 | Compare electron beam depth dose characteristics for various energies. |
| 19.37 | Identify clinical factors that would influence beam type and energy selection. |
| 19.38 | Differentiate between standard treatment distance and virtual distance. |
| 19.39 | Discuss why equivalent squares used with photon beams are inappropriate with electron beams. |
| 19.40 | Describe how inhomogeneities influence electron beam path. |
| 19.41 | Discuss the considerations of matching an electron field to other adjacent photon or electron fields. |
| 19.42 | Analyze which shielding materials and thickness would be needed to attenuate electron beams to appropriate levels. |

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| 19.43 | Describe how electron shielding materials should be arranged for external vs. internal shielding. |
| 19.44 | Discuss changes in dose rate and dose distribution with changes in blocking and electron energy. |
| 19.45 | Compare calculations of shielding thicknesses to measured data for electron beams. |
| 19.46 | Determine why specific isodose lines are prescribed for various clinical situations involving critical and noncritical structures. |
| 19.47 | Calculate percentage depth dose for 10%, 50%, 80%, and 90% lines for various electron energies. |
| 19.48 | Describe the considerations in the clinical application of special electron treatments, including total skin irradiation and arc therapy. |
| 19.49 | Compare the general isodose pattern of particle beams. |
| 19.50 | Determine clinical usefulness of various beam types and the clinical implications involved. |
| 19.51 | Describe the various imaging modalities in tumor localization and planning. |
| 19.52 | Discuss planning techniques used to accommodate the treatment volume shape. |
| 19.53 | Discuss isocenter localization for radiosurgery. |
| 19.54 | Identify vital structures considered during treatment planning. |
| 19.55 | Compare single dose delivery to fractionated dose delivery schedules. |
| 19.56 | Discuss the need for specific equipment used to deliver radiation for conformal therapy. |
| 19.57 | Discuss the purpose and contents of the ICRU Report 62 and supplements. |
| 19.58 | Discuss the computer system features necessary for conformal therapy treatment planning. |
| 19.59 | Identify common sites amenable to conformal therapy and the typical doses employed for those sites. |
| 19.60 | Compare configurations of multileaf collimation systems. |
| 19.61 | Discuss considerations for multileaf collimators. |
| 19.62 | Review the differences between static and dynamic multileaf collimation systems. |
| 19.63 | Identify appropriate clinical applications for brachytherapy. |
| 19.64 | Compare and contrast brachytherapy delivery systems. |
| 19.65 | Describe the techniques and applicators used for intracavitary, interstitial and endovascular brachytherapy procedures. |

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| 19.66 | Explain how simulation and CT data is used for source localization. |
| 19.67 | Discuss the objective of treatment planning for brachytherapy procedures. |
| 19.68 | Summarize dose specification and prescription techniques for different types of implants. |
| 19.69 | Describe optimization techniques used in computer aided dose calculations. |
| 19.70 | Discuss record keeping requirements for radioactive material. |
| 19.71 | State radiation safety requirements for brachytherapy procedures. |
| 19.72 | Identify appropriate clinical applications for using intensity modulated radiation therapy (IMRT). |
| 19.73 | Describe the general flow of the IMRT process from patient immobilization through treatment delivery. |

## Additional Information

### Laboratory Activities

Laboratory investigations that include scientific inquiry, research, measurement, problem solving, emerging technologies, tools and equipment, as well as, experimental, quality, and safety procedures are an integral part of this career and technical program/course. Laboratory investigations benefit all students by developing an understanding of the complexity and ambiguity of empirical work, as well as the skills required to manage, operate, calibrate and troubleshoot equipment/tools used to make observations. Students understand measurement error; and have the skills to aggregate, interpret, and present the resulting data. Equipment and supplies should be provided to enhance hands-on experiences for students.

Clinical education has been established for the students in these programs. It is designed to permit accurate assessment of the knowledge, skills and abilities of students in the clinical education component of the program. After completion of the prerequisite practice of radiotherapeutic procedures, students indicate readiness for evaluation in a specific category to the clinical affiliate or faculty in the assigned clinical education center.

Clinical education and laboratory activities facilitate student rotations to provide them equitable opportunity to achieve the program clinical objective utilizing multiple affiliates. The resulting clinical rotation and laboratory practicum provides students with patient treatment techniques utilizing a variety of megavoltage equipment, radiation therapy patient care procedures, localization and treatment, radiation therapy physics including dosimetry, machine calibration, quality assurance, handling of sealed radioactive sources and protection, follow up, patient care and patient recordkeeping.

### Special Notes

The program is designed to provide the radiation therapy community with workers who, under the supervision of a Radiation Oncologist, uses ionizing radiation to treat disease. The curriculum provides students an opportunity to develop technical and social skills through experiences in the clinic, classroom, and laboratory.

Students are encouraged to become members of their appropriate professional organizations such as the American Society of Radiologic Technologists (ASRT), Florida Society of Radiologic Technologists (FSRT) and its' local affiliate.

### Career and Technical Student Organization (CTSO)

HOSA: Future Health Professionals is the intercurricular career and technical student organization providing leadership training and reinforcing specific career and technical skills. Career and Technical Student Organizations provide activities for students as an integral part of the instruction offered.

### Accommodations

Federal and state legislation requires the provision of accommodations for students with disabilities to meet individual needs and ensure equal access. Postsecondary students with disabilities must self-identify, present documentation, request accommodations if needed, and develop a plan with their counselor and/or instructors. Accommodations received in postsecondary education may differ from those received in secondary

education. Accommodations change the way the student is instructed. Students with disabilities may need accommodations in such areas as instructional methods and materials, assignments and assessments, time demands and schedules, learning environment, assistive technology and special communication systems. Documentation of the accommodations requested and provided should be maintained in a confidential file.

**Florida Department of Education**
**Curriculum Framework**

**Program Title:** **Central Sterile Processing Technologist**
**Career Cluster:** **Health Science**

| CCC | |
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| CIP Number | 0351090903 |
| Program Type | College Credit Certificate (CCC) |
| Program Length | 30 credit hours |
| CTSO | HOSA: Future Health Professionals |
| SOC Codes (all applicable) | 31-9093 Medical Equipment Preparers |

## Purpose

This certificate program is part of the Surgical Services AS degree program (1351000002).

A College Credit Certificate consists of a program of instruction of less than sixty (60) credits of college-level courses, which is part of an AS or AAS degree program and prepares students for entry into employment (Rule 6A-14.030, F.A.C.).

This program offers a sequence of courses that provides coherent and rigorous content aligned with challenging academic standards and relevant technical knowledge and skills needed to prepare for further education and careers in the Health Science career cluster; provides technical skill proficiency, and includes competency-based applied learning that contributes to the academic knowledge, higher-order reasoning and problem-solving skills, work attitudes, general employability skills, technical skills, and occupation-specific skills, and knowledge of all aspects of Health Science career cluster.

This program is designed to prepare students for employment as central sterile processing technicians SOC Code 31-9093.00 (Medical Equipment Preparers), central service technicians.

The content includes but is not limited to central services departmental organization and function; basic anatomy, physiology, microbiology and chemistry related to central service activities; quality assurance; infection control and isolation techniques, principles of safety; principles, methods and controls of sterilization processes; cleaning, processing, packaging, distributing, storing, and inventory control of sterile goods, instruments, trays, and equipment; medical terminology; surgical instrumentation; basic computer skills, interpersonal and job seeking skills, fundamentals of communication, case cart management, laparoscopic specialty, orthopedic specialty, flexible scope processing , shift supervisory skills and procurement of supplies and equipment.

**Additional Information** relevant to this Career and Technical Education (CTE) program is provided at the end of this document.

**Standards**

After successfully completing this program, the student will be able to perform the following:

01.0 Demonstrate knowledge of the healthcare delivery system and health occupations.
02.0 Demonstrate the ability to communicate and use interpersonal skills effectively.
03.0 Demonstrate legal and ethical responsibilities.
04.0 Demonstrate an understanding of and apply wellness and disease concepts.
05.0 Recognize and practice safety and security procedures.
06.0 Recognize and respond to emergency situations.
07.0 Recognize and practice infection control procedures.
08.0 Demonstrate an understanding of information technology applications in healthcare.
09.0 Demonstrate employability skills.
10.0 Demonstrate knowledge of blood borne diseases, including HIV/AIDS.
11.0 Apply basic math and science skills.
12.0 Describe supply distribution systems and the principles of inventory control.
13.0 Demonstrate the ability to recall and dispose of or reprocess sterile supplies.
14.0 Identify fundamentals of procurement skills.
15.0 Demonstrate language arts knowledge and skills.
16.0 Solve problems using critical thinking skills, creativity and innovation.
17.0 Describe the roles within teams, work units, departments, organizations, inter-organizational systems, and the larger environment.
18.0 Demonstrate leadership and teamwork skills needed to accomplish team goals and objectives.
19.0 Demonstrate the roles and responsibilities of the central supply worker.
20.0 Recognize basic principles of microbiology.
21.0 Interpret and apply medical terminology and anatomical terms as they relate to equipment and supplies issued by central service personnel.
22.0 Describe how central service is involved in controlling infections in hospitals.
23.0 Explain the purpose of occupational safety and health Act.
24.0 Receive, decontaminate, clean, prepare, disinfect and sterilize reusable items.
25.0 Demonstrate the use of sterilization process monitors, including temperature and frequency of appropriate chemical indicators and bacterial spore tests for all sterilizers.
26.0 Demonstrate the ability to identify and select appropriate instrumentation or equipment that meets the needs of the specialty.

**Florida Department of Education**
**Student Performance Standards**

**Program Title:** **Central Sterile Processing Technologist**
**CIP Number:** **0351090903**
**Program Length:** **30 Credit Hours**
**SOC Code(s):** **31-9093**

Standards 1-11 are referred to as the **Health Science Core** and are required standards in this program. Secondary and Postsecondary students completing the health science core will not have to repeat the core in any other health science program in which it is a part. When the recommended sequence is followed, the structure allows students to complete at specified points for employment or remain for advanced training or cross-training.

To ensure consistency whenever these courses are offered, the health science core standards (1-11) have been placed in a separate document.

| **This certificate program is part of the Surgical Services AS degree program (1351000002). At the completion of this program, the student will be able to:** |
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| **Students completing intended outcomes (12-26), in addition to the health careers core, will meet the requirements of Central Sterile Processing Technologist – CCC (SOC Code 31-9093).** |
| 12.0 Describe supply distribution systems and the principles of inventory control. -- The student will be able to: |
| 12.01 Define the benefits of inventory control. |
| 12.02 Describe the methods of inventory control. |
| 12.03 Compare the advantages and disadvantages of each distribution methods. |
| 12.04 Process a requisition marked "stat" - locate article, price, etc. |
| 12.05 Demonstrate the process of stock rotation. |
| 12.06 Identify the uses of sterility maintenance covers. |
| 12.07 Describe the processes for loaner instrumentation and equipment. |
| 12.08 Describe the process of product evaluation. |
| 12.09 Describe the procedures for tracking the usage of medical/surgical supplies, patient care equipment and specialty carts. |

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| | 12.10 Describe the procedures for documenting supply and equipment charges. |
| | 12.11 Demonstrate the methods of case cart preparation and the utilization of preference cards. |
| 13.0 | Demonstrate the ability to recall and dispose of or reprocess sterile supplies. -- The student will be able to: |
| | 13.01 Explain the factors that affect how long a package can be considered safe for use. |
| | 13.02 Explain the differences between event related, date related, and manufacturer recommendations. |
| | 13.03 State the methods of determining expiration dates. |
| | 13.04 List the steps in reprocessing outdated hospital packaged items. |
| | 13.05 List conditions that would make a product unsafe for use |
| | 13.06 Describe the use of tamper evident seals. |
| | 13.07 Describe the methods of reprocessing. |
| | 13.08 Identify standards and facility policies on reprocessing of single use items. |
| | 13.09 Describe the process of recall for medical/surgical supplies. |
| 14.0 | Identify fundamentals of procurement skills. -- The student will be able to: |
| | 14.01 Describe procurement system. |
| | 14.02 Communicate with other hospitals, facilities, or company representatives for procurement of supplies and equipment. |
| | 14.03 Describe several different methods of procurement of supplies. |
| | 14.04 Describe basics of receiving items, including documentation of receiving and release to other facilities. |
| 15.0 | Demonstrate language arts knowledge and skills. – The students will be able to: |
| | 15.01 Locate, comprehend and evaluate key elements of oral and written information. |
| | 15.02 Draft, revise, and edit written documents using correct grammar, punctuation and vocabulary. |
| | 15.03 Present information formally and informally for specific purposes and audiences. |
| 16.0 | Solve problems using critical thinking skills, creativity, and innovation. – The students will be able to: |
| | 16.01 Employ critical thinking skills independently and in teams to solve problems and make decisions. |

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| | 16.02 Employ critical thinking and interpersonal skills to resolve conflicts. |
| | 16.03 Identify and document workplace performance goals and monitor progress toward those goals. |
| | 16.04 Conduct technical research to gather information necessary for decision-making. |
| 17.0 | Describe the roles within teams, work units, departments, organizations, inter-organizational systems, and the larger environment. – The students will be able to: |
| | 17.01 Describe the nature and types of business organizations. |
| | 17.02 Explain the effect of key organizational systems on performance and quality. |
| | 17.03 List and describe quality control systems and/or practices common to the workplace. |
| | 17.04 Explain the impact of the global economy on business organizations. |
| 18.0 | Demonstrate leadership and teamwork skills needed to accomplish team goals and objectives. – The students will be able to: |
| | 18.01 Employ leadership skills to accomplish organizational goals and objectives. |
| | 18.02 Establish and maintain effective working relationships with others, in order to accomplish objectives and tasks. |
| | 18.03 Conduct and participate in meetings to accomplish work tasks. |
| | 18.04 Employ mentoring skills to inspire and teach others. |
| | 18.05 Analyze attributes and attitudes of an effective leader. |
| | 18.06 Recognize factors and situations that may lead to conflict. |
| | 18.07 Demonstrate effective techniques for managing team conflict. |
| 19.0 | Demonstrate the roles and responsibilities of the central supply worker. -- The student will be able to: |
| | 19.01 Describes professional standards related to personal hygiene and dress codes. |
| | 19.02 Identifies relevant federal, state, and local guidelines, standards and regulations. |
| | 19.03 Describes the function and workflow of the sterile processing department. |
| | 19.04 Apply ergonomic considerations and appropriate body mechanics for lifting, turning, pulling, pushing, and reaching. |
| | 19.05 Apply policies and procedures related to sterile processing functions (safety, infection control, disaster control, disaster, MSDS, incident reports, etc.). |
| | 19.06 Describes importance of following device, equipment, instrument or supply manufacturer's instructions for processing, operation, and troubleshooting. |

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| 20.0 | Recognize basic principles of microbiology. -- The student will be able to: |
| | 20.01 Describe terms related to microbiology and the control of microorganisms in central sterile processing departments. |
| | 20.02 Identify the main categories of microorganisms. |
| | 20.03 Describe the life functions of microorganisms. |
| | 20.04 Describe conditions affecting the growth of bacteria. |
| | 20.05 Describe special methods used to destroy harmful microorganisms on fomites in the environment. |
| | 20.06 List the helpful microorganisms. |
| | 20.07 Describe how the body controls the growth of pathogenic microorganisms. |
| | 20.08 Identify pathogenic microorganisms commonly found in central service departments. |
| 21.0 | Interpret and apply medical terminology and anatomical terms as they relate to equipment and supplies issued by central service personnel. -- The student will be able to: |
| | 21.01 Identify word elements for medical terms. |
| | 21.02 Relate anatomical concepts to orthopedic devices and other supplies and equipment issued by the CS Department. |
| 22.0 | Describe how central service is involved in controlling infections in hospitals. -- The student will be able to: |
| | 22.01 Describe nosocomial infections. |
| | 22.02 Describe the types of isolation. |
| | 22.03 Describe the organization and functions of CS. |
| | 22.04 Describe the CS responsibilities for infection control and traffic patterns when in the operating room and other departments. |
| | 22.05 Identify proper storage and transportation standards for supplies in the facility (receivables, sterile, clean, or contaminated). |
| | 22.06 Describe the organizational patterns of health care facilities. |
| 23.0 | Explain the purpose of occupational safety and health act. -- The student will be able to: |
| | 23.01 Describe how employees are protected under OSHA. |
| | 23.02 Describe potential workplace hazards in CS. (wet floors, chemicals, fumes, gases, steam, electrical outlets, body fluids, microorganisms, sharps, and medical wastes). |
| | 23.03 Describe the role preventive maintenance plays in patient and personnel safety in the hospital. |

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| | 23.04 | Explain the purpose of Florida's "Right to Know" law and its provisions. |
| | 23.05 | Describe the protocol for personal injury including the completion of incident/occupancy reports and follow up. |
| | 23.06 | Implement appropriate regulatory and accreditation agency patient safety guidelines. |
| 24.0 | Receive, decontaminate, clean, prepare, disinfect and sterilize reusable items. -- The student will be able to: | |
| | 24.01 | Describe the importance of thorough cleaning to the overall objectives of making items safe for patient use. |
| | 24.02 | Explain the importance of following manufacturers' instructions in cleaning each item for reprocessing. |
| | 24.03 | Describe the levels of disinfection, the cleaning process and methods of disinfection for the environment, instruments, syringes, needles, rubber goods and equipment. |
| | 24.04 | Describe the mechanisms of action for each disinfection method including ultrasonic machines and washer/sterilizers. |
| | 24.05 | Describe the strategies for managing difficult to control microorganisms that require isolation techniques and specialized decontamination methods including Creutzfeldt - Jakob disease (CJD). . |
| | 24.06 | Describe the factors affecting decontamination (water temperature, loading procedures, water impurities, opening and disassembling). |
| | 24.07 | Distinguish correct reprocessing policies related to single use, limited use, and reusable items. |
| | 24.08 | Describe decontamination methods for drill systems and batteries. |
| | 24.09 | Describe the function of case cart washers, and alternative methods of cleaning. |
| | 24.10 | Describe the need for testing and monitoring all decontamination machines for proper function and cleaning agents. |
| | 24.11 | Explain the importance of using correct chemicals for cleaning in regards to water quality, PH, filters, softeners, enzymes, lubricants. |
| | 24.12 | Describe the types, characteristics, and uses of chemicals, solutions, and gases utilized for decontamination (detergents, disinfectants, enzymatics, and germicides). |
| | 24.13 | Demonstrate the decontamination process for instruments, syringes, needles, rubber goods and equipment. |
| | 24.14 | Demonstrate flexible endoscopic leak testing, decontamination, and reprocessing. |
| | 24.15 | Demonstrates decontamination and proper handling of rigid scopes. |
| | 24.16 | Describes the methods of high level disinfection including manual and automated endoscopic reprocessor (AER). |
| | 24.17 | Describe the types of sterilizers and methods of sterilization. |
| | 24.18 | Describe the primary objectives in selecting the correct packaging materials for both the individual item and the sterilization method to be used. |

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| | 24.19 Describe the principles of packaging. |
| | 24.20 Describe the characteristics of packaging materials in relationship to sterilization methods. |
| | 24.21 Describe the principles of linen pack and tray construction/assembly. |
| | 24.22 Describe the recommended labeling methodologies. |
| | 24.23 Identify basic surgical procedure trays, instruments, supplies, and accessories. |
| | 24.24 Explain the principles utilized when loading different kinds of wrapped packs or packages into a sterilizer to be assured of sterilant penetration. |
| | 24.25 Recognize equipment malfunction and list corrective actions. |
| | 24.26 Demonstrate the wrapping of procedures trays, instruments and other supplies. |
| | 24.27 Demonstrate loading of different kinds of wrapped packs or packages into a sterilizer to be assured of sterilant penetration. |
| | 24.28 Describe how sterile supplies should be handled. |
| | 24.29 Demonstrate handling, transportation and storage of clean, sterile and nonsterile supplies and equipment. |
| 25.0 | Demonstrate the use of sterilization process monitors, including temperature and frequency of appropriate chemical indicators and bacterial spore tests for all sterilizers. -- The student will be able to: |
| | 25.01 Describe the types of sterilization, sterilization cycles, and parameters for each. |
| | 25.02 Describe the importance of the manufacturer's recommendations for the safe operation of each type of sterilizer. |
| | 25.03 Describe the methods of sterilization monitoring. |
| | 25.04 Demonstrate the process of preparing and documenting the sterilizer load contents for each sterilizer correctly according to the manufacturer's recommendations. |
| | 25.05 Demonstrate the operation, testing, and monitoring of sterilizers. |
| | 25.06 Demonstrate the ability to interpret and document monitoring devices, printouts, and charts accurately for each sterilization system utilized. |
| | 25.07 Identify the standards for, and facility policy regarding, frequency of monitoring for all sterilizers. |
| 26.0 | Demonstrate the ability to identify and select appropriate instrumentation or equipment that meets the needs of the specialty. -- The student will be able to: |
| | 26.01 Describe instrument terminology and identify the anatomy of surgical instruments (jaws, shanks, box locks, rings, etc.). |
| | 26.02 Describe the types and functions of instruments. |
| | 26.03 Describe the types of instrument construction. |

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| 26.04 | Demonstrate appropriate techniques for inspection and testing of instruments. |
| 26.05 | Identify instrumentation and equipment by name and usage. |
| 26.06 | Correctly label instrumentation and equipment. |
| 26.07 | Demonstrate the methods of instrument identification, marking, and tracking of use. |
| 26.08 | Demonstrate the assembly of various instrument sets and specialty equipment. |
| 26.09 | Demonstrate the process regarding the manufacturer's recommendations for instrument and equipment care including handling, operation, maintenance and troubleshooting. |

## Additional Information

### Laboratory Activities

Laboratory investigations that include scientific inquiry, research, measurement, problem solving, emerging technologies, tools and equipment, as well as, experimental, quality, and safety procedures are an integral part of this career and technical program/course. Laboratory investigations benefit all students by developing an understanding of the complexity and ambiguity of empirical work, as well as the skills required to manage, operate, calibrate and troubleshoot equipment/tools used to make observations. Students understand measurement error; and have the skills to aggregate, interpret, and present the resulting data. Equipment and supplies should be provided to enhance hands-on experiences for students.

### Special Notes

This program meets the Department of Health's education requirements for HIV/AIDS, Domestic Violence and Prevention of Medical Errors. Although not a requirement for initial licensure, it is a requirement for renewal, therefore the instructor may provide a certificate for renewal purposes to the student verifying these requirements have been met.

The standard length of this program is 900 clock hours or 30 credit hours. This includes the Health Careers Core (90 clock hours).

If students in this program are seeking a licensure, certificate or registration through the Department of Health, please refer to 456.0635 F.S. for more information on disqualification for a license, certificate, or registration through the Department of Health.

Inquiries about a voluntary certification for sterile processing and distribution may be made to:

International Association of Hospital Central Service Materiel Management (IAHCSMM)
213 West Institute Place, Suite 307, Chicago, IL 60610
Toll Free: 800-962-8274

OR

Certification Board for Sterile Processing and Distribution, Inc. (CBSPD)
2 Industrial Park Road-Suite 3
Alpha, NJ 08865

Outcomes 01-11 are referred to as the Health Careers Core and do not have to be completed if the student has previously completed the Core in another health science program. The Core should be taken first or concurrently with the first course in the program. Following the successful completion of the core, the National Health Care Foundation Skill Standards Assessment will be taken with instructor approval and the completion of a portfolio.

## Career and Technical Student Organization (CTSO)

HOSA: Future Health Professionals is the intercurricular career and technical student organization providing leadership training and reinforcing specific career and technical skills. Career and Technical Student Organizations provide activities for students as an integral part of the instruction offered.

## Accommodations

Federal and state legislation requires the provision of accommodations for students with disabilities to meet individual needs and ensure equal access. Postsecondary students with disabilities must self-identify, present documentation, request accommodations if needed, and develop a plan with their counselor and/or instructors. Accommodations received in postsecondary education may differ from those received in secondary education. Accommodations change the way the student is instructed. Students with disabilities may need accommodations in such areas as instructional methods and materials, assignments and assessments, time demands and schedules, learning environment, assistive technology and special communication systems. Documentation of the accommodations requested and provided should be maintained in a confidential file.

**Florida Department of Education**
**Curriculum Framework**

**Program Title:** **Surgical Technology Specialist**
**Career Cluster:** **Health Science**

| CCC | |
|---|---|
| CIP Number | 0351090904 |
| Program Type | College Credit Certificate (CCC) |
| Program Length | 49 credit hours |
| CTSO | HOSA: Future Health Professionals |
| SOC Codes (all applicable) | 29-2055 Surgical Technologists |

## Purpose

This certificate program is part of Surgical Services AS degree program (1351000002).

A College Credit Certificate consists of a program of instruction of less than sixty (60) credits of college-level courses, which is part of an AS or AAS degree program and prepares students for entry into employment (Rule 6A-14.030, F.A.C.).

This program offers a sequence of courses that provides coherent and rigorous content aligned with challenging academic standards and relevant technical knowledge and skills needed to prepare for further education and careers in the Health Science career cluster; provides technical skill proficiency, and includes competency-based applied learning that contributes to the academic knowledge, higher-order reasoning and problem-solving skills, work attitudes, general employability skills, technical skills, and occupation-specific skills, and knowledge of all aspects of Health Science career cluster.

The program is designed to prepare students for employment as surgical technologists SOC 29-2055.

The content includes but is not limited to communication and interpersonal skills, legal and ethical responsibilities, anatomy, physiology, pathophysiology, microbiology, aseptic techniques, patient care procedures, surgical technology procedures, patient safety, use and care of equipment and supplies, CPR, Heartsaver, employability skills, and basic computer literacy.

**Additional Information** relevant to this Career and Technical Education (CTE) program is provided at the end of this document.

**Standards**

After successfully completing this program, the student will be able to perform the following:

01.0 Demonstrate knowledge of the healthcare delivery system and health occupations.
02.0 Demonstrate the ability to communicate and use interpersonal skills effectively.
03.0 Demonstrate legal and ethical responsibilities.
04.0 Demonstrate an understanding of and apply wellness and disease concepts.
05.0 Recognize and practice safety and security procedures.
06.0 Recognize and respond to emergency situations.
07.0 Recognize and practice infection control procedures.
08.0 Demonstrate an understanding of information technology applications in healthcare.
09.0 Demonstrate employability skills.
10.0 Demonstrate knowledge of blood borne diseases, including HIV/AIDS.
11.0 Apply basic math and science skills.
12.0 Demonstrate central supply skills.
13.0 Use communication and interpersonal skills as related to surgical technology.
14.0 Demonstrate an understanding of the basic sciences related to surgical technology.
15.0 Demonstrate knowledge of pharmacology and math calculation principles related to the surgical environment.
16.0 Describe and practice safety measures in the surgical environment.
17.0 Assist the RN circulator with patient care procedures related to the surgical environment and describe methods for meeting patient's needs.
18.0 Demonstrate knowledge of the skills necessary to function safely and effectively.
19.0 Demonstrate knowledge of and assist with surgical procedures.
20.0 Demonstrate an understanding of legal and ethical responsibilities specific to surgical technology.

**Florida Department of Education**
**Student Performance Standards**

**Program Title:** **Surgical Technology Specialist**
**CIP Numbers:** **0351090904**
**Program Length:** **49 Credit Hours**
**SOC Code(s):** **29-2055**

Standards 1-11 are referred to as the **Health Science Core** and are required standards in this program. Secondary and Postsecondary students completing the health science core will not have to repeat the core in any other health science program in which it is a part. When the recommended sequence is followed, the structure allows students to complete at specified points for employment or remain for advanced training or cross-training.

To ensure consistency whenever these courses are offered, the health science core standards (1-11) have been placed in a separate document.

**This certificate program is part of Surgical Services AS degree program (1351000002). At the completion of this program, the student will be able to:**

**Students completing intended outcomes 12-20, in addition to the health careers core, will meet the requirements of the Surgical Technology Specialist-CCC (SOC Code 29-2055).**

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| 12.0 | Demonstrate central supply skills. –The student will be able to: |
| 12.01 | Apply the principles of medical/surgical asepsis including attire, environmental control and traffic patterns to control and manage dirty, clean and sterile areas of the operating room and central supply. |
| 12.02 | Apply infection control techniques following Center for Disease Control (CDC) guidelines. |
| 12.03 | Inspect and send out for repair instruments, equipment and supplies regarding condition and quantity. |
| 12.04 | Describe the methods of disinfection and sterilization. |
| 12.05 | Demonstrate the handling, inspection and notification process regarding package integrity. |
| 12.06 | Demonstrate correctly decontamination techniques for instruments, equipment, and the environment used for surgical procedures. |
| 12.07 | Describe clean and sterile transportation, restocking, and storage principles for instruments, supplies and equipment. |
| 12.08 | Identify instruments, supplies and equipment for any surgical procedure. |
| 12.09 | Describe various supply distribution and inventory control methods. |
| 12.10 | Demonstrate ability to prepare and label items for high level disinfection and sterilization correctly. |

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| | 12.11 Demonstrate the techniques of high level disinfection and sterilization for immediate use items. |
| | 12.12 Demonstrate case cart preparation and management. |
| 13.0 | Use communication and interpersonal skills as related to surgical technology. – The student will be able to: |
| | 13.01 Describe various forms of communication in the role of surgical technologist. |
| | 13.02 Analyze and select the appropriate behavioral response unique to the patient's needs. |
| | 13.03 Describe the concepts of conflict resolution, assertive behavior and the principles of teamwork in the surgical environment. |
| 14.0 | Demonstrate an understanding of the basic sciences related to surgical technology. – The student will be able to: |
| | 14.01 Describe the concepts of microbiology and relate key principles to the surgical environment. |
| | 14.02 Compare and contrast the structure and characteristics of microorganisms found in the surgical environment. |
| | 14.03 Relate medical terminology, medical abbreviations, and anatomy and physiology to surgical specialties and specific procedures. |
| | 14.04 Analyze patient defense mechanisms, the chain of infection and the infectious process as related to surgical practice. |
| | 14.05 Demonstrate infection and disease transmission control techniques following the Center for Disease Control (CDC) and Occupational Safety and Health Administration (OSHA) guidelines for surgery. |
| | 14.06 Correlate wound classifications and wound healing principles with wound management guidelines. |
| | 14.07 Discuss the principles of information technology, electricity and robotics as they relate to surgery. |
| 15.0 | Demonstrate knowledge of pharmacology and math calculation principles related to the surgical environment.-The student will be able to: |
| | 15.01 Describe the roles of the anesthesia provider and circulating nurse. |
| | 15.02 Analyze the administration of anesthesia including the methods, agents, and techniques. |
| | 15.03 Describe the preoperative examination and preparation process for both surgery and anesthesia. |
| | 15.04 Describe potential anesthesia and operative complications and interventions for each. |
| | 15.05 Define the terminology and describe the basic concepts of pharmacology including pharmacokinetics and pharmacodynamics. |
| | 15.06 Identify the classifications, actions, effects and precautions for common drugs used at the sterile field and within the surgical environment. |
| | 15.07 Demonstrate the application of the six rights of medication administration. |
| | 15.08 Analyze and assemble correctly all medication supplies, for each drug to be used on the sterile field. |

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| | 15.09 Demonstrate the appropriate methods of transferring and accepting medications onto the sterile field. |
| | 15.10 Prepare, manage and label sterile solutions and medications accurately within the sterile field. |
| | 15.11 Correctly calculate common medication conversions and dosages. |
| | 15.12 Demonstrate preparation and passing of medication mixtures using ratio and proportions correctly. |
| | 15.13 Maintains an accurate account of the amount of each medication and/or solution used at the field and notifies circulator as appropriate to the situation to ensure accurate documentation. |
| 16.0 | Describe and practice safety measures in the surgical environment. – The student will be able to: |
| | 16.01 Describe the role, job duties and responsibilities of the surgical technologist in the healthcare setting. |
| | 16.02 Inspect emergency equipment and supplies for condition and quantity. |
| | 16.03 Demonstrate appropriate safety measures to prevent operating room fires and electrical shock from equipment. |
| | 16.04 Describe appropriate safety measures for laser and electrosurgical unit usage in surgery. |
| | 16.05 Implement appropriate regulatory and accreditation agency patient safety guidelines. |
| | 16.06 Describe the role of the surgical technologist in a disaster situation. |
| | 16.07 Describe the role of the surgical technologist in an emergency patient situation. |
| | 16.08 Prepare the operative site. |
| | 16.09 Perform steps for Foley catheter insertion and connecting to drainage correctly. |
| 17.0 | Assist the RN circulator with patient care procedures related to the surgical environment and describe methods for meeting patient's needs. – The student will be able to: |
| | 17.01 Perform patient transfer/transportation techniques used in the operating room. |
| | 17.02 Assist with positioning and apply safety devises to the patient for surgery. |
| | 17.03 Ground patient and connect electrosurgical cautery unit. |
| | 17.04 Describe the roles of anesthetist and circulating nurse during induction. |
| | 17.05 Prepare the operative site. |
| | 17.06 Perform steps for Foley catheter insertion and connecting to drainage. |
| | 17.07 Apply sterile dressing and bandage. |

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| 18.0 | Demonstrate knowledge of the skills necessary to function safely and effectively. – The student will be able to: |
| 18.01 | Select and verify instruments, equipment and supplies, including any implants needed for surgical procedures using surgeon preference/procedure cards including those identified as “have available/hold items”. |
| 18.02 | Measure and pour sterile solutions. |
| 18.03 | Perform surgical scrub. |
| 18.04 | Put on sterile gown and gloves. |
| 18.05 | Drape tables and solution stands. |
| 18.06 | Set up sterile mayo stand and instrument table. |
| 18.07 | Prepare sutures, ligatures, and ties. |
| 18.08 | Prepare, pass, and monitor amount given for medications used on the sterile field. |
| 18.09 | Assist surgeon in gowning and gloving. |
| 18.10 | Assist in draping patient, pass instruments, monitor field. |
| 18.11 | Identify/correct and/or report breaks in aseptic technique. |
| 18.12 | Monitor body fluids, e.g. blood loss, ascites. |
| 18.13 | Perform complete counts with R.N. |
| 18.14 | Identify principles and demonstrate techniques of disinfection and sterilization. |
| 18.15 | Assist in removing/applying cast. |
| 18.16 | Assist in maintaining retraction, cutting suture and holding instruments as directed by the surgeon in the second assistant role. |
| 18.17 | Prepare specimen for laboratory analysis. |
| 18.18 | Decontaminate instruments equipment and environment. |
| 18.19 | Replenish supplies and equipment. |
| 18.20 | Describe how to update procedure/preference cards. |
| 18.21 | Apply electrical knowledge to safe patient care practices in surgery. |
| 19.0 | Demonstrate knowledge of and assist with surgical procedures. – The student will be able to: |

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| | 19.01 | Identify preoperative diagnosis, common complications, and operative pathology relating to specific surgical procedures. |
| | 19.02 | List and describe types of incisions and wound closures. |
| | 19.03 | Describe the usual sequence of a common surgical procedure (i.e. incision into the anatomy, dissection of the anatomy and closing of the anatomy). |
| | 19.04 | Demonstrates the ability to select the appropriate instrument, equipment, or supply for each step of the procedure. |
| | 19.05 | Demonstrates proper cost effective methods including the ability to identify “have available/hold items”. |
| 20.0 | Demonstrate an understanding of legal and ethical responsibilities specific to surgical technology. – The student will be able to: | |
| | 20.01 | State methods, standards and aids that assist a surgical technologist with interpreting and following legal responsibilities. |
| | 20.02 | Describe the role of the surgical technologist in the healthcare setting. Provide health care within the ethical/legal framework of the surgical technologist’s role. |

## Additional Information

### Laboratory Activities

Laboratory investigations that include scientific inquiry, research, measurement, problem solving, emerging technologies, tools and equipment, as well as, experimental, quality, and safety procedures are an integral part of this career and technical program/course. Laboratory investigations benefit all students by developing an understanding of the complexity and ambiguity of empirical work, as well as the skills required to manage, operate, calibrate and troubleshoot equipment/tools used to make observations. Students understand measurement error; and have the skills to aggregate, interpret, and present the resulting data. Equipment and supplies should be provided to enhance hands-on experiences for students.

The Human Patient Simulator (HPS) or other accepted simulation scenarios may be used for a limited number of clinical hours. A low teacher-student ratio in the lab and clinical area is strongly recommended. The recommended maximum ratio is 1:6.

### Special Notes

Selected portions of this program may be utilized to provide additional skills to enable nursing graduates to become employable in operating rooms as surgical technologists. The program should meet the requirements of the Commission on Accreditation of Allied Health Education Programs (CAAHEP) or Accrediting Bureau of Health Education Schools (ABHES).

This program focuses on broad, transferable skills and stresses understanding and demonstration of the following elements of the health care industry; planning, management, finance, technical and production skills, underlying principles of technology, labor issues, community issues and health, safety, and environmental issues.

This program meets the Department of Health's education requirements for HIV/AIDS, Domestic Violence and Prevention of Medical Errors. Although not a requirement for initial licensure, it is a requirement for renewal, therefore the instructor may provide a certificate for renewal purposes to the student verifying these requirements have been met.

If students in this program are seeking a licensure, certificate or registration through the Department of Health, please refer to 456.0635 F.S. for more information on disqualification for a license, certificate, or registration through the Department of Health.

After successful completion of a Commission on Accreditation of Allied Health Education Programs (CAAHEP) or Accrediting Bureau of Health Education Schools (ABHES) accredited program, students are eligible to take the National Board of Surgical Technologist and Surgical Assisting (NBSTSA), Certified Surgical Technologist exam.

Please contact NBSTSA for more information on this exam:

National Board of Surgical Technologist and Surgical Assisting (NBSTSA)
6 West Dry Creek Circle, Suite 100 Littleton, Colorado 80120
**Toll-free:** (800) 707-0057

Outcomes 01-11 are referred to as the Health Science Core and do not have to be completed if the student has previously completed the Core in another health occupations program at any level. The Core should be taken first or concurrently with the first course in the program. Following the successful completion of the core, the student is eligible to take the National Health Care Foundation Skill Standards Assessment with instructor approval and the completion of a portfolio.

## Career and Technical Student Organization (CTSO)

HOSA: Future Health Professionals is the intercurricular career and technical student organization providing leadership training and reinforcing specific career and technical skills. Career and Technical Student Organizations provide activities for students as an integral part of the instruction offered.

## Accommodations

Federal and state legislation requires the provision of accommodations for students with disabilities to meet individual needs and ensure equal access. Postsecondary students with disabilities must self-identify, present documentation, request accommodations if needed, and develop a plan with their counselor and/or instructors. Accommodations received in postsecondary education may differ from those received in secondary education. Accommodations change the way the student is instructed. Students with disabilities may need accommodations in such areas as instructional methods and materials, assignments and assessments, time demands and schedules, learning environment, assistive technology and special communication systems. Documentation of the accommodations requested and provided should be maintained in a confidential file.

**Florida Department of Education**
**Curriculum Framework**

**Program Title:** **Surgical First Assistant**
**Career Cluster:** **Health Science**

| | CCC |
|---|---|
| CIP Number | 0351090908 |
| Program Type | College Credit Certificate (CCC) |
| Program Length | 59 credit hours |
| CTSO | HOSA: Future Health Professionals |
| SOC Codes (all applicable) | 29-2055 Surgical Technologists<br>31-9099 Healthcare Support Workers, All Other |

## Purpose

This certificate program is part of the Surgical First Assisting AS degree program (1351090900).

A College Credit Certificate consists of a program of instruction of less than sixty (60) credits of college-level courses, which is part of an AS or AAS degree program and prepares students for entry into employment (Rule 6A-14.030, F.A.C.).

This program offers a sequence of courses that provides coherent and rigorous content aligned with challenging academic standards and relevant technical knowledge and skills needed to prepare for further education and careers in the Health Science career cluster; provides technical skill proficiency, and includes competency-based applied learning that contributes to the academic knowledge, higher-order reasoning and problem-solving skills, work attitudes, general employability skills, technical skills, and occupation-specific skills, and knowledge of all aspects of Health Science career cluster.

The program is designed to prepare students for employment as a Surgical First Assistant Expanded Function (Surgical technologists is SOC 29-2055).

The content includes, but is not limited to, communication and interpersonal skills, legal and ethical responsibilities, anatomy, physiology, pathophysiology, microbiology, aseptic techniques, patient care procedures, surgical procedures, patient safety, use and care of equipment and supplies, CPR, Heartsaver, employability skills, basic computer literacy and surgical first assistant skills such as preoperative duties, aid in exposure, hemostasis, closure, intraoperative technical functions, and postoperative duties under the direction and supervision of the surgeon.

**Additional Information** relevant to this Career and Technical Education (CTE) program is provided at the end of this document.

**Standards**

After successfully completing this program, the student will be able to perform the following:

01.0 Demonstrate knowledge of the health care delivery system and health occupations.
02.0 Demonstrate the ability to communicate and use interpersonal skills effectively.
03.0 Demonstrate legal and ethical responsibilities.
04.0 Demonstrate an understanding of and apply wellness and disease concepts.
05.0 Recognize and practice safety and security procedures.
06.0 Recognize and respond to emergency situations.
07.0 Recognize and practice infection control procedures.
08.0 Demonstrate an understanding of information technology applications in healthcare.
09.0 Demonstrate employability skills.
10.0 Demonstrate knowledge of blood borne diseases, including HIV/AIDS.
11.0 Apply basic math and science skills.
12.0 Demonstrate central sterile processing skills.
13.0 Demonstrate competencies in the core components of the surgical first assistant related to communication and interpersonal skills.
14.0 Demonstrate an understanding of the basic sciences related to surgical first assisting.
15.0 Describe and practice safety measures in the surgical environment.
16.0 Perform patient care procedures related to the surgical environment and describe methods for meeting patient's needs.
17.0 Demonstrate knowledge of pharmacology and math calculation principles related to the surgical environment.
18.0 Demonstrate knowledge of the basic surgical skills necessary to function safely and effectively.
19.0 Demonstrate competencies in the core components of the surgical first assistant related to knowledge and skills.
20.0 Demonstrate competencies in the core components of the surgical first assistant related to legal and ethical responsibilities.

**Florida Department of Education**
**Student Performance Standards**

**Program Title:** **Surgical First Assistant**
**CIP Number:** **0351090908**
**Program Length:** **59 credits**
**SOC Code(s):** **29-2055; 31-9099**

Standards 1-11 are referred to as the **Health Science Core** and are required standards in this program. Secondary and Postsecondary students completing the health science core will not have to repeat the core in any other health science program in which it is a part. When the recommended sequence is followed, the structure allows students to complete at specified points for employment or remain for advanced training or cross-training.

To ensure consistency whenever these courses are offered, the health science core standards (1-11) have been placed in a separate document.

| **This certificate program is part of the Surgical First Assisting AS degree program (1351090900). At the completion of this program, the student will be able to:** | |
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| **Students completing intended outcomes 12-20 will meet the requirements of the Surgical First Assistant –CCC Program (SOC Code 29-2055).** | |
| 12.0 | Demonstrate central sterile processing skills. -- The student will be able to: |
| 12.01 | Apply the principles of medical/surgical asepsis including attire, environmental control and traffic patterns to control and manage dirty, clean and sterile areas of the operating room and central supply. |
| 12.02 | Identify relevant federal, state and local guidelines, standards and regulations. |
| 12.03 | Apply ergonomic considerations and appropriate body mechanics for lifting, turning, pulling, pushing, reaching, and other work related activities. |
| 12.04 | Describe the methods of disinfection and sterilization. |
| 12.05 | Describe the importance of following device, equipment, instrument or supply manufacturer's instructions for decontamination, processing, operation, and troubleshooting. |
| 12.06 | Demonstrate correctly decontamination techniques for instruments, equipment and the environment used during surgical procedures. |
| 12.07 | Demonstrate appropriate techniques for inspection, testing and sending out for repair instruments, equipment and supplies regarding condition, quantity and quality. |
| 12.08 | Describe clean and sterile transportation, restocking, and storage principles for instruments. |
| 12.09 | Analyze the results of sterilization process monitors used in sterilization units, sterilizations cycles and ensures documentation meets the safe parameters for each prior to use of an item. |

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| | 12.10 Describe clean and sterile transportation, restocking, and storage principles for supplies in the facility (receivables, sterile, clean, or contaminated). |
| | 12.11 Demonstrates the ability to identify and select appropriate instruments, equipment and supplies for any surgical procedure. |
| | 12.12 Demonstrate the ability to prepare and label items for high level disinfection and sterilization as required. |
| | 12.13 Demonstrate the techniques of high level disinfection and sterilization for immediate use items. |
| | 12.14 Describe various supply distribution and inventory control methods. |
| | 12.15 Demonstrate case cart preparation and management. |
| 13.0 | Demonstrate competencies in the core components of the surgical first assistant related to communication and interpersonal skills -- The student will be able to: |
| | 13.01 Demonstrate proper use of communication systems. |
| | 13.02 Use various forms of communication in the role of Surgical First Assistant to communicate relevant, accurate and complete information in a concise and clear manner. |
| | 13.03 Collaborate with the patient, surgeon, and other members of the Healthcare team to assess, plan, implement, and evaluate the patient's surgical care to promote positive outcomes including the use of preoperative checklists and preoperative assessment and evaluations methods. |
| | 13.04 Demonstrate patient interviewing techniques. |
| | 13.05 Demonstrate the ability to analyze and communicate specific patient care factors or needs and the surgeon's preferences to the surgical team including suture needs, specialty supplies and instrumentation, and equipment. |
| | 13.06 Describe the concepts of conflict resolution, assertive behavior and the principles of teamwork as a patient advocate and assistant to the surgeon. |
| | 13.07 Demonstrate competency regarding reporting and documentation responsibilities in the clinical setting. |
| | 13.08 Employ leadership skills to accomplish organizations goals and objectives. |
| | 13.09 Establish and maintain effective working relationships with others, in order to accomplish objectives and tasks. |
| | 13.10 Conduct and participate in meetings to accomplish work tasks. |
| | 13.11 Employ mentoring skills to inspire and teach others. |
| 14.0 | Demonstrate an understanding of the basic sciences related to surgical first assisting.--The student will be able to: |
| | 14.01 Apply knowledge of the microbial environment to the surgical care of the patient. |
| | 14.02 Analyze patient defense mechanisms, the chain of infection and the infectious process as related to surgical practice and the prevention of surgical site infections. |
| | 14.03 Correlate wound classifications and wound healing principles with wound management guidelines and complications. |

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| 14.04 | Demonstrate infection and disease transmission control techniques following the Center for Disease Control (CDC) and Occupational Safety and Health Administration (OSHA) guidelines for surgery. |
| 14.05 | Describe the causes, clinical signs and symptoms and prevention measures for surgical infections. |
| 14.06 | Describe the basic composition, principles, clinical signs and symptoms regarding electrolytes and fluid balance including the mechanism of hypovolemic, septic, hemorrhagic and cardiogenic shock. |
| 14.07 | Correlates the principles and disorders of hematology, hemostasis, types of blood components, and coagulation with hemostasis in surgery. |
| 14.08 | Discuss the principles of information technology, electricity, and robotics as they relate to surgery. |
| 15.0 | Describe and practice safety measures in the surgical environment.--The student will be able to: |
| 15.01 | Inspect emergency equipment and supplies for condition and quantity. |
| 15.02 | Implement appropriate Joint Commission patient safety goals. |
| 15.03 | Demonstrate appropriate safety measures to prevent operating room fires and electrical shock from equipment. |
| 15.04 | Apply knowledge of surgical hazards to safe patient care. |
| 15.05 | Demonstrate the safe inspection and utilization of laser, electrical, endoscopic, and robotic equipment. |
| 15.06 | Describe and practice appropriate safety measures for laser, electrical, endoscopy and robotic surgery. |
| 15.07 | Describe the role preventive maintenance, prevention, correction, and documentation plays in patient and personnel safety and the prevention of medical errors in the surgical setting. |
| 15.08 | Explain the purpose of Florida's "Right to Know" law and its provisions. |
| 15.09 | Describe the role of the surgical technologist and surgical first assistant in an emergency patient situation. |
| 15.10 | Describe the protocol for personal injury including the completion of incident/occupancy reports and follow up. |
| 15.11 | Describe the preparation and planning, detection and communication, incident management and support systems, safety and security, clinical/public health assessment and intervention, contingency, continuity and recovery and the public health law and ethics of All-Hazards Preparation for disasters. |
| 15.12 | Conduct technical research to gather information for decision-making. |
| 15.13 | List and describe quality control systems and/or practices common to the workplace. |
| 15.14 | Employ critical thinking skills independently and in teams to solve problems, resolve conflicts, and make decisions. |
| 16.0 | Perform patient care procedures related to the surgical environment and describe methods for meeting patient's needs.--The student will be able to: |
| 16.01 | Identify the roles of the members of the surgical team during each phase of surgery. |

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| | 16.02 | Assist surgeon with the perioperative care of the surgical patient. |
| | 16.03 | Correlate the preoperative examination and preparation process for both surgery and anesthesia with the identification of potential patient factors that may inhibit positive outcomes. |
| | 16.04 | Describe appropriate review and identification of patient factors regarding the chart including preoperative identification, preoperative checklists, diagnostic tests, lab values and surgical consent. |
| | 16.05 | Demonstrate safe patient transfer/transportation techniques used in the perioperative setting. |
| | 16.06 | Monitor OR traffic, placement of sterile tables and ensure steps are taken to reduce microbial fallout. |
| | 16.07 | Correlate anesthesia monitoring devices, patient complications and interventions with maintaining patient homeostasis. |
| | 16.08 | Demonstrate the principles of safe positioning, application of safety devices, and restraining patient for surgery correlating the prevention of potential complications with the need for patient stability. |
| | 16.09 | Demonstrate the selection of the appropriate solution and preparation of the operative site for the surgical procedure. |
| | 16.10 | Perform steps for Foley catheter insertion and connection to drainage. |
| | 16.11 | Describe the safe usage of critical instruments, equipment and supplies utilized intraoperatively including the electrosurgical unit, Lasers, Ultrasonic equipment, endoscopy equipment, robotics, insufflators, light sources, microscopes, power tools, suction, tourniquets, etc. |
| | 16.12 | Demonstrate correctly the connection and operation of essential instruments, equipment and supplies for the surgical procedure. |
| | 16.13 | Demonstrate correct mathematical skills related to dosage available versus dosage needing when drawing up or administering medications. |
| | 16.14 | Demonstrate correctly the techniques for injection of local anesthetics. |
| | 16.15 | Demonstrate knowledge of wound management techniques, including suturing techniques in the operating room, perioperative care of special needs patients, and perioperative assessment of the skin. |
| | 16.16 | Demonstrate applicable wound management principles including the placement and security of catheters, wound drainage systems, sterile dressings and cast applications. |
| | 16.17 | Discuss relevant and unique factors regarding postoperative care specific to the procedure. |
| 17.0 | Demonstrate knowledge of pharmacology and math calculation principles related to the surgical environment.--The student will be able to: | |
| | 17.01 | Analyze the terminology the basic concepts of pharmacology and drug administration including pharmacokinetics and pharmacodynamics. |
| | 17.02 | Describe pharmacological concepts relative to the administration of all anesthesia methods, agents, and techniques including the role of the anesthetist, the first assistant and the circulator during induction and extubation. |
| | 17.03 | Identify the classification, actions, effects and precautions of common drugs used at the field, and within the surgical environment. |
| | 17.04 | Apply knowledge of the pharmacologic agents used in the treatment of the surgical patient. |

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| 17.05 | Describe potential anesthesia and operative complications and interventions for each. |
| 17.06 | Demonstrate the application of the six rights of medication administration. |
| 17.07 | Identify the correct medication form and method of application. |
| 17.08 | Analyze and assemble correctly all medication supplies, for each drug to be used on the sterile field. |
| 17.09 | Pour or receive, measure, prepare and manage sterile solutions accurately within the sterile field. |
| 17.10 | Demonstrate the appropriate methods of transferring and accepting medications onto the sterile field. |
| 17.11 | Label properly all fluids and medications used within the sterile field. |
| 17.12 | Demonstrates ability to correctly calculate common medication conversions and dosages. |
| 17.13 | Apply correct unit of measure for each medication. |
| 17.14 | Demonstrates preparation and passing of medication mixtures using ratio and proportions correctly. |
| 17.15 | Maintains an accurate account of the amount of each medication and/or solution used at the field and notifies circulator as appropriate to the situation to ensure accurate documentation. |
| 17.16 | Describe the adverse effects of local and topical anesthetics. |
| 18.0 | Demonstrate knowledge of the basic surgical skills necessary to function safely and effectively.--The student will be able to: |
| 18.01 | Demonstrate an understanding of advanced anatomy, physiology, the disease processes and the relationship of the processes to the specific types of pathologies according to body systems. |
| 18.02 | Correlate the preoperative diagnosis, diagnostic interventions, common complications, and operative pathophysiology relative to specific surgical procedures. |
| 18.03 | Correlate the preoperative diagnosis, operative anatomy, physiology and pathology, usual incision, wound closure techniques, medications utilized, common complications, and the usual sequence as related to specific surgical procedures. |
| 18.04 | Select and verify required instrumentation, equipment and supplies, including any implants needed for specific surgical procedures using core knowledge and the applicable surgeon preference/procedure cards. |
| 18.05 | Demonstrate an understanding of diagnostic images as related to surgical anatomy. |
| 18.06 | Demonstrate application of aseptic and sterile technique principles including the appropriate corrective action for common breaks in sterile technique that may occur. |
| 18.07 | Demonstrate the surgical scrub and donning of sterile gown and gloves. |
| 18.08 | Demonstrate the principles of sterile draping. |
| 18.09 | Demonstrate the set up and management of the sterile mayo stand and/or instrument table(s). |

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| | 18.10 | Demonstrate the set up and management of the sterile mayo stand and/or instrument table(s). |
| | 18.11 | Prepare, pass, utilize, and monitor sharps, sutures, ligatures, ties and staples correctly. |
| | 18.12 | Prepare, pass, utilize, and monitor amount given for medications and solutions utilized on the sterile field. |
| | 18.13 | Demonstrate assisted gowning/gloving for others. |
| | 18.14 | Participate in the surgical time out to prevent wrong site surgery and delays in the surgical procedure. |
| | 18.15 | Select, prepare, pass, and utilize instruments, equipment, tissue replacement materials, implants and supplies efficiently. |
| | 18.16 | Monitor the surgical site regarding counted items, stage of surgery, tissue appearance and patient's body fluids, e.g. blanching, desiccation, color of blood, blood loss, bile leaks, ascites, etc. |
| | 18.17 | Demonstrate correctly the initiation and completion of counts regarding sponges, sharps, instruments and miscellaneous items used within the patient's wound to prevent foreign body retention. |
| | 18.18 | Describe the types of incisions, methods of wound closure, and mechanisms of wound management. |
| | 18.19 | Describe the usual sequence of a common surgical procedure. ( i.e. incision into the anatomy, dissection of the anatomy, operative steps of the procedure, and closing of the anatomy). |
| | 18.20 | Selects the appropriate instrument, equipment, or supply for each step of the procedure. |
| | 18.21 | Demonstrate ability to prepare, validate, handle and preserve specimen accurately for laboratory analysis. |
| | 18.22 | Demonstrates knowledge of and assists with surgical procedures while functioning in the roles of scrub and assistant circulator. |
| | 18.23 | Demonstrate effective perioperative case management ensuring cost control and time/motion economy methods are utilized to maximize the efficiency of the OR team. |
| 19.0 | Demonstrate competencies in the core components of the surgical first assistant related to knowledge and skills.-- The student will be able to: | |
| | 19.01 | Prioritize care or actions to be taken in a given circumstance to expedite the operative procedure or emergency situation. |
| | 19.02 | Describe preoperative diagnosis, common complications, operative pathophysiology and postoperative care related to the specific surgical procedures performed. |
| | 19.03 | Analyze common patient assessments including skin and chart review relating relevant diagnostic and monitoring results to the surgeon as applicable to the surgical specialty. |
| | 19.04 | Demonstrate preoperative preparation of the patient to facilitate proper patient care including but not limited to positioning, application of tourniquet, surgical skin preparation, catherization, draping, and sterile setup preparation. |
| | 19.05 | Demonstrate and describe types of incisions and insertion of trocars. |
| | 19.06 | Identify types of tissue, organs, and gross anatomical structures correctly during surgical procedures. |
| | 19.07 | Demonstrate appropriate tissue handling techniques including the care of the surgical specimens. |

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| | 19.08 | Provide appropriate exposure and visualization of the operative field for the surgeon. |
| | 19.09 | Describe the appropriate sequence for common surgical procedures. |
| | 19.10 | Utilize appropriate techniques to assist with hemostasis. |
| | 19.11 | Demonstrate appropriate safe surgical techniques when the case involves either thermal, radiological, laparoscopic, environmental, or other known surgical hazard. |
| | 19.12 | Participate in volume replacement or autotransfusion techniques and medication administration as appropriate. |
| | 19.13 | Select appropriate instruments and supplies for the type of tissue. |
| | 19.14 | Demonstrate competence with technology, the use of instruments, equipment supplies and medications for the surgical procedure. |
| | 19.15 | Use surgical instruments skillfully in ways consistent with their design and purpose. |
| | 19.16 | Utilize appropriate techniques to assist with the closure of body planes. |
| | 19.17 | Select and apply appropriate wound dressings. |
| | 19.18 | Assist surgeon in securing drainage systems to tissue. |
| | 19.19 | Evaluate patient and report appropriately any abnormal condition found post-op related to positioning. |
| | 19.20 | Assist surgeon with postoperative care of the patient to facilitate proper patient care. |
| | 19.21 | Demonstrate appropriate response to emergency situations including respiratory/cardiac arrest situations, sudden hypoxia, hemorrhage, shock, surgical misadventures, contamination, perforation of viscous or cavity, critical equipment failure, and exposure, retraction and compression injuries. |
| | 19.22 | Facilitate the continuity of care within and across the healthcare settings to access available resources and services. |
| 20.0 | Demonstrate competencies in the core components of the surgical first assistant related to legal and ethical responsibilities. --The student will be able to: | |
| | 20.01 | State methods, standards and aids that assist a surgical first assistant with interpreting and following legal responsibilities. |
| | 20.02 | Describe the importance of maintaining credentials and following the appropriate credentialing policy in accordance with hospital policy and appropriate laws and regulations. |
| | 20.03 | Explain the job requirements. |
| | 20.04 | Describe the key elements related to the development of a surgical conscience. |
| | 20.05 | Demonstrate an understanding of the legal, ethical, moral, and professional responsibilities of working as a surgical assistant, and the professional skills necessary to fulfill the role. |
| | 20.06 | Provide health care within the ethical/legal framework of the job description including role responsibilities and limitations. |

20.07 Describe the principles of problem solving and confidentiality in ethical decision making and risk management.

## Additional Information

### Laboratory Activities

Laboratory investigations that include scientific inquiry, research, measurement, problem solving, emerging technologies, tools and equipment, as well as, experimental, quality, and safety procedures are an integral part of this career and technical program/course. Laboratory investigations benefit all students by developing an understanding of the complexity and ambiguity of empirical work, as well as the skills required to manage, operate, calibrate and troubleshoot equipment/tools used to make observations. Students understand measurement error; and have the skills to aggregate, interpret, and present the resulting data. Equipment and supplies should be provided to enhance hands-on experiences for students.

In a simulated surgical environment, students practice preparing, setting up and maintaining a sterile field, sterilization and disinfection procedures, preparation of supplies and equipment for surgery, and patient preparation.

Clinical learning experiences in an operating room and related areas are an integral part of this program.

The Human Patient Simulator (HPS) or other accepted simulation scenarios may be used for a limited number of clinical hours. A low teacher-student ratio in the lab and clinical area is strongly recommended. The recommended maximum ratio is 1:8.

### Special Notes

This program focuses on broad, transferable skills and stresses understanding and demonstration of the following elements of the health care industry; planning, management, finance, technical and production skills, underlying principles of technology, labor issues, community issues and health, safety, and environmental issues.

This program meets the Department of Health's education requirements for HIV/AIDS, Domestic Violence and Prevention of Medical Errors. Although not a requirement for initial licensure, it is a requirement for renewal, therefore the instructor may provide a certificate for renewal purposes to the student verifying these requirements have been met.

If students in this program are seeking a licensure, certificate or registration through the Department of Health, please refer to 456.0635 F.S. for more information on disqualification for a license, certificate, or registration through the Department of Health

In accordance with Rule 6A-10.024, F.A.C. all faculty providing instruction must have at least a baccalaureate degree or an associate degree with demonstrated competencies in the specific instructional program as defined by the Southern Association of Colleges and Schools.

The Surgical First Assistant Core Curriculum should be taught by qualified staff as outlined in the most recent approved CAAHEP (Commission on Accreditation on Allied Health Education Programs) accreditation standards and guidelines.

Entering students who have successfully completed the program 0351090905 or 0351090904, Surgical Technology or are currently Nationally Certified as a CST (Certified Surgical Technologist) or SA-C (Surgical Assistant-Certified) should be given appropriate advanced standing.

After successful completion of an approved and accredited surgical first assistant program, students are eligible to take the National Board of Surgical Technology and Surgical Assisting First Assistant exam as approved.

Outcomes 01-11 are referred to as the Health Careers Core and do not have to be completed if the student has previously completed the Core in another health science program. The CORE should be taken first or concurrently with the first course in the program. Following the successful completion of the core, the student is eligible to take the National Health Care Foundation Skill Standards Assessment with instructor approval and the completion of a portfolio.

## Career and Technical Student Organization (CTSO)

HOSA: Future Health Professionals is the intercurricular career and technical student organization providing leadership training and reinforcing specific career and technical skills. Career and Technical Student Organizations provide activities for students as an integral part of the instruction offered.

## Accommodations

Federal and state legislation requires the provision of accommodations for students with disabilities to meet individual needs and ensure equal access. Postsecondary students with disabilities must self-identify, present documentation, request accommodations if needed, and develop a plan with their counselor and/or instructors. Accommodations received in postsecondary education may differ from those received in secondary education. Accommodations change the way the student is instructed. Students with disabilities may need accommodations in such areas as instructional methods and materials, assignments and assessments, time demands and schedules, learning environment, assistive technology and special communication systems. Documentation of the accommodations requested and provided should be maintained in a confidential file.

**Florida Department of Education**
**Curriculum Framework**

**Program Title:** **Diagnostic Medical Sonography Specialist**
**Career Cluster:** **Health Science**

| CCC | |
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| CIP Number | 0351091005 |
| Program Type | College Credit Certificate (CCC) |
| Program Length | 47 credit hours |
| CTSO | HOSA: Future Health Professionals |
| SOC Codes (all applicable) | 29-2032 Diagnostic Medical Sonographers |

## Purpose

This certificate program is part of the Diagnostic Medical Sonography Technology AS degree program (1351091004).

A College Credit Certificate consists of a program of instruction of less than sixty (60) credits of college-level courses, which is part of an AS or AAS degree program and prepares students for entry into employment (Rule 6A-14.030, F.A.C.).

This program offers a sequence of courses that provides coherent and rigorous content aligned with challenging academic standards and relevant technical knowledge and skills needed to prepare for further education and careers in the Health Science career cluster; provides technical skill proficiency, and includes competency-based applied learning that contributes to the academic knowledge, higher-order reasoning and problem-solving skills, work attitudes, general employability skills, technical skills, and occupation-specific skills, and knowledge of all aspects of Health Science career cluster.

The program is designed to prepare students for employment as diagnostic medical sonographers, SOC Code 29-2032, or to provide supplemental training for persons previously or currently employed in this occupation.

The content includes but is not limited to anatomy, physiology and pathology of the abdominal, pelvic, and urogenital structures; physics; instrumentation; equipment standards; biological effect of ultrasound; patient care; clinical medicine; applications and limitations of ultra-sound; related diagnostic procedures; image evaluation; administration; first aid and cardiopulmonary resuscitation; employability skills; leadership and human relations skills; health and safety.

**Additional Information** relevant to this Career and Technical Education (CTE) program is provided at the end of this document.

**Standards**

After successfully completing this program, the student will be able to perform the following:

01.0 Demonstrate knowledge of the health care delivery system and health occupations.
02.0 Demonstrate the ability to communicate and use interpersonal skills effectively.
03.0 Demonstrate legal and ethical responsibilities.
04.0 Demonstrate an understanding of and apply wellness and disease concepts.
05.0 Recognize and practice safety and security procedures.
06.0 Recognize and respond to emergency situations.
07.0 Recognize and practice infection control procedures.
08.0 Demonstrate an understanding of information technology applications in healthcare.
09.0 Demonstrate employability skills.
10.0 Demonstrate knowledge of blood borne diseases, including HIV/AIDS.
11.0 Apply basic math and science skills.
12.0 Demonstrate an understanding of the role and responsibilities of the sonographer in regards to ultrasound imaging and patient care.
13.0 Demonstrate an awareness of the basic principles of ultrasound physics, emphasizing practical relationships of physics to optimizing images for more accurate diagnosis.
14.0 Demonstrate knowledge of the basic principles of instrumentation common to the field of ultrasound.
15.0 Demonstrate knowledge of the principles of Doppler.
16.0 Apply knowledge gained in instrumentation lecture as it applied to various ultrasound systems in the clinical setting.
17.0 Apply knowledge of the anatomy and scanning techniques related to retroperitoneal structures and upper abdominal organs and systems.
18.0 Apply knowledge of the anatomy and scanning techniques related to superficial structures.
19.0 Apply knowledge of anatomy, pathology, and scanning techniques to the urinary system and adrenal glands.
20.0 Apply knowledge of anatomy, pathology, and scanning techniques used in Sonography of the female pelvis.
21.0 Apply knowledge of anatomy, pathology and scanning techniques related to obstetrics.
22.0 Develop a continuous awareness of the disease processes.
23.0 Apply accumulated knowledge to the process of creating diagnostic sonograms.
24.0 Apply skills needed to complete diagnostic images of high quality from a variety of scanning units.

**Florida Department of Education**
**Student Performance Standards**

**Program Title:** **Diagnostic Medical Sonography Specialist**
**CIP Number:** **0351091005**
**Program Length:** **47 credit hours**
**SOC Code(s):** **29-2032**

Standards 1-11 are referred to as the **Health Science Core** and are required standards in this program. Secondary and Postsecondary students completing the health science core will not have to repeat the core in any other health science program in which it is a part. When the recommended sequence is followed, the structure allows students to complete at specified points for employment or remain for advanced training or cross-training.

To ensure consistency whenever these courses are offered, the health science core standards (1-11) have been placed in a separate document.

| **This certificate program is part of the Diagnostic Medical Sonography Technology AS degree program (1351091004). At the completion of this program, the student will be able to:** | |
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| **Diagnostic Medical Sonography Specialist: The intended outcomes complete the occupational completion point of Diagnostic Medical Sonography Specialist.** | |
| 12.0 | Demonstrate an understanding of the role and responsibilities of the sonographer in regards to ultrasound imaging and patient care. – The student will be able to: |
| 12.01 | Explain the role of the sonographer. |
| 12.02 | Describe the relationship of ultrasound to other imaging-modalities. |
| 12.03 | Describe and demonstrate the proper uses of orientation and standard labeling of ultrasound images. |
| 12.04 | Explain the basic concepts of ultrasound equipment available and demonstrate safety in their use and basic techniques of scanning. |
| 12.05 | Explain and demonstrate the criteria for image evaluation and specifically of special sonographic parameters. |
| 12.06 | Demonstrate and describe proper body mechanics to avoid work related musculoskeletal disorders when performing sonographic examinations. |
| 12.07 | Describe special problems encountered and methods related to medical ethics and law in sonography. |
| 12.08 | Describe the organizational structure common to most hospitals with special emphasis placed on the role of the ultrasound department. |
| 12.09 | Describe the relationship of the sonographer to the patients and their special needs. |

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| | 12.10 Demonstrate professional communication skills required on a daily basis in the health care setting. |
| | 12.11 Explain and demonstrate the methods of patient preparation and care before and during a sonogram. |
| | 12.12 Demonstrate proper body mechanics when transporting and assisting patients. |
| | 12.13 Discuss current trends in sonographic technology and techniques. |
| | 12.14 Demonstrate proper universal precautions and sterile techniques when preparing for a sonographic procedure. |
| 13.0 | Demonstrate an awareness of the basic principles of ultrasound physics, emphasizing practical relationships of physics to optimizing images for more accurate diagnosis. – The student will be able to: |
| | 13.01 Explain what sound is and its characteristics. |
| | 13.02 Compare the difference between pulsed and continuous wave ultrasound. |
| | 13.03 Explain amplitude and intensity of sound as it applies to sonography. |
| | 13.04 Describe the causes and effects of attenuation and acoustic impedance on ultrasound. |
| | 13.05 Identify the causes and effects of incidence, scattering and refraction of ultrasound. |
| | 13.06 Explain the Doppler Effect as it relates to ultrasound. |
| | 13.07 Describe the factors of attenuation versus depth penetration of ultrasound in human tissue. |
| | 13.08 Identify resolution and controlling factors of resolution as applied to sonography. |
| | 13.09 Discuss and demonstrate the basic principles governing sound and sound interaction in various types of tissue. |
| | 13.10 Describe and demonstrate the conditions affecting sound transmission such as attenuating factors. |
| | 13.11 Relate mathematical formulas to the interaction of sound with various mediums. |
| | 13.12 Describe resolution and its effect on the final image. |
| | 13.13 Describe and demonstrate the factors that control and determine axial, elevational and lateral resolution. |
| 14.0 | Demonstrate knowledge of the basic principles of instrumentation common to the field of ultrasound. – The student will be able to: |
| | 14.01 Describe piezoelectric effects. |
| | 14.02 Describe transducer construction. |
| | 14.03 Discuss historical perspectives related to the development of the ultrasound system. |

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| | 14.04 Explain and describe how signal processing affects image production and presentations. |
| | 14.05 Discuss basic system operation in the form of block diagrams for real-time and Doppler image production. |
| | 14.06 Describe the purpose and use of typical controls located on ultrasound systems. |
| | 14.07 Identify methods of determining and assuring quality control both sonographically and photographically. |
| | 14.08 Discuss common processing techniques including but not limited to harmonics, persistence, spatial compounding, panoramic imaging, and RES. |
| | 14.09 Discuss causes, detection and control of factors that may create biologic effects in human tissue with insonation at the diagnostic medical sonography exposure level. |
| 15.0 | Demonstrate knowledge of the principles of Doppler. – The student will be able to: |
| | 15.01 Explain the general principles of Doppler techniques and the Doppler formula. |
| | 15.02 Describe how pulse wave Doppler is processed and displayed. |
| | 15.03 Describe how color-flow Doppler is processed and displayed. |
| | 15.04 Describe how power Doppler is processed and displayed. |
| | 15.05 Identify normal and abnormal Doppler wave forms. |
| | 15.06 Discuss the advantages and disadvantages of the various Doppler methods. |
| | 15.07 Describe the purpose and use of typical controls used to optimize Doppler acquisition and display. |
| | 15.08 Demonstrate skills required on a daily basis in the typical Sonography setting for obtaining and displaying Doppler. |
| 16.0 | Apply knowledge gained in instrumentation lecture as it applied to various ultrasound systems in the clinical setting. – The student will be able to: |
| | 16.01 Utilize patient information systems. |
| | 16.02 Demonstrate appropriate transducer selection for specific sonographic application. |
| | 16.03 Utilize amplification in all its forms to produce a diagnostic quality sonogram. |
| | 16.04 Utilize power to produce a diagnostic quality sonogram while maintaining the ALARA principle. |
| | 16.05 Utilize the various forms of processing to produce a diagnostic quality sonogram. |
| | 16.06 Utilize the various types of scanning techniques and patient positioning required to produce diagnostic quality sonograms. |
| | 16.07 To explain and recognize typical artifacts as found in sonographic imaging. |

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| | 16.08 Utilize test objects and phantoms. |
| 17.0 | Apply knowledge of the anatomy and scanning techniques related to retroperitoneal structures and upper abdominal organs and systems. – The student will be able to: |
| | 17.01 Identify gross abdominal structures as demonstrated by ultrasound such as: the liver, gall bladder, aorta, inferior vena cava, stomach, pancreas, bowel, spleen, lymph nodes, retroperitoneum, and peritoneal cavity. |
| | 17.02 Identify the gross upper abdominal organs in two planes. |
| | 17.03 Identify the gross retroperitoneal organs, bowel and peritoneum in two planes. |
| | 17.04 Explain the physiology of the upper abdominal organs and the related laboratory results. |
| | 17.05 Explain the physiology of the retroperitoneal organs, bowel and peritoneum. |
| | 17.06 Explain and demonstrate the protocol for sonographic examination of the upper abdominal organs. |
| | 17.07 Explain and demonstrate the protocol for sonographic examination of the retroperitoneal organs, bowel, and peritoneum. |
| | 17.08 Explain the common pathologies related to the upper abdomen including the sonographic appearance of these pathologies corresponding lab values, patient history and symptoms. |
| | 17.09 Explain the common pathologies related to the retroperitoneal organs, bowel and peritoneum including the sonographic appearance of these pathologies and corresponding lab values, patient history and symptoms. |
| | 17.10 Explain screen orientation and its relationship to the upper abdomen and retroperitoneal structures. |
| | 17.11 Describe and perform procedures of a complete ultrasound examination of the upper abdomen from preparation to reporting. |
| | 17.12 Describe and perform procedures of a complete ultrasound examination of the bowel, lymph nodes, retroperitoneum, and peritoneal cavity from preparation to reporting. |
| 18.0 | Apply knowledge of the anatomy and scanning techniques related to superficial structures. – The student will be able to: |
| | 18.01 Identify gross superficial structures as demonstrated by ultrasound including but not limited to: the thyroid, scrotum (testicular), abdominal wall, neck, breast, prostate, and musculoskeletal. |
| | 18.02 Identify superficial structures in two planes. |
| | 18.03 Explain the physiology of the superficial structures and the related laboratory results. |
| | 18.04 Explain and demonstrate the protocol for the sonographic examination of superficial structures. |
| | 18.05 Explain the common pathology related to the superficial structures including the sonographic appearance of these pathologies and corresponding lab values, patient history, and symptoms. |
| | 18.06 Describe and perform procedures of a complete ultrasound examination of each of the superficial structures from preparation to reporting. |
| 19.0 | Apply knowledge of anatomy, pathology, and scanning techniques to the urinary system and adrenal glands. – The student will be able to: |

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| 19.01 | Identify the gross structures of the urinary system as demonstrated by ultrasound including but not limited to the kidney, ureters, and urinary bladder. |
| 19.02 | Identify the gross organs of the urinary system in two planes. |
| 19.03 | Identify the gross adrenals in two planes. |
| 19.04 | Explain the physiology of the urinary system organs and the related laboratory results. |
| 19.05 | Explain the physiology of the adrenals and the related laboratory results. |
| 19.06 | Explain and demonstrate the protocol for sonographic examination of the urinary system organs. |
| 19.07 | Explain and demonstrate the protocol for sonographic examination of the adrenals. |
| 19.08 | Explain the common pathologies related to the urinary system organs including the sonographic appearance of these pathologies corresponding lab values, patient history and symptoms. |
| 19.09 | Explain the common pathologies related to the adrenals including the sonographic appearance of these pathologies corresponding lab values, patient history, and symptoms. |
| 19.10 | Explain screen orientation and its relationship to the urinary system structures and the adrenals. |
| 19.11 | Describe and perform procedures of a complete ultrasound examination of the urinary system from preparation to reporting. |
| 19.12 | Describe and perform procedures of a complete ultrasound examination of the adrenals from preparation to reporting. |
| 20.0 | Apply knowledge of anatomy, pathology, and scanning techniques used in Sonography of the female pelvis. – The student will be able to: |
| 20.01 | Identify the gross female pelvic structures as demonstrated by ultrasound including but not limited to the female reproductive organs and urinary bladder. |
| 20.02 | Identify the gross female pelvic organs in two planes. |
| 20.03 | Explain the physiology of the female pelvic organs and the related laboratory results. |
| 20.04 | Explain and demonstrate the protocol for sonographic examination of the female pelvic organs. |
| 20.05 | Explain the common pathologies related to the female pelvis including the sonographic appearance of these pathologies corresponding lab values, patient history, and symptoms. |
| 20.06 | Explain screen orientation and its relationship to the female pelvic structures. |
| 20.07 | Describe and perform procedures of a complete ultrasound examination of the female pelvis from preparation to reporting. |
| 20.08 | Explain the protocol for both transabdominal, translabial, and transvaginal pelvic ultrasound. |
| 21.0 | Apply knowledge of anatomy, pathology and scanning techniques related to obstetrics. – The student will be able to: |
| 21.01 | Identify gross obstetrical structures as demonstrated by ultrasound including but not limited to the uterus and adnexa in both the |

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| | pregnant and postpartum state. |
| 21.02 | Discuss anatomy and physiology of the various stages of fetal development as related to ultrasound. |
| 21.03 | Discuss anatomy and physiology of the placenta at all stages of development. |
| 21.04 | Describe the basic stages of embryology and sonographic relationships. |
| 21.05 | Describe events occurring in the first trimester and their relationship to ultrasound. |
| 21.06 | Explain the physiology of organs related to obstetrics. |
| 21.07 | Explain and demonstrate the protocol for sonographic examinations used in obstetrics. |
| 21.08 | Explain the common pathologies related to obstetrics including the sonographic appearance of these pathologies corresponding lab values, patient history and symptoms. |
| 21.09 | Explain screen orientation and its relationship to the organs related to obstetrics. |
| 21.10 | Describe and perform methods for determining gestational age and fetal growth by ultrasound using appropriate biometrics. |
| 21.11 | Explain the effects of specific diseases common to the gestational period. |
| 21.12 | Compare normal and abnormal states of embryology in the human as demonstrated by ultrasound. |
| 21.13 | Perform a biophysical profile to determine fetal well-being. |
| 21.14 | Compare the normal and pathologic appearance of the fetus and the fetal environment. |
| 21.15 | Demonstrate special techniques of ultrasound scanning and collateral processes during pregnancy. |
| 21.16 | Explain the protocol and AIUM guidelines for obstetrical ultrasound. |
| 21.17 | Explain and demonstrate the special safety precautions required during an obstetrical ultrasound with a focus on AIUM guidelines. |
| 21.18 | Describe and perform procedures of a complete obstetrical ultrasound examination from preparation to reporting. |
| 21.19 | Describe and perform Doppler applications for evaluation of a pregnancy (i.e. umbilical artery, etc.). |
| 22.0 | Develop a continuous awareness of the disease processes. – The student will be able to: |
| 22.01 | Discuss basic concepts of the causes of disease. |
| 22.02 | Discuss common urogenital pathology. |
| 22.03 | Discuss gastrointestinal diseases. |

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| 22.04 | Discuss common pathology found in obstetrics and gynecology. |
| 22.05 | Discuss common pathology found in the cardiovascular system. |
| 22.06 | Discuss common pathology found in hepatobiliary system to include: liver, gallbladder, pancreas and spleen. |
| 22.07 | Discuss post-surgical changes and its effects on images. |
| 22.08 | Demonstrate knowledge and understanding of the role of the sonographer in performing interventional/invasive procedures. |
| 23.0 | Apply accumulated knowledge to the process of creating diagnostic sonograms. – The student will be able to: |
| 23.01 | Complete in all aspects a diagnostic sonogram with emphasis on: |
| 23.01.01 | patient identification |
| 23.01.02 | patient interaction |
| 23.01.03 | professionalism |
| 23.01.04 | creation of an optimized sonogram |
| 23.01.05 | appropriate image annotation |
| 23.01.06 | safety |
| 23.01.07 | recognition of anatomy, both normal and pathologic. |
| 23.02 | Complete routine documentation associated with a typical ultrasound department. |
| 23.03 | Present a sonographic exam to the interpreting physician in completed form. |
| 24.0 | Apply skills needed to complete diagnostic images of high quality from a variety of scanning units. – The student will be able to: |
| 24.01 | Perform complete and diagnostic examinations of the abdomen, superficial structures, pelvis and obstetrical patient using real-time and Doppler techniques using a variety of ultrasound machines. |
| 24.02 | Present completed examinations in detail with justification of all techniques, methods and procedures used to obtain data. |
| 24.03 | Identify gross pathology of the abdomen, pelvis and obstetrical patient, both on sonograms and related imaging modalities. |
| 24.04 | Perform all preliminary procedures leading to actual examination by Sonography and all procedures necessary post examination. |
| 24.05 | Demonstrate skills needed to relate with tact and diplomacy with patients, physicians, nurses, other imaging personnel, and the general hospital population. |
| 24.06 | Demonstrate those characteristics that reflect the high degree of professionalism associated with the field of ultrasound. |

## Additional Information

### Laboratory Activities

Laboratory investigations that include scientific inquiry, research, measurement, problem solving, emerging technologies, tools and equipment, as well as, experimental, quality, and safety procedures are an integral part of this career and technical program/course. Laboratory investigations benefit all students by developing an understanding of the complexity and ambiguity of empirical work, as well as the skills required to manage, operate, calibrate and troubleshoot equipment/tools used to make observations. Students understand measurement error; and have the skills to aggregate, interpret, and present the resulting data. Equipment and supplies should be provided to enhance hands-on experiences for students.

### Special Notes

This program meets the Department of Health's education requirements for HIV/AIDS, Domestic Violence and Prevention of Medical Errors. Although not a requirement for initial licensure, it is a requirement for renewal, therefore the instructor may provide a certificate for renewal purposes to the student verifying these requirements have been met.

If students in this program are seeking a licensure, certificate or registration through the Department of Health, please refer to 456.0635 F.S. for more information on disqualification for a license, certificate, or registration through the Department of Health.

The program should meet the requirements of:

Commission on Accreditation of Allied Health Education Programs (CAAHEP)
361 Park St.
Clearwater, FL 33756
(727) 210-2350

Written clinical affiliation agreements must be maintained with each health care facility. Health care facilities must be accredited by The Joint Commission.

The designation of PSV-C requires that the student have an associate degree in a related field of study (i.e. radiologic technology, nursing-RN, etc.). Upon the successful completion of the program the student will receive a Diagnostic Medical Sonography Specialist Certificate.

Students completing this program may apply to take one or both of the national registry examinations to obtain certification, for further information contact:

American Registry of Diagnostic
Medical Sonographers (ARDMS)
51 Monroe St. Plaza East 1
Rockville, Maryland 20850-2400
(301) 738-8401

Or

American Registry of Radiologic Technologists (ARRT)
1255 Northland Drive
St. Paul, MN 55120-1155
(612) 687-0048

Outcomes 01-11 are referred to as the Health Careers Core and do not have to be completed if the student has previously completed the Core in another health science program. The Core should be taken first or concurrently with the first course in the program. Following the successful completion of the core, the student is eligible to take the National Health Care Foundation Skill Standards Assessment with instructor approval and the completion of a portfolio.

**Career and Technical Student Organization (CTSO)**

HOSA: Future Health Professionals is the intercurricular career and technical student organization providing leadership training and reinforcing specific career and technical skills. Career and Technical Student Organizations provide activities for students as an integral part of the instruction offered.

**Accommodations**

Federal and state legislation requires the provision of accommodations for students with disabilities to meet individual needs and ensure equal access. Postsecondary students with disabilities must self-identify, present documentation, request accommodations if needed, and develop a plan with their counselor and/or instructors. Accommodations received in postsecondary education may differ from those received in secondary education. Accommodations change the way the student is instructed. Students with disabilities may need accommodations in such areas as instructional methods and materials, assignments and assessments, time demands and schedules, learning environment, assistive technology and special communication systems. Documentation of the accommodations requested and provided should be maintained in a confidential file.

**Florida Department of Education**
**Curriculum Framework**

**Program Title:** **Endoscopic Technician**
**Career Cluster:** **Health Science**

| CCC | |
|---|---|
| CIP Number | 0351099902 |
| Program Type | College Credit Certificate (CCC) |
| Program Length | 24 credit hours |
| CTSO | HOSA: Future Health Professionals |
| SOC Codes (all applicable) | 31-9099 Healthcare Support Workers, All Other |

## Purpose

This certificate program is part of the Surgical Services AS degree program (1351000002).

A College Credit Certificate consists of a program of instruction of less than sixty (60) credits of college-level courses, which is part of an AS or AAS degree program and prepares students for entry into employment (Rule 6A-14.030, F.A.C.).

This program offers a sequence of courses that provides coherent and rigorous content aligned with challenging academic standards and relevant technical knowledge and skills needed to prepare for further education and careers in the Health Science career cluster; provides technical skill proficiency, and includes competency-based applied learning that contributes to the academic knowledge, higher-order reasoning and problem-solving skills, work attitudes, general employability skills, technical skills, and occupation-specific skills, and knowledge of all aspects of Health Science career cluster.

The program is designed to prepare students for employment as an Endoscopic Technician (SOC31-9099).

The content includes but is not limited to communication and interpersonal skills, legal and ethical responsibilities, anatomy, physiology, pathophysiology, microbiology, aseptic techniques, patient care endoscopy procedures, endoscopy procedures, patient safety, use and care of equipment and supplies, CPR, Heartsaver, employability skills, basic computer literacy and endoscopic technician duties such as disinfection and processing endoscopic instruments, completing the setup and assisting during the endoscopy procedures, assisting with patient positioning and splinting as indicated, transportation of patients, and manage the endoscopy accessories, related supplies and equipment.

**Additional Information** relevant to this Career and Technical Education (CTE) program is provided at the end of this document.

**Standards**

After successfully completing this program, the student will be able to perform the following:

01.0 Demonstrate knowledge of the health care delivery system and health occupations.
02.0 Demonstrate the ability to communicate and use interpersonal skills effectively.
03.0 Demonstrate legal and ethical responsibilities.
04.0 Demonstrate an understanding of and apply wellness and disease concepts.
05.0 Recognize and practice safety and security procedures.
06.0 Recognize and respond to emergency situations.
07.0 Recognize and practice infection control procedures.
08.0 Demonstrate an understanding of information technology applications in healthcare.
09.0 Demonstrate employability skills.
10.0 Demonstrate knowledge of blood borne diseases, including HIV/AIDS.
11.0 Apply basic math and science skills.
12.0 Demonstrate language arts knowledge and skills.
13.0 Solve problems using critical thinking skills, creativity and innovation.
14.0 Describe the roles within teams, work units, departments, organizations, inter-organizational systems, and the larger environment.
15.0 Demonstrate leadership and teamwork skills needed to accomplish team goals and objectives.
16.0 Demonstrate central supply technician skills.
17.0 Demonstrate competencies in the core components of the endoscopy technician related to communication and interpersonal Skills.
18.0 Demonstrate an understanding of the basic sciences related to endoscopy.
19.0 Describe and practice safety measures in the endoscopy environment.
20.0 Perform patient care endoscopy procedures related to the endoscopy environment and describe methods for meeting patient's needs.
21.0 Demonstrate knowledge of the basic endoscopy skills necessary to function safely and effectively.
22.0 Demonstrate competencies in the core components of the endoscopy technician related to knowledge and skills.
23.0 Demonstrate competencies in the core components of the endoscopy technician related to legal and ethical responsibilities.

**Florida Department of Education**
**Student Performance Standards**

**Program Title:** **Endoscopic Technician**
**CIP Number:** **0351099902**
**Program Length:** **24 credit hours**
**SOC Code(s):** **31-9099**

Standards 1-11 are referred to as the **Health Science Core** and are required standards in this program. Secondary and Postsecondary students completing the health science core will not have to repeat the core in any other health science program in which it is a part. When the recommended sequence is followed, the structure allows students to complete at specified points for employment or remain for advanced training or cross-training.

To ensure consistency whenever these courses are offered, the health science core standards (1-11) have been placed in a separate document.

| **This certificate program is part of Surgical Services AS degree program (1351000002). At the completion of this program, the student will be able to:** | |
|---|---|
| **Students completing intended outcomes 12-23, in addition to the health careers core, will meet the requirements of the Endoscopic Technician-CCC (SOC Code 31-9099).** | |
| 12.0 | Demonstrate language arts knowledge and skills. – The students will be able to: |
| | 12.01 Locate, comprehend and evaluate key elements of oral and written information. |
| | 12.02 Draft, revise, and edit written documents using correct grammar, punctuation and vocabulary. |
| | 12.03 Present information formally and informally for specific purposes and audiences. |
| 13.0 | Solve problems using critical thinking skills, creativity, and innovation. – The students will be able to: |
| | 13.01 Employ critical thinking skills independently and in teams to solve problems and make decisions. |
| | 13.02 Employ critical thinking and interpersonal skills to resolve conflicts. |
| | 13.03 Identify and document workplace performance goals and monitor progress toward those goals. |
| | 13.04 Conduct technical research to gather information necessary for decision-making. |
| 14.0 | Describe the roles within teams, work units, departments, organizations, inter-organizational systems, and the larger environment. – The students will be able to: |

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| | 14.01 Describe the nature and types of business organizations. |
| | 14.02 Explain the effect of key organizational systems on performance and quality. |
| | 14.03 List and describe quality control systems and/or practices common to the workplace. |
| | 14.04 Explain the impact of the global economy on business organizations. |
| 15.0 | Demonstrate leadership and teamwork skills needed to accomplish team goals and objectives. – The students will be able to: |
| | 15.01 Employ leadership skills to accomplish organizational goals and objectives. |
| | 15.02 Establish and maintain effective working relationships with others, in order to accomplish objectives and tasks. |
| | 15.03 Conduct and participate in meetings to accomplish work tasks. |
| | 15.04 Employ mentoring skills to inspire and teach others. |
| | 15.05 Analyze attributes and attitudes of an effective leader. |
| | 15.06 Recognize factors and situations that may lead to conflict. |
| | 15.07 Demonstrate effective techniques for managing team conflict. |
| 16.0 | Demonstrate central supply technician skills. -- The student will be able to: |
| | 16.01 Apply the principles of medical and sterile asepsis to the processing and use of instruments, equipment, and supplies. |
| | 16.02 Apply infection control techniques following Center for Disease Control (CDC) guidelines. |
| | 16.03 Inspect equipment and supplies for condition and quantity. |
| | 16.04 Identify principles and demonstrate techniques of disinfection and sterilization. |
| | 16.05 Decontaminate instruments, equipment and environment. |
| | 16.06 Identify/correct and/or report package integrity. |
| | 16.07 Replenish supplies and equipment. |
| | 16.08 Identify instruments, equipment and supplies for any procedure. |
| | 16.09 Demonstrate the ability to label, package goods and supplies as required. |
| | 16.10 Demonstrate various storage, case cart preparation and supply distribution methods for instruments, equipment, and supplies. |

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| | 16.11 Describe the types and use of inventory control systems. |
| 17.0 | Demonstrate competencies in the core components of the endoscopy technician related to communication and interpersonal skills. -- The student will be able to: |
| | 17.01 Use various forms of communication in the role of Endoscopy Technician to communicate relevant, accurate and complete information in a concise and clear manner. |
| | 17.02 Collaborate with the patient, physician, and other members of the Healthcare team to assess, plan, implement, and evaluate the patient's endoscopy care to promote positive outcomes. |
| | 17.03 Demonstrate proper use of communication technology including but not limited to intercoms, computers, written documentation logs and paging systems. |
| | 17.04 Demonstrate patient interviewing techniques. |
| | 17.05 Facilitate teamwork as a patient advocate and assistant to the physician. |
| | 17.06 Demonstrate competency regarding reporting and documentation responsibilities. |
| 18.0 | Demonstrate an understanding of the basic sciences related to endoscopy. -- The student will be able to: |
| | 18.01 Apply knowledge of the microbial environment to the care of the patient. |
| | 18.02 Relate anatomy, physiology and pathophysiology, to endoscopy procedures. |
| | 18.03 Apply the principles of medical and surgical asepsis to endoscopy procedures performed. |
| | 18.04 Discuss electricity, computers, and robotics as they relate to endoscopy procedures performed. |
| | 18.05 Apply knowledge of the pharmacologic agents used in the treatment of the endoscopy patient. |
| 19.0 | Describe and practice safety measures in the endoscopy environment. -- The student will be able to: |
| | 19.01 Inspect emergency equipment and supplies for condition and quantity. |
| | 19.02 Implement appropriate Joint Commission patient safety goals. |
| | 19.03 Apply knowledge of endoscopy hazards to safe patient care. |
| 20.0 | Perform patient care endoscopy procedures related to the endoscopy environment and describe methods for meeting patient's needs. -- The student will be able to: |
| | 20.01 Perform safe patient transfer/transportation techniques used in the endoscopy unit setting. |
| | 20.02 Apply the principles of safe positioning and restraining patient for endoscopy procedures. |
| | 20.03 Apply the principles of safe usage of the electrosurgical unit, laser, endoscopes, and other equipment utilized. |
| | 20.04 Identify the roles of the members of the endoscopy team during each phase of endoscopy procedures. |

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| | 20.05 | Assist the registered nurse and physician with the care of the endoscopy patient. |
| | 20.06 | Apply the principles of patient assessment and preparation. |
| | 20.07 | Describe the perioperative techniques, methods and management of anesthesia related to the type of endoscopy procedure. |
| | 20.08 | Apply knowledge of endoscopy assisting techniques such as splinting and assisting with specimens. |
| 21.0 | Demonstrate knowledge of the basic endoscopy skills necessary to function safely and effectively. -- The student will be able to: | |
| | 21.01 | Demonstrate an understanding of the gastrointestinal system, respiratory system and relevant disease processes. |
| | 21.02 | Select instruments, equipment and supplies for endoscopy procedures using physician preference/procedure cards. |
| | 21.03 | Measure and pour sterile solutions and medications. |
| | 21.04 | Differentiates appropriately the use of medical aseptic and/or sterile technique regarding the donning of sterile gloves and the use of instruments, supplies and equipment for the scenario given. |
| | 21.05 | Describes the principles of positioning, draping patient, passing instruments, monitoring field, and manipulation of scope. |
| | 21.06 | Demonstrates the preparation and/or updates procedure cards to meet a specific surgeon's preferences correctly. |
| 22.0 | Demonstrate competencies in the core components of the endoscopy technician related to knowledge and skills. -- The student will be able to: | |
| | 22.01 | Prioritize care or actions to be taken in a given circumstance to expedite the procedure or emergency situation. |
| | 22.02 | Describe preoperative diagnosis, common complications, and operative pathophysiology related to the specific endoscopy procedures performed. |
| | 22.03 | Describe and apply common patient diagnostic and monitoring devices as applicable to the endoscopy specialty. |
| | 22.04 | Assist physician and/or healthcare team with preoperative preparation of the patient to facilitate proper patient care including but not limited to positioning, draping, and setup preparation. |
| | 22.05 | Identify gross anatomical structures correctly during endoscopy procedures. |
| | 22.06 | Demonstrate appropriate tissue handling techniques including the care of the endoscopy specimens. |
| | 22.07 | Describe the appropriate sequence for common endoscopy procedures. |
| | 22.08 | Utilize appropriate techniques to assist with facilitating visualization. |
| | 22.09 | Demonstrate appropriate safe endoscopy techniques when the case involves either thermal, radiological, laparoscopic, environmental, or other known endoscopy hazard. |
| | 22.10 | Select appropriate instruments, equipment and supplies for the procedure. |
| | 22.11 | Demonstrate competence with technology including the use of instruments, equipment, and supplies for the endoscopy procedure. |

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| | 22.12 | Assist the registered nurse and physician with postoperative care of the patient to facilitate proper patient care. |
| | 22.13 | Demonstrate appropriate response to emergency situations including respiratory/cardiac arrest situations, sudden hypoxia, hemorrhage, shock, endoscopy misadventures, contamination, perforation of viscous or cavity, critical equipment failure, and injury. |
| | 22.14 | Facilitate the continuity of care within the healthcare setting to access available resources and services. |
| 23.0 | Demonstrate competencies in the core components of the endoscopy technician related to legal and ethical responsibilities. -- The student will be able to: | |
| | 23.01 | State methods, standards and aids that assist an Endoscopy Technician with interpreting and following legal responsibilities. |
| | 23.02 | Explain the job requirements. |
| | 23.03 | Demonstrate an understanding of the legal, ethical, moral, and professional responsibilities of working as an endoscopy technician, and the professional skills necessary to fulfill the role. |
| | 23.04 | Provide health care within the ethical/legal framework of the job description including role responsibilities and limitations. |

## Additional Information

### Laboratory Activities

Laboratory investigations that include scientific inquiry, research, measurement, problem solving, emerging technologies, tools and equipment, as well as, experimental, quality, and safety procedures are an integral part of this career and technical program/course. Laboratory investigations benefit all students by developing an understanding of the complexity and ambiguity of empirical work, as well as the skills required to manage, operate, calibrate and troubleshoot equipment/tools used to make observations. Students understand measurement error; and have the skills to aggregate, interpret, and present the resulting data. Equipment and supplies should be provided to enhance hands-on experiences for students.

The Human Patient Simulator (HPS) or other accepted simulation scenarios may be used for a limited number of clinical hours. A low teacher-student ratio in the lab and clinical area is strongly recommended. The recommended maximum ratio is 1:8.

### Special Notes

This program focuses on broad, transferable skills and stresses understanding and demonstration of the following elements of the health care industry; planning, management, finance, technical and production skills, underlying principles of technology, labor issues, community issues and health, safety, and environmental issues.

This program meets the Department of Health's education requirements for HIV/AIDS, Domestic Violence and Prevention of Medical Errors. Although not a requirement for initial licensure, it is a requirement for renewal, therefore the instructor may provide a certificate for renewal purposes to the student verifying these requirements have been met.

If students in this program are seeking a licensure, certificate or registration through the Department of Health, please refer to 456.0635 F.S. for more information on disqualification for a license, certificate, or registration through the Department of Health

The Endoscopy Technician Core Curriculum should be taught by qualified staff including but not limited to physicians, registered nurses, certified endoscopic technicians and experienced endoscopic technicians.

Entering students who have successfully completed the program 51-3902, Nursing Assistant or currently Nationally Certified as a CNA (Certified Nursing Assistant), should be given appropriate advanced standing.

Outcomes 01-11 are referred to as the Health Careers Core and do not have to be completed if the student has previously completed the Core in another health science program. The CORE should be taken first or concurrently with the first course in the program. Following the successful completion of the core, the student is eligible to take the National Health Care Foundation Skill Standards Assessment with instructor approval and the completion of a portfolio.

## Career and Technical Student Organization (CTSO)

HOSA: Future Health Professionals is the intercurricular career and technical student organization providing leadership training and reinforcing specific career and technical skills. Career and Technical Student Organizations provide activities for students as an integral part of the instruction offered.

## Accommodations

Federal and state legislation requires the provision of accommodations for students with disabilities to meet individual needs and ensure equal access. Postsecondary students with disabilities must self-identify, present documentation, request accommodations if needed, and develop a plan with their counselor and/or instructors. Accommodations received in postsecondary education may differ from those received in secondary education. Accommodations change the way the student is instructed. Students with disabilities may need accommodations in such areas as instructional methods and materials, assignments and assessments, time demands and schedules, learning environment, assistive technology and special communication systems. Documentation of the accommodations requested and provided should be maintained in a confidential file.

**Florida Department of Education**
**Curriculum Framework**

**Program Title:** **Medical Clinical Laboratory Technician**
**Program Type:** **ATD (Applied Technology Diploma)**
**Career Cluster:** **Health Science**

| | College Credit | Career Certificate Program |
|---|---|---|
| Program Number | N/A | H170600 |
| CIP Number | 0351100401 | 0351100404 |
| Grade Level | Applied Technology Diploma (ATD) | 30, 31 |
| Standard Length | 40 credit hours | 1515 clock hours |
| CTSO | HOSA: Future Health Professionals | HOSA: Future Health Professionals |
| SOC Codes (all applicable) | 31-9099 Healthcare Support Workers, All Other<br>31-9097 Phlebotomists<br>29-2012 Medical and Clinical Laboratory Technicians | 31-9099 Healthcare Support Workers, All Other<br>31-9097 Phlebotomists<br>29-2012 Medical and Clinical Laboratory Technicians |
| Basic Skills Level: | N/A | Mathematics 10<br>Language: 11<br>Reading 11 |

## Purpose

This program offers a sequence of courses that provides coherent and rigorous content aligned with challenging academic standards and relevant technical knowledge and skills needed to prepare for further education and careers in the Health Science career cluster; provides technical skill proficiency, and includes competency-based applied learning that contributes to the academic knowledge, higher-order reasoning and problem-solving skills, work attitudes, general employability skills, technical skills, and occupation-specific skills, and knowledge of all aspects of Health Science career cluster.

The content includes but is not limited to didactic and laboratory performance of routine procedures in hematology, immunology, urinalysis, immunohematology, microbiology and clinical chemistry including the use of common laboratory instruments. A clinical component is a necessary element of this program.

**Additional Information** relevant to this Career and Technical Education (CTE) program is provided at the end of this document.

## Program Structure

This program is an Applied Technology Diploma (ATD) program that is part of a technical degree program, is less than 60 credit hours, and leads to employment in a specific occupation. An ATD program may consist of either technical credit or college credit. A public school district may offer an ATD program only as clock hour credit, with college credit awarded to a student upon articulation to a state college.

## Regulated Programs

**This program is regulated by the Florida Board of Clinical Laboratory Personnel.**

## Career Certificate Program

When offered at the district level, this program is a planned sequence of instruction consisting of 3 occupational completion points and the courses as shown below.

| OCP | Course Number | Course Title | Length | SOC Code |
|---|---|---|---|---|
| A | HSC0003 | Basic Healthcare Worker | 90 hours | 31-9099 |
| B | MEA0520 | Phlebotomist | 75 hours | 31-9097 |
| C | MLT0009 | Introduction to Medical laboratory Technology | 90 hours | 29-2012 |
| | MLT0220 | Urinalysis and Body Fluids | 135 hours | |
| | MLT0335 | Hematology and Hemostasis | 280 hours | |
| | MLT0505 | Immunology | 60 hours | |
| | MLT0640 | Clinical Chemistry | 255 hours | |
| | MLT0520 | Immunohematology | 255 hours | |
| | MLT0450 | Microbiology and Parasitology | 275 hours | |

## College Credit

When offered at the college credit level, this ATD program is part of the Medical Laboratory Technology AS program (1351100405) and has a program length of 40 credits.

**Standards**

After successfully completing this program, the student will be able to perform the following:

01.0 Demonstrate knowledge of the healthcare delivery system and health occupations.
02.0 Demonstrate the ability to communicate and use interpersonal skills effectively.
03.0 Demonstrate legal and ethical responsibilities.
04.0 Demonstrate an understanding of and apply wellness and disease concepts.
05.0 Recognize and practice safety and security procedures.
06.0 Recognize and respond to emergency situations.
07.0 Recognize and practice infection control procedures.
08.0 Demonstrate an understanding of information technology applications in healthcare.
09.0 Demonstrate employability skills.
10.0 Demonstrate knowledge of blood borne diseases, including HIV/AIDS.
11.0 Apply basic math and science skills.
12.0 Demonstrate accepted professional, communication and interpersonal skills.
13.0 Discuss phlebotomy in relation to the health care setting.
14.0 Identify the anatomic structure and function of body systems in relation to services performed by phlebotomist.
15.0 Recognize and identify collection reagents supplies, equipment and interfering chemical substances.
16.0 Demonstrate skills and knowledge necessary to perform phlebotomy.
17.0 Practice infection control following standard precautions.
18.0 Practice accepted procedures of transporting, accessioning and processing specimens.
19.0 Practice quality assurance and safety.
20.0 Demonstrate knowledge and use of basic laboratory equipment and techniques.
21.0 Demonstrate basic knowledge of and perform clinical laboratory Point of Care (POC) testing (Waived).
22.0 Demonstrate basic knowledge of and perform Point of Care (POC) Testing using CLIA approved Waived instrumentation.
23.0 Discuss the general responsibilities and functions encountered by a medical technician.
24.0 Apply quality assurance principles and safety protocols.
25.0 Demonstrate knowledge of the operation of computer systems.
26.0 Demonstrate an understanding of the basic principles of molecular diagnostics.
27.0 Demonstrate knowledge of urinalysis and body fluids principles and procedures.
28.0 Demonstrate knowledge of hematological principles and procedures.
29.0 Demonstrate knowledge of hemostasis and related diagnostic principles and procedures.
30.0 Demonstrate knowledge of immunology principles and procedures.
31.0 Demonstrate knowledge of clinical chemistry principles and procedures.
32.0 Demonstrate knowledge of immunohematology principles and procedures.
33.0 Demonstrate knowledge of microbiological principles and procedures.

**Florida Department of Education**
**Student Performance Standards**

**Program Title: Medical Clinical Laboratory Technician-ATD**
**Career Certificate Program Number: H170600**

When this program is offered at the Career Certificate Program level, the following organization of courses, standards, and benchmarks apply.

The **Basic Health Care Worker (HSC0003)** is referred to as the **Health Science Core** and is the first OCP in the majority of the Career Certificate Program health science programs. Secondary and Postsecondary students completing the health science core will not have to repeat the core in any other health science program in which it is a part. When the recommended sequence is followed, the structure allows students to complete at specified points for employment or remain for advanced training or cross-training.

**Career Certificate Program Course Number: HSC0003**
**Occupational Completion Point: A**
**Basic Healthcare Worker – 90 Hours – SOC Code 31-9099**

To ensure consistency whenever these courses are offered, the health science core standards (1-11) have been placed in a separate document.

**Career Certificate Program Course Number: MEA0520**
**Occupational Completion Point: B**
**Phlebotomist – 75 Hours – SOC Code 31-9097**

| | | |
|---|---|---|
| 12.0 | | Demonstrate accepted professional, communication, and interpersonal skills. – The student will be able to: |
| | 12.01 | Demonstrate the appropriate professional behavior of a phlebotomist. |
| | 12.02 | Explain to the patient the procedure to be used in specimen collection. |
| | 12.03 | Explain in detail the importance of identifying patients correctly when drawing blood. |
| | 12.04 | Describe the scope of practice (job skills and duties) for a phlebotomist. |
| | 12.05 | List and describe professional organizations that provide accreditation for phlebotomy programs and provide certifications for phlebotomists. |
| | 12.06 | Explain the importance of continuing education in relation to certification to maintain competency and skills. |
| 13.0 | | Discuss phlebotomy in relation to the health care setting. – The student will be able to: |
| | 13.01 | List, classify and discuss various departments and services within the health care setting in which the phlebotomist must interact with to obtain laboratory specimens from patients. |

| | | |
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| | 13.02 | Identify the major departments/sections with the clinical laboratory, the major types of procedures run in each department/section, and their specimen requirements. |
| | 13.03 | Describe roles of the major classifications of clinical laboratory personnel (i.e., pathologist, chief/administrative technologist, CLS, MLS, MLT, MT, phlebotomist, lab assistant, etc.). |
| 14.0 | Identify the anatomic structure and function of body systems in relation to services performed by phlebotomist. – The student will be able to: | |
| | 14.01 | Describe and define major body systems with emphasis on the circulatory system. |
| | 14.02 | List and describe the main superficial veins used in performing venipuncture. |
| | 14.03 | Locate the most appropriate sites(s) for capillary and venipuncture. |
| | 14.04 | Describe the function of the following blood components: erythrocytes, thrombocytes, leukocytes and plasma. |
| | 14.05 | Compare and contrast between serum and plasma as it relates to blood collection. |
| | 14.06 | Discuss hemostasis as it relates to blood collection. |
| 15.0 | Recognize and identify collection reagents supplies, equipment and interfering chemical substances. – The student will be able to: | |
| | 15.01 | Identify and discuss proper use of appropriate types of equipment needed to collect various clinical laboratory blood specimens by venipuncture. |
| | 15.02 | Explain the special precautions and types of equipment needed to collect blood from the pediatric patient. |
| | 15.03 | Identify and discuss proper use of supplies used in collecting micro-specimens. |
| | 15.04 | Identify and discuss the proper use of the various types of anticoagulants, preservatives and gels used in blood collection and the vacuum tube color-codes for these additives. |
| | 15.05 | Describe the types of patient's specimens that are analyzed in the clinical laboratory and the phlebotomist's role in collecting and/or transporting these specimens to the laboratory. |
| | 15.06 | Describe substances potentially encountered during phlebotomy which can interfere in analysis of blood constituents. |
| | 15.07 | Define and utilize correct medical terminology and metric measurement needed for specimen collection. |
| 16.0 | Demonstrate skills and knowledge necessary to perform phlebotomy. – The student will be able to: | |
| | 16.01 | Follow approved procedure for completing a laboratory requisition form. |
| | 16.02 | Recognize a properly completed requisition and apply established protocol for patient and specimen identification for transport to a reference lab. |
| | 16.03 | Demonstrate knowledge of established protocol for patient and specimen identification. |
| | 16.04 | Discuss appropriate methods for facilitating and preparing the patient for capillary and venipuncture collection. |

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| | 16.05 List appropriate antiseptic agents useful in preparing sites for capillary and venipuncture. |
| | 16.06 Know how to perform venipuncture by evacuated tube, butterfly and syringe systems. |
| | 16.07 Describe the correct order of draw according to CLSI guidelines. |
| | 16.08 Describe the use of barcoding systems used for positive patient identification and specimen identification. |
| | 16.09 Convey an understanding of capillary puncture using appropriate supplies and techniques for both adults and pediatric patients. |
| | 16.10 Describe the most common complications associated with capillary and venipuncture, their causes, prevention and treatment. |
| | 16.11 Recognize and respond to possible adverse patient reactions such as allergies, convulsions, syncope and light headedness. |
| | 16.12 Perform appropriate procedures for disposing of used or contaminated capillary and venipuncture supplies. |
| | 16.13 Perform appropriate techniques for making a peripheral blood smear for hematologic evaluation. |
| | 16.14 Demonstrate the proper procedure for collecting blood cultures. |
| | 16.15 Discuss the effects of hemolysis and methods of prevention. |
| | 16.16 Demonstrate a working understanding of how age and weight of patients impacts the maximum amount of blood that can be safely drawn. |
| 17.0 | Practice infection control following standard precautions. – The student will be able to: |
| | 17.01 Define the term "hospital acquired infection”. |
| | 17.02 Demonstrate proper hand hygiene. |
| | 17.03 Comply with universal/standard precautions. |
| | 17.04 Identify potential routes of infection and their complications. |
| 18.0 | Practice accepted procedures of transporting, accessioning and processing specimens. – The student will be able to: |
| | 18.01 Follow the approved procedure for preparation and processing (e.g. - centrifugation, separation, aliquoting, labeling, and storage) of serum, plasma, urine, sputum, stool, and wound culture specimens. |
| | 18.02 Demonstrate knowledge of accessioning procedures. |
| | 18.03 Describe the significance of time constraints for specimen collection, transporting and delivery. |
| | 18.04 Describe routine procedures for transporting and processing specimens including DOT packaging requirements. |
| 19.0 | Practice quality assurance and safety. – The student will be able to: |

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| 19.01 | Distinguish and perform procedures which ensure reliability of test results when collecting blood specimens. |
| 19.02 | Demonstrate knowledge of and practice appropriate patient safety. |
| 19.03 | Practice safety in accordance with OSHA (State & Federal guidelines) for chemical, biological, and PPE established procedures including proper disposal of sharps. |
| 19.04 | Follow documentation procedures for work related accidents. |
| 19.05 | Understand Joint Commission patient safety goals and other accrediting/regulatory agency guidelines. |

| **Career Certificate Program Course Number: MLT0009**<br>**Occupational Completion Point: C**<br>**Introduction to Medical Laboratory Technology – 90 Hours – SOC Code 29-2012** | |
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| 20.0 | Demonstrate knowledge and use of basic laboratory equipment and techniques. – The student will be able to: |
| 20.01 | Identify the parts of the microscope and explain the function of each. |
| 20.02 | Demonstrate the proper technique for operation of the microscope. |
| 20.03 | Demonstrate use of standard laboratory equipment including glassware, pipettes and centrifuge. |
| 20.04 | Perform basic laboratory math calculations. |
| 20.05 | Understand the principles of quality assurance to correct problems encountered in monitoring daily quality control. |
| 20.06 | Evaluate laboratory findings to confirm results according to standard operating procedure. |
| 20.07 | Demonstrate knowledge of principles and operation of laboratory instruments. |
| 21.0 | Demonstrate basic knowledge of and perform clinical laboratory Point of Care (POC) testing (Waived). -- The student will be able to: |
| 21.01 | Demonstrate the ability to interpret instructions of point of care testing including , but not limited to the following: |
| 21.01.1 | Test principle |
| 21.01.2 | Storage & Stability |
| 21.01.3 | Internal vs. External Quality Control |
| 21.01.4 | Specimen collection & preparation |
| 21.01.5 | Directions for use |

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| | 21.01.6 | Interpretation of results |
| | 21.01.7 | Interfering substances |
| | 21.02 | Explain the purpose of lot to lot correlations. |
| | 21.03 | Demonstrate knowledge of the frequency in which quality control procedures should be performed. |
| | 21.04 | Understand the CLIA 88 classification of laboratory testing into waived, moderate, and highly complex including the personnel qualified to perform each. |
| 22.0 | Demonstrate basic knowledge of and perform Point of Care(POC) Testing using CLIA approved Waived instrumentation.-- The student will be able to: | |
| | 22.01 | Demonstrate and perform POC testing specific to microbiology, hematology, urinalysis, and clinical chemistry. |
| | 22.02 | Perform instrument maintenance. |
| | 22.03 | Demonstrate knowledge of quality control and calibrations involved within the POC instruments. |
| | 22.04 | Identify normal limits and associate abnormal results with disease or disorders. |
| | 22.05 | Discuss the significance of reporting critical values as it applies to Point of Care testing. |
| 23.0 | Discuss the general responsibilities and functions encountered by a medical technician. – The students will be able to: | |
| | 23.01 | Ask appropriate scientific questions and recognize what is involved in experimental approaches to the solutions of such questions. |
| | 23.02 | Communicate laboratory results to healthcare professionals. |
| | 23.03 | Demonstrate ability to evaluate laboratory results. |
| | 23.04 | Demonstrate ability to report laboratory results in written or oral form. |
| | 23.05 | Discuss the licensure and certification requirements of the major classifications of clinical laboratory personnel. |
| 24.0 | Apply quality assurance principles and safety protocols. – The student will be able to: | |
| | 24.01 | Assess specimen acceptability using standard operating procedure including rejection/recollection criteria. |
| | 24.02 | Describe procedures for transporting and processing specimens. |
| | 24.03 | Describe clinical laboratory role in providing quality assurance in laboratory testing, reporting, and use and maintenance of equipment. |
| | 24.04 | Understand the need for calibration of laboratory equipment. |
| | 24.05 | Demonstrate and record quality control procedures required for the tests performed and recognize unacceptable results. |

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| | 24.06 Report identified problems encountered in daily quality control according to standard operating procedures. |
| | 24.07 Comply with current OSHA regulations regarding laboratory hazards. |
| 25.0 | Demonstrate knowledge of the operation of computer systems.– The student will be able to: |
| | 25.01 Discuss the role of computer systems in laboratory data management. |
| | 25.02 Demonstrate knowledge of common computer terminology. |
| | 25.03 Demonstrate entry level computer operations for specimen accessioning, data reporting, and quality control recording. |
| | 25.04 Demonstrate entry level operational skills in the use of computer-interfaced analytical instrumentation. |
| 26.0 | Demonstrate an understanding of the basic principles of molecular diagnostics. – The student will be able to: |
| | 26.01 Discuss the principles and major steps of the polymerase chain reaction (PCR). |
| | 26.02 Label the organelles and important parts of a eukaryotic animal cell. |
| | 26.03 Describe the function of the organelles and important parts of a eukaryotic animal cell. |
| | 26.04 Discuss the structure, function, and components of DNA and RNA. |
| | 26.05 Define the key terms of molecular diagnostics. |
| | 26.06 Understand the principles of molecular diagnostic testing. |
| | 26.07 Compare the advantages and disadvantages of molecular techniques over traditional diagnostic tests for infectious diseases. |
| | 26.08 List molecular tests associated with the identification of microorganisms. |
| | 26.09 Identify the types of samples appropriate for molecular diagnostics. |
| **Career Certificate Program Course Number: MLT0220<br>Occupational Completion Point: C<br>Urinalysis and Body Fluids – 135 Hours – SOC Code 29-2012** | |
| 27.0 | Demonstrate knowledge of urinalysis and body fluids principles and procedures. – The student will be able to: |
| | 27.01 Identify the components of the urinary system and explain their functions. |
| | 27.02 Discuss diseases affecting the urinary system. |
| | 27.03 Describe collection, transport and storage procedures for random and timed urine specimens. |
| | 27.04 Discuss specific gravity techniques; calibration and use of the refractometer. |

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| 27.05 | Perform dipstick or tablet (non-automated) urinalysis techniques for chemical exam of the urine and interpret results. |
| 27.06 | Demonstrate the proper use of automated urinalysise analyzers. |
| 27.07 | Describe renal function tests. |
| 27.08 | Describe principles of and perform routine physical and chemical analyses on urine. |
| 27.09 | Prepare urine sediments and perform identification and quantitation of microscopic formed elements. |
| 27.10 | Correlate abnormal physical, chemical and microscopic urine results with associated pathological conditions. |
| 27.11 | Differentiate between transudates and exudates. |
| 27.12 | Discuss miscellaneous body fluids to include cerebral spinal, serous, seminal and joint fluids. |
| 27.13 | Perform physical, chemical and microscopic evaluations of common body fluids. |
| **Career Certificate Program Course Number: MLT0335:<br>Occupational Completion Point: C<br>Hematology and Hemostasis – 280 Hours – SOC Code 29-2012** | |
| 28.0 | Demonstrate knowledge of hematological principles and procedures. – The student will be able to: |
| 28.01 | Discuss the organs, cells and cellular interaction of the lymphoid, myeloid and reticuloendothelial systems. |
| 28.02 | Demonstrate an understanding of basic concepts of hematopoiesis. |
| 28.03 | Identify the components of blood. |
| 28.04 | Discuss the function of formed elements of blood. |
| 28.05 | Demonstrate an understanding of the synthesis of normal and abnormal molecular structure of hemoglobin, common hemoglobinopathies, and associated tests. |
| 28.06 | Describe normal hemoglobin-oxygen function using the Oxygen Dissociation Curve (ODC). |
| 28.07 | Discuss assessment and impact of preanalytical, analytical and post-analytical factors on hematology testing. |
| 28.08 | Calculate red blood cell indices. |
| 28.09 | Discuss selected cytochemical staining and flowcytometry procedures. |
| 28.10 | Evaluate red blood cell morphology. |
| 28.11 | State the review process of histogram/scatterplot/scattergram analysis. |
| 28.12 | Describe the categories used in a morphological classification of anemias. |

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| 28.13 | Correlate complete blood cell results with peripheral exam of blood smear. |
| 28.14 | List the white blood cell maturation sequence and identify distinguishing morphology for stages of developing white blood cells. |
| 28.15 | Discuss normal and abnormal hematology findings, reference ranges and associated diseases. |
| 28.16 | Demonstrate an understanding of normal and abnormal white cell morphology, related disease states, and associated tests. |
| 28.17 | Discuss the principles of and perform routine hematology procedures applying quality control procedures.as necessary. |
| 28.18 | Perform commonly used methods to evaluate leukocytes, correlate and verify automated cell counts with established criteria. |
| 28.19 | Identify characteristic findings of nonmalignant leukocytic disorders, e.g. shift to the left, toxic granulation, Döhle bodies, etc. |
| 28.20 | Perform techniques of manual blood smear evaluation including white blood cell differential, red cell and platelet morphology. |
| 28.21 | Correlate peripheral blood evaluation with automated cell analysis. |
| 28.22 | Perform platelet counts on patient and control specimens using manual and automated techniques and correlate counts with peripheral smear. |
| 29.0 | Demonstrate knowledge of hemostasis and related diagnostic principles and procedures. – The student will be able to: |
| 29.01 | Discuss and define the mechanisms of hemostasis including bleeding and clotting. |
| 29.02 | Discuss common coagulopathies and associated treatments. |
| 29.03 | Discuss assessment and impact of preanalytical factors on hemostasis testing. |
| 29.04 | Describe the principles of and perform routine testing used in the evaluation of primary and secondary hemostasis. |
| 29.05 | Discuss additional hemostasis tests performed to differentiate the cause of abnormal routine tests. |
| **Career Certificate Program Course Number: MLT0505<br>Occupational Completion Point: C<br>Immunology – 60 Hours – SOC Code 29-2012** | |
| 30.0 | Demonstrate knowledge of immunology principles and procedures. – The student will be able to: |
| 30.01 | Discuss the functions of the cells of the immune system, cytokines and regulatory molecules. |
| 30.02 | Discuss physical and chemical properties of immunogens (antigens), immunoglobulins (antibodies) and complement |
| 30.03 | Compare and contrast the principles of basic agglutination, flocculation and precipitation procedures in immunology/serology. |
| 30.04 | Perform basic procedures in immunology/serology. |

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| 30.05 Discuss principles of serum protein electrophoresis and immunofixation. |
| 30.06 Discuss the clinical significance of the commonly performed immunological tests. |
| 30.07 Discuss selected serological tests such as immunoassays. |
| **Career Certificate Program Course Number: MLT0640**<br>**Occupational Completion Point: C**<br>**Clinical Chemistry – 255 Hours – SOC Code 29-2012** |
| 31.0 Demonstrate knowledge of clinical chemistry principles and procedures. – The student will be able to: |
| 31.01 Identify the chemistry analytes used to evaluate various organ function. |
| 31.02 Discuss the renal system and related analytes. |
| 31.03 Discuss principles of and perform common renal function tests. |
| 31.04 Discuss carbohydrate, protein and lipid metabolism. |
| 31.05 Discuss principles of and perform commonly ordered tests related to carbohydrate, protein and lipid metabolism. |
| 31.06 Discuss the liver and its functions and related analytes. |
| 31.07 Discuss principles of and perform commonly ordered liver function tests. |
| 31.08 Discuss enzyme classification, origin, activity and function. |
| 31.09 Discuss principles of and perform commonly ordered enzyme procedures. |
| 31.10 Discuss electrolyte balance as related to health and disease. |
| 31.11 Discuss principles of and perform electrolyte analyses. |
| 31.12 Discuss principles of and perform commonly ordered tests to evaluate cardiac function. |
| 31.13 Discuss the physiology of the endocrine system and the principal tests used to evaluate endocrine function. |
| 31.14 Discuss the role of the laboratory in therapeutic drug monitoring and toxicology. |
| 31.15 Discuss and perform general electrophoresis techniques. |
| 31.16 Discuss the clinical significance of commonly ordered clinical chemistry tests. |
| 31.17 Demonstrate knowledge of principles of instrumentation as related to the clinical chemistry laboratory. |
| 31.18 Discuss techniques of clinical chemistry related to standardization of procedure and use of standards and controls. |

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| 31.19 | Discuss other techniques of clinical chemistry. |
| 31.20 | Discuss basic techniques of clinical chemistry related to normal and abnormal physiology. |
| **Career Certificate Program Course Number: MLT0520<br>Occupational Completion Point: C<br>Immunohematology – 255 Hours – SOC Code 29-2012** | |
| 32.0 | Demonstrate knowledge of immunohematology principles and procedures. – The student will be able to: |
| 32.01 | Discuss donor interview, criteria for selection, phlebotomy preparation, and donor blood processing. |
| 32.02 | Discuss blood component collection and, preparation, storage, and use. |
| 32.03 | Describe the roles of FDA, AABB, and state agencies and how to contact each. |
| 32.04 | Compare advantages and disadvantages for autologous, versus homologous (allogenic) blood collection, and transfusion. |
| 32.05 | Discuss basic genetics of the blood group antigens |
| 32.06 | Discuss the ABO blood group systems testing procedures and recognize ABO discrepancies. |
| 32.07 | Describe required tests on recipient blood samples. |
| 32.08 | Discuss and differentiate other blood group systems such as Duffy, Kell, Kidd, S,s, Lu and the common cold-reacting antibodies such as Le, P, I, M and N. |
| 32.09 | Perform Rh testing to determine Rh phenotypes. |
| 32.10 | Perform and interpret antibody screening. |
| 32.11 | Perform antibody identification tests to detect clinically significant antibodies. |
| 32.12 | Discuss the safety and determine compatibility of blood components for transfusion. |
| 32.13 | Discuss and perform routine compatibility testing including the immediate spin crossmatch and the electronic crossmatch. |
| 32.14 | Discuss and perform phenotyping on recipient and donor specimens. |
| 32.15 | Identify symptoms of the suspected transfusion reaction and the required laboratory work-up. |
| 32.16 | Discuss immune hemolytic disorders and perform the direct antiglobulin test. |
| 32.17 | Discuss specialized techniques. |
| 32.18 | Perform quality control (QC) on reagents. |
| 32.19 | Describe the pathophysiology of hemolytic disease of the fetus and newborn. |

| **Career Certificate Program Course Number: MLT0450**<br>**Occupational Completion Point: C**<br>**Microbiology and Parasitology – 275 Hours – SOC Code 29-2012** |
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| 33.0 Demonstrate knowledge of microbiological principles and procedures. – The student will be able to: |
| 33.01 Discuss microbial taxonomy and nomenclature. |
| 33.02 Discuss bacterial metabolism, reproduction, cell structures, and their functions. |
| 33.03 Discuss classification, composition and preparation of culture media. |
| 33.04 Discuss the human pathogenesis of bacteria. |
| 33.05 Discuss and perform sterilization techniques. |
| 33.06 Perform culturing techniques for urine, stool, wound, respiratory, body fluids, and blood specimens. |
| 33.07 Perform techniques of microbiology related to inoculation and transfer of cultures. |
| 33.08 Discuss the principles of Gram and AFB stains. |
| 33.09 Accurately perform, read and report gram stains. |
| 33.10 Perform techniques necessary for isolation and identification of aerobic and anaerobic bacterial organisms. |
| 33.11 Identify commonly encountered aerobic bacteria through morphological, physical and biochemical properties. |
| 33.12 Perform and interpret antimicrobial susceptibility tests. |
| 33.13 Discuss collection and handling of specimens for fungal, mycobacterial and viral culture. |
| 33.14 Prepare and examine specimens, and identify ova and parasites when present. |

**Florida Department of Education**
**Student Performance Standards**

**Program Title:** **Medical Clinical Laboratory Technician - ATD**
**ATD CIP Number:** **0351100401**
**SOC Code(s):** **31-9099, 31-9097, 29-2012**

When this program is offered at the college level, the following standards and benchmarks apply:

Standards 1-11 are referred to as the **Health Science Core** and are required standards in this program. Secondary and Postsecondary students completing the health science core will not have to repeat the core in any other health science program in which it is a part. When the recommended sequence is followed, the structure allows students to complete at specified points for employment or remain for advanced training or cross-training.

To ensure consistency whenever these courses are offered, the health science core standards (1-11) have been placed in a separate document.

| **Phlebotomy: (12-19)** | |
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| 12.0 | Demonstrate accepted professional, communication, and interpersonal skills. – The student will be able to: |
| 12.01 | Demonstrate the appropriate professional behavior of a phlebotomist. |
| 12.02 | Explain to the patient the procedure to be used in specimen collection. |
| 12.03 | Explain in detail the importance of identifying patients correctly when drawing blood. |
| 12.04 | Describe the scope of practice (job skills and duties) for a phlebotomist. |
| 12.05 | List and describe professional organizations that provide accreditation for phlebotomy programs and provide certification for phlebotomists. |
| 12.06 | Explain the importance of continuing education in relation to certification to maintain competency and skills. |
| 13.0 | Discuss phlebotomy in relation to the health care setting. – The student will be able to: |
| 13.01 | List, classify and discuss various departments and services within the health care setting in which the phlebotomist must interact with to obtain laboratory specimens from patients. |
| 13.02 | Identify the major departments/sections with the clinical laboratory, the major types of procedures run in each department/section, and their specimen requirements. |
| 13.03 | Describe roles of the major classifications of clinical laboratory personnel (i.e., pathologist, chief/administrative technologist, CLS, MLS, MLT, MT, phlebotomist, lab assistant, etc.). |

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| 14.0 | Identify the anatomic structure and function of body systems in relation to services performed by phlebotomist. – The student will be able to: |
| 14.01 | Describe and define major body systems with emphasis on the circulatory system. |
| 14.02 | List and describe the main superficial veins used in performing venipuncture. |
| 14.03 | Locate the most appropriate sites(s) for capillary and venipuncture. |
| 14.04 | Describe the function of the following blood components: erythrocytes, thrombocytes, leukocytes and plasma. |
| 14.05 | Compare and contrast between serum and plasma as it relates to blood collection. |
| 14.06 | Discuss hemostasis as it relates to blood collection. |
| 15.0 | Recognize and identify collection reagents supplies, equipment and interfering chemical substances. – The student will be able to: |
| 15.01 | Identify and discuss proper use of appropriate types of equipment needed to collect various clinical laboratory blood specimens by venipuncture. |
| 15.02 | Explain the special precautions and types of equipment needed to collect blood from the pediatric patient. |
| 15.03 | Identify and discuss proper use of supplies used in collecting micro-specimens. |
| 15.04 | Identify and discuss the proper use of the various types of anticoagulants, preservatives and gels used in blood collection and the vacuum tube color-codes for these additives. |
| 15.05 | Describe the types of patient's specimens that are analyzed in the clinical laboratory and the phlebotomist's role in collecting and/or transporting these specimens to the laboratory. |
| 15.06 | Describe substances potentially encountered during phlebotomy which can interfere in analysis of blood constituents. |
| 15.07 | Define and utilize correct medical terminology and metric measurement needed for specimen collection. |
| 16.0 | Demonstrate skills and knowledge necessary to perform phlebotomy. – The student will be able to: |
| 16.01 | Follow approved procedure for completing a laboratory requisition form. |
| 16.02 | Recognize a properly completed requisition and apply established protocol for patient and specimen identification for transport to a reference lab. |
| 16.03 | Demonstrate knowledge of established protocol for patient and specimen identification. |
| 16.04 | Discuss appropriate methods for facilitating and preparing the patient for capillary and venipuncture collection. |
| 16.05 | List appropriate antiseptic agents useful in preparing sites for capillary and venipuncture. |
| 16.06 | Know how to perform venipuncture by evacuated tube, butterfly and syringe systems. |
| 16.07 | Describe the correct order of draw according to CLSI guidelines. |

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| 16.08 | Describe the use of barcoding systems used for positive patient identification and specimen identification. |
| 16.09 | Convey an understanding of capillary puncture using appropriate supplies and techniques for both adults and pediatric patients. |
| 16.10 | Describe the most common complications associated with capillary and venipuncture, their causes, prevention and treatment. |
| 16.11 | Recognize and respond to possible adverse patient reactions such as allergies, convulsions, syncope and light headedness. |
| 16.12 | Perform appropriate procedures for disposing of used or contaminated capillary and venipuncture supplies. |
| 16.13 | Perform appropriate techniques for making a peripheral blood smear for hematologic evaluation. |
| 16.14 | Demonstrate the proper procedure for collecting blood cultures. |
| 16.15 | Discuss the effects of hemolysis and methods of prevention. |
| 16.16 | Demonstrate a working understanding of how age and weight of patients impacts the maximum amount of blood that can be safely drawn. |
| 17.0 | Practice infection control following standard precautions. – The student will be able to: |
| 17.01 | Define the term "hospital acquired infection”. |
| 17.02 | Demonstrate proper hand hygiene. |
| 17.03 | Comply with universal/standard precautions. |
| 17.04 | Identify potential routes of infection and their complications. |
| 18.0 | Practice accepted procedures of transporting, accessioning and processing specimens. – The student will be able to: |
| 18.01 | Follow the approved procedure for preparation and processing (e.g. - centrifugation, separation, aliquoting, labeling, and storage) of serum, plasma, urine, sputum, stool, and wound culture specimens. |
| 18.02 | Demonstrate knowledge of accessioning procedures. |
| 18.03 | Describe the significance of time constraints for specimen collection, transporting and delivery. |
| 18.04 | Describe routine procedures for transporting and processing specimens including DOT packaging requirements. |
| 19.0 | Practice quality assurance and safety. – The student will be able to: |
| 19.01 | Distinguish and perform procedures which ensure reliability of test results when collecting blood specimens. |
| 19.02 | Demonstrate knowledge of and practice appropriate patient safety. |
| 19.03 | Practice safety in accordance with OSHA (State & Federal guidelines) for chemical, biological, and PPE established procedures including proper disposal of sharps. |

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| 19.04 | Follow documentation procedures for work related accidents. |
| 19.05 | Understand Joint Commission patient safety goals and other accrediting/regulatory agency guidelines. |
| **Medical Laboratory Technician: (20-33)** | |
| 20.0 | Demonstrate knowledge and use of basic laboratory equipment and techniques. – The Student will be able to: |
| 20.01 | Identify the parts of the microscope and explain the function of each. |
| 20.02 | Demonstrate the proper technique for operation of the microscope. |
| 20.03 | Demonstrate use of standard laboratory equipment including glassware, pipettes and centrifuge. |
| 20.04 | Perform basic laboratory math calculations. |
| 20.05 | Understand the principles of quality assurance to correct problems encountered in monitoring daily quality control. |
| 20.06 | Evaluate laboratory findings to confirm results according to standard operating procedure. |
| 20.07 | Demonstrate knowledge of principles and operation of laboratory instruments. |
| 21.0 | Demonstrate basic knowledge of and perform clinical laboratory Point of Care (POC) testing (Waived). -- The student will be able to |
| 21.01 | Demonstrate the ability to interpret instructions of point of care testing including , but not limited to the following: |
| 21.01.1 | Test principle |
| 21.04.2 | Storage & Stability |
| 21.04.3 | Internal vs. External Quality Control |
| 21.04.4 | Specimen collection & preparation |
| 21.04.5 | Directions for use |
| 21.04.6 | Interpretation of results |
| 21.01.7 | Interfering substances |
| 21.02 | Explain the purpose of performing lot to lot correlations. |
| 21.03 | Demonstrate knowledge of the frequency in which quality control procedures should be performed. |
| 21.04 | Understand the CLIA 88 classification of laboratory testing into waived, moderate, and highly complex including the personnel qualified to perform each. |

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| 22.0 | Demonstrate basic knowledge of and perform Point of Care (POC) Testing using CLIA approved Waived instrumentation. -- The student will be able to: |
| 22.01 | Demonstrate and perform POC testing specific to microbiology, hematology, urinalysis, and clinical chemistry. |
| 22.02 | Perform instrument maintenance. |
| 22.03 | Demonstrate knowledge of quality control and calibrations involved within the POC instruments. |
| 22.04 | Identify normal limits and associate abnormal results with disease or disorders. |
| 22.05 | Discuss the significance of reporting critical values as it applies to Point of Care testing. |
| 23.0 | Discuss the general responsibilities and functions encountered by a medical technician. – The students will be able to: |
| 23.01 | Ask appropriate scientific questions and recognize what is involved in experimental approaches to the solutions of such questions. |
| 23.02 | Communicate laboratory results to healthcare professionals. |
| 23.03 | Demonstrate ability to evaluate laboratory results. |
| 23.04 | Demonstrate ability to report laboratory results in written or oral form. |
| 23.05 | Discuss the licensure and certification requirements of the major classifications of clinical laboratory personnel. |
| 24.0 | Apply quality assurance principles and safety protocols. – The student will be able to: |
| 24.01 | Assess specimen acceptability using standard operating procedure including rejection/recollection criteria. |
| 24.02 | Describe procedures for transporting and processing specimens. |
| 24.03 | Describe clinical laboratory role in providing quality assurance in laboratory testing, reporting, and use and maintenance of equipment. |
| 24.04 | Understand the need for calibration of laboratory equipment. |
| 24.05 | Demonstrate and record quality control procedures required for the tests performed and recognize unacceptable results. |
| 24.06 | Report identified problems encountered in daily quality control according to standard operating procedures. |
| 24.07 | Comply with current OSHA regulations regarding laboratory hazards. |
| 25.0 | Demonstrate knowledge of the operation of computer systems. – The student will be able to: |
| 25.01 | Discuss the role of computer systems in laboratory data management. |
| 25.02 | Demonstrate knowledge of common computer terminology. |

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| | 25.03 Demonstrate entry level computer operations for specimen accessioning, data reporting, and quality control recording. |
| | 25.04 Demonstrate entry level operational skills in the use of computer-interfaced analytical instrumentation. |
| 26.0 | Demonstrate an understanding of the basic principles of molecular diagnostics. – The student will be able to: |
| | 26.01 Discuss the principles and major steps of the polymerase chain reaction (PCR). |
| | 26.02 Label the organelles and important parts of a eukaryotic animal cell. |
| | 26.03 Describe the function of the organelles and important parts of a eukaryotic animal cell. |
| | 26.04 Discuss the structure, function, and components of DNA and RNA. |
| | 26.05 Define the key terms of molecular diagnostics. |
| | 26.06 Understand the principles of molecular diagnostic testing. |
| | 26.07 Compare the advantages and disadvantages of molecular techniques over traditional diagnostic tests for infectious diseases. |
| | 26.08 List molecular tests associated with the identification of microorganisms. |
| | 26.09 Identify the types of samples appropriate for molecular diagnostics. |
| | 26.10 Discuss the ethical impact of genetic technologies. |
| | 26.11 Outline requirements for reducing contamination in a molecular lab. |
| | 26.12 Discuss nucleic acid probes and their role in clinical laboratory diagnostics. |
| 27.0 | Demonstrate knowledge of urinalysis and body fluids principles and procedures. – The student will be able to: |
| | 27.01 Identify the components of the urinary system and explain their functions. |
| | 27.02 Discuss diseases affecting the urinary system. |
| | 27.03 Describe collection, transport and storage procedures for random and timed urine specimens. |
| | 27.04 Discuss specific gravity techniques; calibration and use of the refractometer. |
| | 27.05 Perform dipstick or tablet (non-automated) urinalysis techniques for chemical exam of the urine and interpret results. |
| | 27.06 Demonstrate the proper use of automated urinalysise analyzers. |
| | 27.07 Describe renal function tests. |

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| 27.08 | Describe principles of and perform routine physical and chemical analyses on urine. |
| 27.09 | Prepare urine sediments and perform identification and quantitation of microscopic formed elements. |
| 27.10 | Correlate abnormal physical, chemical and microscopic urine results with associated pathological conditions. |
| 27.11 | Differentiate between transudates and exudates. |
| 27.12 | Discuss miscellaneous body fluids to include cerebral spinal, serous, seminal and joint fluids. |
| 27.13 | Perform physical, chemical and microscopic evaluations of common body fluids. |
| 28.0 | Demonstrate knowledge of hematological principles and procedures. – The student will be able to: |
| 28.01 | Discuss the organs, cells and cellular interaction of the lymphoid, myeloid and reticuloendothelial systems. |
| 28.02 | Demonstrate an understanding of basic concepts of hematopoiesis. |
| 28.03 | Identify the components of blood. |
| 28.04 | Discuss the function of formed elements of blood. |
| 28.05 | Demonstrate an understanding of the synthesis of normal and abnormal molecular structure of hemoglobin, common hemoglobinopathies, and associated tests. |
| 28.06 | Describe normal hemoglobin-oxygen function using the Oxygen Dissociation Curve (ODC). |
| 28.07 | Discuss assessment and impact of preanalytical, analytical and post-analytical factors on hematology testing. |
| 28.08 | Calculate red blood cell indices. |
| 28.09 | Discuss selected cytochemical staining and flowcytometry procedures. |
| 28.10 | Evaluate red blood cell morphology. |
| 28.11 | State the review process of histogram/scatterplot/scattergram analysis. |
| 28.12 | Describe the categories used in a morphological classification of anemias. |
| 28.13 | Correlate complete blood cell results with peripheral exam of blood smear. |
| 28.14 | List the white blood cell maturation sequence and identify distinguishing morphology for stages of developing white blood cells. |
| 28.15 | Discuss normal and abnormal hematology findings, reference ranges and associated diseases. |
| 28.16 | Demonstrate an understanding of normal and abnormal white cell morphology, related disease states and associated tests. |

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| | 28.17 Discuss the principles of and perform routine hematology procedures applying quality control procedures.as necessary. |
| | 28.18 Perform commonly used methods to evaluate leukocytes, correlate and verify automated cell counts with established criteria. |
| | 28.19 Identify characteristics findings of nonmalignant leukocytic disorders, e.g. shift to the left, toxic granulation, Döhle bodies, etc. |
| | 28.20 Perform techniques of manual blood smear evaluation including white blood cell differential, red cell and platelet morphology. |
| | 28.21 Correlate peripheral blood evaluation with automated cell analysis. |
| | 28.22 Perform platelet counts on patient and control specimens using manual and automated techniques and correlate counts with peripheral smear. |
| 29.0 | Demonstrate knowledge of hemostasis and related diagnostic principles and procedures. – The student will be able to: |
| | 29.01 Discuss and define the mechanisms of hemostasis including bleeding and clotting. |
| | 29.02 Discuss common coagulopathies and associated treatments. |
| | 29.03 Discuss assessment and impact of preanalytical factors on hemostasis testing. |
| | 29.04 Describe the principles of and perform routine testing used in the evaluation of primary and secondary hemostasis. |
| | 29.05 Discuss additional hemostasis tests performed to differentiate the cause of abnormal routine tests. |
| 30.0 | Demonstrate knowledge of immunology principles and procedures. – The student will be able to: |
| | 30.01 Discuss the functions of the cells of the immune system, cytokines and regulatory molecules. |
| | 30.02 Discuss physical and chemical properties of immunogens (antigens), immunoglobulins (antibodies) and complement. |
| | 30.03 Compare and contrast the principles of basic agglutination, flocculation and precipitation procedures in immunology/serology. |
| | 30.04 Perform basic procedures in immunology/serology. |
| | 30.05 Discuss principles of serum protein electrophoresis and immunofixation. |
| | 30.06 Discuss the clinical significance of the commonly performed immunological tests. |
| | 30.07 Discuss selected serological tests such as immunoassays. |
| 31.0 | Demonstrate knowledge of clinical chemistry principles and procedures. – The student will be able to: |
| | 31.01 Identify the chemistry analytes used to evaluate various organ function. |
| | 31.02 Discuss the renal system and related analytes. |

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| 31.03 | Discuss principles of and perform common renal function tests. |
| 31.04 | Discuss carbohydrate, protein and lipid metabolism. |
| 31.05 | Discuss principles of and perform commonly ordered tests related to carbohydrate, protein and lipid metabolism. |
| 31.06 | Discuss the liver and its functions and related analytes. |
| 31.07 | Discuss principles of and perform commonly ordered liver function tests. |
| 31.08 | Discuss enzyme classification, origin, activity and function. |
| 31.09 | Discuss principles of and perform commonly ordered enzyme procedures. |
| 31.10 | Discuss electrolyte balance as related to health and disease. |
| 31.11 | Discuss principles of and perform electrolyte analyses. |
| 31.12 | Discuss principles of and perform commonly ordered tests to evaluate cardiac function. |
| 31.13 | Discuss the physiology of the endocrine system and the principal tests used to evaluate endocrine function. |
| 31.14 | Discuss the role of the laboratory in therapeutic drug monitoring and toxicology. |
| 31.15 | Discuss and perform general electrophoresis techniques. |
| 31.16 | Discuss the clinical significance of commonly ordered clinical chemistry tests. |
| 31.17 | Demonstrate knowledge of principles of instrumentation as related to the clinical chemistry laboratory. |
| 31.18 | Discuss techniques of clinical chemistry related to standardization of procedure and use of standards, blanks and controls. |
| 31.19 | Discuss other techniques of clinical chemistry related to visual colorimetry; calibration and use of the spectrophotometer. |
| 31.20 | Discuss basic techniques of clinical chemistry related to normal and abnormal physiology. |
| 32.0 | Demonstrate knowledge of immunohematology principles and procedures. – The student will be able to: |
| 32.01 | Discuss donor interview, criteria for selection, phlebotomy preparation, and donor blood processing. |
| 32.02 | Discuss blood component collection and, preparation, storage and use. |
| 32.03 | Describe the roles of FDA, AABB, and state agencies and how to contact each. |
| 32.04 | Compare advantages and disadvantages for autologous, versus homologous (allogenic) blood collection and transfusion. |

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| 32.05 | Discuss basic genetics of the blood group antigens. |
| 32.06 | Discuss the ABO blood group system testing procedures and recognize ABO discrepancies. |
| 32.07 | Describe required tests on recipient blood samples. |
| 32.08 | Discuss and differentiate other blood group systems such as Duffy, Kell, Kidd, S,s, Lu and the common cold-reacting antibodies such as Le, P, I, M, and N. |
| 32.09 | Perform Rh testing to determine Rh phenotypes. |
| 32.10 | Perform and interpret antibody screening. |
| 32.11 | Perform antibody identification tests to detect clinically significant antibodies. |
| 32.12 | Discuss the safety and determine compatibility of blood components for transfusion. |
| 32.13 | Discuss and perform routine compatibility testing including the immediate spin crossmatch and the electronic crossmatch. |
| 32.14 | Discuss and perform phenotyping on recipient and donor specimens. |
| 32.15 | Identify symptoms of the suspected transfusion reaction and the required laboratory work-up. |
| 32.16 | Discuss immune hemolytic disorders and perform the direct antiglobulin test. |
| 32.17 | Discuss specialized techniques. |
| 32.18 | Perform quality control (QC) on reagents. |
| 32.19 | Describe pathophysiology of hemolytic disease of the fetus and newborn. |
| 33.0 | Demonstrate knowledge of microbiological principles and procedures. – The student will be able to: |
| 33.01 | Discuss microbial taxonomy and nomenclature. |
| 33.02 | Discuss bacterial metabolism, reproduction, cell structures and their functions. |
| 33.03 | Discuss classification, composition and preparation of culture media. |
| 33.04 | Discuss the human pathogenesis of bacteria. |
| 33.05 | Discuss and perform sterilization techniques. |
| 33.06 | Perform culturing techniques for urine, stool, wound, respiratory, body fluids, and blood specimens. |
| 33.07 | Perform techniques of microbiology related to inoculation and transfer of cultures. |

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| 33.08 Discuss the principles of Gram and AFB stains. |
| 33.09 Accurately perform, read and report gram stains. |
| 33.10 Perform techniques necessary for isolation and identification of aerobic and anaerobic bacterial organisms. |
| 33.11 Identify commonly encountered aerobic bacteria through morphological, physical and biochemical properties. |
| 33.12 Perform and interpret antimicrobial susceptibility tests. |
| 33.13 Discuss collection and handling of specimens for fungal, mycobacterial and viral culture. |
| 33.14 Prepare and examine specimens, and identify ova and parasites when present. |

## Additional Information

### Laboratory Activities

Laboratory investigations that include scientific inquiry, research, measurement, problem solving, emerging technologies, tools and equipment, as well as, experimental, quality, and safety procedures are an integral part of this career and technical program/course. Laboratory investigations benefit all students by developing an understanding of the complexity and ambiguity of empirical work, as well as the skills required to manage, operate, calibrate and troubleshoot equipment/tools used to make observations. Students understand measurement error; and have the skills to aggregate, interpret, and present the resulting data. Equipment and supplies should be provided to enhance hands-on experiences for students.

**Clinical learning experiences in a clinical laboratory and related areas are an integral part of this program. Clinical learning experiences should reflect the full breadth of responsibilities expected of a Medical Laboratory Technician and should include appropriate experience in each of the areas of the laboratory described herein. The specified length for each of the courses listed is inclusive of clinical experience for each of the respective laboratory sections.**

### Special Notes

This program meets the Department of Health HIV/AIDS Domestic Violence and Prevention of Medical Errors education requirements. Upon completion of this program, the instructor will provide a certificate to the student verifying that these requirements have been met.

If students in this program are seeking a licensure, certificate or registration through the Department of Health, please refer to 456.0635 F.S. for more information on disqualification for a license, certificate, or registration through the Department of Health.

Either a community college or school district may offer the ATD program. When offered at the community college, college credit shall be awarded for completion of this program. When offered at the school district, vocational credit will be awarded. Vocational credit will be converted to college credit upon transfer to the AS degree at the community college.

In accordance with Rule 6A-10.024, F.A.C. all faculty providing instruction must have at least a baccalaureate degree or an associate degree with demonstrated competencies in the specific instructional program as defined by the Southern Association of Colleges and Schools.
The programs should be accredited by:

The Accrediting Bureau of Health Education Schools (ABHES)
7777 Leesburg Pike, Suite 314
North Falls Church, VA 22403
(703) 917-9503 Fax (703) 917-4109

Or any other agency as specified by the Division of Medical Quality Administration, Board of Clinical Laboratory Personnel Chapter 483 F.S., Rule 590 FAC, "Florida Clinical Laboratory Personnel Law". The graduate of a board approved program should be prepared to take the appropriate licensing examination to practice in Florida and an appropriate national certifying examination. For further information contact:

Board of Clinical Laboratory Personnel

4052 Bald Cypress Way, Bin CO7
Tallahassee, FL 32399-3257
(850) 245-4444 x3625

National Certification is voluntary and may be obtained from the:

American Medical Technologists
710 Higgins Rd.
Park Ridge, IL. 60068
(847) 823-5169 or
800-275-1268

Or

National Healthcareer Association
7500 West 160th Street
Stilwell, Kansas 66085
800-499-9092
(973) 644-4797

Outcomes 01-11 are referred to as the Health Careers Core and do not have to be completed if the student has previously completed the Core in another health science program. The Core should be taken first or concurrently with the first course in the program. Following the successful completion of the core, the student is eligible to take the National Health Care Foundation Skill Standards Assessment with instructor approval and the completion of a portfolio

**Career and Technical Student Organization (CTSO)**

HOSA: Future Health Professionals is the intercurricular career and technical student organization providing leadership training and reinforcing specific career and technical skills. Career and Technical Student Organizations provide activities for students as an integral part of the instruction offered.

**Basic Skills**

In a Career Certificate Program offered for 450 hours or more, in accordance with Rule 6A-10.040, F.A.C. the minimum basic skills grade levels required for postsecondary adult career and technical students to complete this program are: Mathematics 10, Language 11, and Reading 11. These grade level numbers correspond to a grade equivalent score obtained on a state designated basic skills examination.

Adult students with disabilities, as defined in Section 1004.02(7), Florida Statutes, may be exempted from meeting the Basic Skills requirements (Rule 6A-10.040). Students served in exceptional student education (except gifted) as defined in s. 1003.01(3) (a), F.S., may also be exempted from meeting the Basic Skills requirement. Each school district and Florida College must adopt a policy addressing procedures for exempting eligible students with disabilities from the Basic Skills requirement as permitted in Section 1004.91(3), F.S.

Students who possess a college degree at the Associate of Applied Science level or higher; who have completed or are exempt from the college entry-level examination; or who have passed a state, national, or industry licensure exam are exempt from meeting the Basic Skills requirement (Rule 6A-10.040, F.A.C.) Exemptions from state, national or industry licensure are limited to the certifications listed on the Basic Skills and Licensure Exemption List which may be accessed from the CTE Program Resources page.

**Accommodations**

Federal and state legislation requires the provision of accommodations for students with disabilities to meet individual needs and ensure equal access. Postsecondary students with disabilities must self-identify, present documentation, request accommodations if needed, and develop a plan with their counselor and/or instructors. Accommodations received in postsecondary education may differ from those received in secondary education. Accommodations change the way the student is instructed. Students with disabilities may need accommodations in such areas as instructional methods and materials, assignments and assessments, time demands and schedules, learning environment, assistive technology and special communication systems. Documentation of the accommodations requested and provided should be maintained in a confidential file.

Note: postsecondary curriculum and regulated secondary programs cannot be modified.

**Program Length**

In accordance with Rule 6A-10.024, F.A.C. an ATD program consists of a course of study that is part of an AS or AAS degree program, is less than 60 credit hours, is approximately 50% of the technical component (non-general education), and leads to employment in a specific occupation. An ATD program may consist of either technical credit or college credit.

Students must have a high school diploma, a GED, or a certificate of completion to be admitted to an ATD program. Within six weeks of entry, students in ATD programs of 450 or more hours must be tested pursuant to Rule 6A-10.040, F.A.C. and if below minimum standards for completion from the program, must receive remedial instruction. The minimum standards must be at least the equivalent of a score of ten (10) on all sections of basic skills test approved in Rule 6A-10.040, F.A.C. Students must successfully complete all remedial instruction before completing the ATD.

Community Colleges may offer either college or career credit toward the ATD. A Career Center in a public school district may offer an ATD program only as technical credit, with college credit awarded to a student upon articulation to a community college (Section 1004.02, F.S.)

When offered at a community college the standard length of this program is 40 credits. When offered at a technical center the standard length of this program is 1515 clock hours.

In accordance with Rule 6A-10.024, F.A.C. all faculty providing instruction must have at least a baccalaureate degree or an associate degree with demonstrated competencies in the specific instructional program as defined by the Southern Association of Colleges and Schools.

**Florida Department of Education**
**Curriculum Framework**

**Program Title:** **Ophthalmic Laboratory Technician**
**Career Cluster:** **Health Science**

| CCC | |
|---|---|
| CIP Number | 0351100600 |
| Program Type | College Credit Certificate (CCC) |
| Program Length | 24 credit hours |
| CTSO | HOSA: Future Health Professionals |
| SOC Codes (all applicable) | 51-9083 Ophthalmic Laboratory Technicians |

## Purpose

This certificate program is part of the Opticianry AS degree program (1351180100).

A College Credit Certificate consists of a program of instruction of less than sixty (60) credits of college-level courses, which is part of an AS or AAS degree program and prepares students for entry into employment (Rule 6A-14.030, F.A.C.).

This program offers a sequence of courses that provides coherent and rigorous content aligned with challenging academic standards and relevant technical knowledge and skills needed to prepare for further education and careers in the Health Science career cluster; provides technical skill proficiency, and includes competency-based applied learning that contributes to the academic knowledge, higher-order reasoning and problem-solving skills, work attitudes, general employability skills, technical skills, and occupation-specific skills, and knowledge of all aspects of Health Science career cluster.

The purpose of this program is to prepare students for employment as Ophthalmic Laboratory Technicians. SOC Code 51-9083 (Ophthalmic Laboratory Technicians).

The content includes but is not limited to basic instruction in anatomy and physiology, CPR, Heartsaver, office practices and dispensing of visual devices. Because optometrists now deal with certain drugs, students need knowledge of diagnostic and therapeutic drugs under supervision.

**Additional Information** relevant to this Career and Technical Education (CTE) program is provided at the end of this document.

**Standards**

After successfully completing this program, the student will be able to perform the following:

01.0 Demonstrate knowledge of the health care delivery system and health occupations.
02.0 Demonstrate the ability to communicate and use interpersonal skills effectively.
03.0 Demonstrate legal and ethical responsibilities.
04.0 Demonstrate an understanding of and apply wellness and disease concepts.
05.0 Recognize and practice safety and security procedures.
06.0 Recognize and respond to emergency situations.
07.0 Recognize and practice infection control procedures.
08.0 Demonstrate an understanding of information technology applications in healthcare.
09.0 Demonstrate employability skills.
10.0 Demonstrate knowledge of blood borne diseases, including HIV/AIDS.
11.0 Apply basic math and science skills.
12.0 Perform lens preparation.
13.0 Demonstrate knowledge of edging lenses.
14.0 Perform edging using appropriate automatic equipment.
15.0 Perform edging using appropriate hand edging equipment.
16.0 Demonstrate knowledge of impact resistant lenses.
17.0 Demonstrate knowledge of insets and prisms in lenses.
18.0 Perform special procedures.

**Florida Department of Education**
**Student Performance Standards**

**Program Title:** **Ophthalmic Laboratory Technician**
**CIP Number:** **0351100600**
**Program Length:** **24 credit hours**
**SOC Code(s):** **51-9083**

Standards 1-11 are referred to as the **Health Science Core** and are required standards in this program. Secondary and Postsecondary students completing the health science core will not have to repeat the core in any other health science program in which it is a part. When the recommended sequence is followed, the structure allows students to complete at specified points for employment or remain for advanced training or cross-training.

To ensure consistency whenever these courses are offered, the health science core standards (1-11) have been placed in a separate document.

| **This certificate program is part of the Ophthalmic Technician AS degree program (1351180301). At the completion of this program, the student will be able to:** |
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| **Completion of the following competencies (12-18) lead to completion point of SOC Code51-9083 (Ophthalmic Laboratory Technicians)** |
| 12.0 Perform lens preparation – The student will be able to: |
| 12.01 Define the terms pertaining to surfacing. |
| 12.02 Relate the RX to surfacing spherical lenses. |
| 12.03 Calculate laps for spherical lenses. |
| 12.04 Determine the thickness calculations for spherical lenses. |
| 12.05 Prepare a lot spherical lenses for surfacing. |
| 12.06 Block spherical lenses for surfacing glass and plastic. |
| 12.07 Set up a generator for surfacing plus and minus grind spherical lenses. |
| 12.08 Fine spherical glass and plastic lenses. |
| 12.09 Polish spherical glass and plastic lenses. |

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| | 12.10 Inspect and deblock finished lenses. |
| | 12.11 Define terms pertaining to sphero-cylinder lenses. |
| | 12.12 Relate RX to surfacing cylindrical lenses for flat transposition and toric transposition. |
| | 12.13 Calculate base curve and laps for surfacing cylindrical lenses. |
| | 12.14 Thickness calculations for cylindrical lenses. |
| | 12.15 Enter information on job ticket. |
| | 12.16 Layout lenses for surfacing cylindrical lenses. |
| | 12.17 Set-up the generator for surfacing cylindrical lenses. |
| | 12.18 Define the terms relating to multifocal lenses. |
| | 12.19 Relate Rx to surfacing multifocal lenses. |
| 13.0 | Demonstrate knowledge of edging lenses – The student will be able to: |
| | 13.01 Explain the need to verify a lens before edging. |
| | 13.02 Describe the methods to verify a lens before edging. |
| | 13.03 Describe the "Boxing System". |
| | 13.04 Explain the need for decentering a lens. |
| | 13.05 Give examples that bring about decentration in and/or out when laying out for edging. |
| | 13.06 Explain how thickness is verified and the need to control it. |
| | 13.07 Explain 5 surface defects a lens may have and how an optician would be able to detect each. |
| | 13.08 Apply A.N.S.I. Z-80 standards when verifying uncut, edged and mounted single vision lenses. |
| 14.0 | Perform edging using appropriate automatic equipment – The student will be able to: |
| | 14.01 Explain the procedures to layout for edging single vision spherical and cylindrical lenses. |
| | 14.02 Demonstrate the ability to layout single vision lenses for edging. |
| | 14.03 Explain why verification of the layout is necessary. |

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| 14.04 | Explain how the optician will verify the layout and what will be checked. |
| 14.05 | Explain the different uses the pattern may have in verifying the layout of lenses. |
| 14.06 | Explain the use of the "Box-o-graph" for patterns and lenses. |
| 14.07 | Demonstrate the ability to verify a layout. |
| 14.08 | Demonstrate the ability to make patterns. |
| 14.09 | Explain methods of blocking lenses for edging. |
| 14.10 | Explain sizing procedures including set, set size, and on size. |
| 14.11 | Explain the procedures to edge lenses in various automatic edgers. |
| 14.12 | Explain a standard bevel and its uses. |
| 14.13 | Explain a hide-a-bevel and its uses. |
| 14.14 | Explain a flat bevel and its uses. |
| 14.15 | Explain a grooved bevel and its uses. |
| 14.16 | Explain a 1/3 - 2/3 bevel and its uses. |
| 14.17 | Explain combination bevels and what they are used for. |
| 14.18 | Explain maintenance schedules and calibration techniques for blocking and edging equipment. |
| 14.19 | Demonstrate the ability to block lenses, edge lenses using the automatic edgers, and control sizing. |
| 15.0 | Perform edging using appropriate hand edging equipment – The student will be able to: |
| 15.01 | Describe the different types of handedgers. |
| 15.02 | Compare and contrast the advantages and/or disadvantages of ceramic and diamond hand edgers. |
| 15.03 | Explain the methods of hand beveling. |
| 15.04 | Explain the reasons for not re-edging glass lenses. |
| 15.05 | Explain the methods to re-edge lenses. |
| 15.06 | Explain the reasons for and use of safety or pin bevels. |

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| | 15.07 Explain the difference between hand edging or beveling and safety or pin beveling. |
| | 15.08 Demonstrate the ability to hand bevel and/or reshape lenses to fit any given frame. |
| | 15.09 Demonstrate the ability to insert lenses into various frames. |
| | 15.10 Explain the methods of hand beveling. |
| | 15.11 Explain the reasons for not re-edging glass lenses. |
| | 15.12 Explain the methods to re-edge lenses. |
| | 15.13 Explain the uses for the polarascope. |
| | 15.14 Demonstrate the ability to hand bevel and/or reshape lenses to fit any given frame. |
| | 15.15 Edge lenses using the HORIZON edger. |
| | 15.16 Explain prism as it relates to edging of single vision lenses, including decentered and ground. |
| | 15.17 Explain the procedure for laying out single vision lenses with prism. |
| | 15.18 Explain maintenance schedules and calibration techniques for edging equipment. |
| 16.0 | Demonstrate knowledge of impact resistant lenses – The student will be able to: |
| | 16.01 Explain the heat treating method of making lenses impact resistant. |
| | 16.02 Explain the chemical treating method of making lenses impact resistant. |
| | 16.03 Explain what happens in the process of making a lens impact resistant. |
| | 16.04 Explain the drop ball test and when to use it according to FDA regulations. |
| | 16.05 Explain the legal responsibility in relationship to impact resistant lenses. |
| | 16.06 Explain different types of lens materials and their relationship to impact resistance. |
| 17.0 | Demonstrate knowledge of insets and prisms in lenses – The student will be able to: |
| | 17.01 Explain what is meant by segment position for edging and give examples of computation for segment position in bifocal lenses. |
| | 17.02 Explain inset and relate it to the Rx, the patient, and the lenses. |
| | 17.03 Explain total decentration or total inset. |

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| | 17.04 Explain the method of achieving prism in a multifocal. |
| | 17.05 Explain the procedures to layout flat bifocal lenses. |
| | 17.06 Demonstrate the ability to layout and edge flat top bifocal lenses. |
| 18.0 | Perform special procedures – The student will be able to: |
| | 18.01 Layout SV, ST, Round, Exec, Progressive and other lenses. |
| | 18.02 Block lenses. |
| | 18.03 Calculate set sizes. |
| | 18.04 Make patterns. |
| | 18.05 Hand bevel lenses. |
| | 18.06 Safety bevel lenses. |
| | 18.07 Reshape lenses. |
| | 18.08 Dye lenses. |
| | 18.09 UV treat lenses. |
| | 18.10 Heat treat lenses. |
| | 18.11 Chemical treat lenses. |

## Additional Information

### Laboratory Activities

Laboratory investigations that include scientific inquiry, research, measurement, problem solving, emerging technologies, tools and equipment, as well as, experimental, quality, and safety procedures are an integral part of this career and technical program/course. Laboratory investigations benefit all students by developing an understanding of the complexity and ambiguity of empirical work, as well as the skills required to manage, operate, calibrate and troubleshoot equipment/tools used to make observations. Students understand measurement error; and have the skills to aggregate, interpret, and present the resulting data. Equipment and supplies should be provided to enhance hands-on experiences for students.

### Special Notes

This program meets the Department of Health's education requirements for HIV/AIDS, Domestic Violence and Prevention of Medical Errors. Although not a requirement for initial licensure, it is a requirement for renewal, therefore the instructor may provide a certificate for renewal purposes to the student verifying these requirements have been met.

If students in this program are seeking a licensure, certificate or registration through the Department of Health, please refer to 456.0635 F.S. for more information on disqualification for a license, certificate, or registration through the Department of Health.

Students are prepared to assist in performing tests to determine defects in vision, preparing and fitting eyeglasses and contact lenses, and administering corrective eye exercises and other treatments under the supervision of a person licensed under FL Statutes 458, 459, 463 or 484.

This program focuses on broad, transferable skills and stresses understanding and demonstration of the following elements of the health care industry; planning, management, finance, technical and production skills, underlying principles of technology, labor issues, community issues and health, safety, and environmental issues.

Students should be strongly encouraged to take the Certification examination offered by the Paraoptometric Section of the American Optometric Association.

Cooperative training - OJT is appropriate for this program. Whenever cooperative training - OJT is offered, the following are required for each student: a training plan, signed by the student, teacher, and employer, which includes instructional objectives and a list of on-the-job and in-school learning experiences; a workstation that reflects equipment, skills and tasks that are relevant to the occupation which the student has chosen as a career goal. The student must receive compensation for work performed.

Outcomes 01-11 are referred to as the Health Careers Core and do not have to be completed if the student has previously completed the Core in another health science program. The CORE should be taken first or concurrently with the first course in the program. Following the successful completion of the core, the student is eligible to take the National Health Care Foundation Skill Standards Assessment with instructor approval and the completion of a portfolio.

## Career and Technical Student Organization (CTSO)

HOSA: Future Health Professionals is the intercurricular career and technical student organization providing leadership training and reinforcing specific career and technical skills. Career and Technical Student Organizations provide activities for students as an integral part of the instruction offered.

## Accommodations

Federal and state legislation requires the provision of accommodations for students with disabilities to meet individual needs and ensure equal access. Postsecondary students with disabilities must self-identify, present documentation, request accommodations if needed, and develop a plan with their counselor and/or instructors. Accommodations received in postsecondary education may differ from those received in secondary education. Accommodations change the way the student is instructed. Students with disabilities may need accommodations in such areas as instructional methods and materials, assignments and assessments, time demands and schedules, learning environment, assistive technology and special communication systems. Documentation of the accommodations requested and provided should be maintained in a confidential file.

**Florida Department of Education**
**Curriculum Framework**

**Program Title:** **Eye Care Technician**
**Career Cluster:** **Health Science**

| CCC | |
|---|---|
| CIP Number | 0351180302 |
| Program Type | College Credit Certificate (CCC) |
| Program Length | 48 credit hours |
| CTSO | HOSA: Future Health Professionals |
| SOC Codes (all applicable) | 31-9099 Healthcare Support Workers, All Other |

## Purpose

This certificate program is part of the Opticianry AS degree program (1351180100).

A College Credit Certificate consists of a program of instruction of less than sixty (60) credits of college-level courses, which is part of an AS or AAS degree program and prepares students for entry into employment (Rule 6A-14.030, F.A.C.).

This program offers a sequence of courses that provides coherent and rigorous content aligned with challenging academic standards and relevant technical knowledge and skills needed to prepare for further education and careers in the Health Science career cluster; provides technical skill proficiency, and includes competency-based applied learning that contributes to the academic knowledge, higher-order reasoning and problem-solving skills, work attitudes, general employability skills, technical skills, and occupation-specific skills, and knowledge of all aspects of Health Science career cluster.

The purpose of this program is to prepare students for employment as Eye Care Technicians. SOC Code 31-9099 (Healthcare Support Workers, All Other)

The content includes but is not limited to basic instruction in anatomy and physiology, CPR, Heartsaver, office practices and dispensing of visual devices. Because optometrists now deal with certain drugs, students need knowledge of diagnostic and therapeutic drugs under supervision.

**Additional Information** relevant to this Career and Technical Education (CTE) program is provided at the end of this document.

**Standards**

After successfully completing this program, the student will be able to perform the following:

01.0 Demonstrate knowledge of the healthcare delivery system and health occupations.
02.0 Demonstrate the ability to communicate and use interpersonal skills effectively.
03.0 Demonstrate legal and ethical responsibilities.
04.0 Demonstrate an understanding of and apply wellness and disease concepts.
05.0 Recognize and practice safety and security procedures.
06.0 Recognize and respond to emergency situations.
07.0 Recognize and practice infection control procedures.
08.0 Demonstrate an understanding of information technology applications in healthcare.
09.0 Demonstrate employability skills.
10.0 Demonstrate knowledge of blood borne diseases, including HIV/AIDS.
11.0 Apply basic math and science skills.
12.0 Report and record patient information.
13.0 Demonstrate knowledge of business management techniques.
14.0 Performs delivery of optical devices.
15.0 Perform and assist in procedures used in visual testing.
16.0 Perform special procedures.
17.0 Demonstrate knowledge of the refractive status of the eye and binocularity.
18.0 Demonstrate knowledge of basic ocular anatomy and physiology.

**Florida Department of Education**
**Student Performance Standards**

**Program Title:** **Eye Care Technician**
**CIP Number:** **0351180302**
**Program Length:** **48 credit hours**
**SOC Code(s):** **31-9099**

Standards 1-11 are referred to as the **Health Science Core** and are required standards in this program. Secondary and Postsecondary students completing the health science core will not have to repeat the core in any other health science program in which it is a part. When the recommended sequence is followed, the structure allows students to complete at specified points for employment or remain for advanced training or cross-training.

To ensure consistency whenever these courses are offered, the health science core standards (1-11) have been placed in a separate document.

| **This certificate program is part of the Ophthalmic Technician AS degree program (131180301). At the completion of this program, the student will be able to:** | |
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| **The completion of the following competencies (12-18) leads to the completion point of SOC Code 31-9099 (Healthcare Support Workers, All Other)** | |
| 12.0 | Report and record patient information – The student will be able to: |
| | 12.01 Properly identify patients. |
| | 12.02 Obtain specified data from patient and family regarding visual status. |
| | 12.03 Receive and give oral report of patient's visual status. |
| | 12.04 Report and record pertinent observations of visual status. |
| | 12.05 Utilize verbal and written information to assist with the plan of care for the patient. |
| 13.0 | Demonstrate knowledge of business management techniques – The student will be able to: |
| | 13.01 Demonstrate knowledge of legal and ethical standards of vision care professionals. |
| | 13.02 Demonstrate the use of several means of communication. |
| | 13.03 Maintain and file patient records. |

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| | 13.04 Bill and collect current and overdue accounts. |
| | 13.05 Practice office supply control. |
| | 13.06 Demonstrate knowledge of medical terminology. |
| | 13.07 Practice accepted work ethic. |
| | 13.08 Demonstrate basic maintenance of equipment. |
| | 13.09 Schedule patients. |
| | 13.10 Complete and file third party forms. |
| | 13.11 Type 25 words per minute correctly. |
| 14.0 | Perform delivery of optical devices – The student will be able to: |
| | 14.01 Transcribe, transpose, and interpret prescriptions. |
| | 14.02 Neutralize and verify lenses. |
| | 14.03 Edge and insert lenses. |
| | 14.04 Select and order lenses. |
| | 14.05 Adjust, dispense and repair spectacles. |
| | 14.06 Assist patients with frame and lens selection. |
| | 14.07 Demonstrate knowledge of basic mathematical principles that are involved in ophthalmic and geometrical optics. |
| | 14.08 List the types of repairs which can be performed on plastic and metal frames and describe how these repairs are accomplished. |
| | 14.09 Demonstrate knowledge of various lens designs and materials. |
| 15.0 | Perform and assist in procedures used in visual testing – The student will be able to: |
| | 15.01 Perform vision screening and preliminary testing. |
| | 15.02 Measure and record visual acuity. |
| | 15.03 Measure and record color vision. |
| | 15.04 Measure and record stereo acuity. |

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| | 15.05 Take and record patient histories. |
| | 15.06 Perform chairside assisting. |
| | 15.07 Describe components of and instrumentation used in comprehensive vision evaluation. |
| 16.0 | Perform special procedures – The student will be able to: |
| | 16.01 Assist in fitting contact lenses. |
| | 16.02 Instruct patients in care and handling of contact lenses. |
| | 16.03 Use selected instruments to verify contact lenses. |
| | 16.04 Demonstrate knowledge of the advantages and disadvantages of various contact lens materials and designs. |
| | 16.05 Demonstrate knowledge of vision therapy. |
| | 16.06 Measure and record intraocular pressure. |
| | 16.07 Measure and record a visual field. |
| | 16.08 Demonstrate knowledge of diagnostic and therapeutic drugs. |
| 17.0 | Demonstrate knowledge of the refractive status of the eye and binocularity – The student will be able to: |
| | 17.01 Demonstrate knowledge of refractive errors. |
| | 17.02 Demonstrate knowledge of visual deficiencies. |
| | 17.03 Demonstrate knowledge of ocular motility. |
| | 17.04 Demonstrate knowledge of binocular vision. |
| | 17.05 Demonstrate ability to communicate knowledge to patients. |
| | 17.06 Demonstrate the ability to recognize sight threatening emergencies. |
| 18.0 | Demonstrate knowledge of basic ocular anatomy and physiology – The student will be able to: |
| | 18.01 Demonstrate knowledge of ocular anatomy. |
| | 18.02 Demonstrate knowledge of ocular physiology. |
| | 18.03 Demonstrate knowledge of pathological and functional disorders of the eye. |

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| 18.04 Correlate general health as it relates to ocular health. |

## Additional Information

### Laboratory Activities

Laboratory investigations that include scientific inquiry, research, measurement, problem solving, emerging technologies, tools and equipment, as well as, experimental, quality, and safety procedures are an integral part of this career and technical program/course. Laboratory investigations benefit all students by developing an understanding of the complexity and ambiguity of empirical work, as well as the skills required to manage, operate, calibrate and troubleshoot equipment/tools used to make observations. Students understand measurement error; and have the skills to aggregate, interpret, and present the resulting data. Equipment and supplies should be provided to enhance hands-on experiences for students.

### Special Notes

This program meets the Department of Health's education requirements for HIV/AIDS, Domestic Violence and Prevention of Medical Errors. Although not a requirement for initial licensure, it is a requirement for renewal, therefore the instructor may provide a certificate for renewal purposes to the student verifying these requirements have been met.

If students in this program are seeking a licensure, certificate or registration through the Department of Health, please refer to 456.0635 F.S. for more information on disqualification for a license, certificate, or registration through the Department of Health.

Students are prepared to assist in performing tests to determine defects in vision, preparing and fitting eyeglasses and contact lenses, and administering corrective eye exercises and other treatments under the supervision of a person licensed under FL Statutes 458, 459, 463 or 484.

This program focuses on broad, transferable skills and stresses understanding and demonstration of the following elements of the health care industry; planning, management, finance, technical and production skills, underlying principles of technology, labor issues, community issues and health, safety, and environmental issues.

Students should be strongly encouraged to take the Certification examination offered by the Paraoptometric Section of the American Optometric Association.

Cooperative training - OJT is appropriate for this program. Whenever cooperative training - OJT is offered, the following are required for each student: a training plan, signed by the student, teacher, and employer, which includes instructional objectives and a list of on-the-job and in-school learning experiences; a workstation that reflects equipment, skills and tasks that are relevant to the occupation which the student has chosen as a career goal. The student must receive compensation for work performed.

Outcomes 01-11 are referred to as the Health Careers Core and do not have to be completed if the student has previously completed the Core in another health science program. The CORE should be taken first or concurrently with the first course in the program. Following the successful completion of the core, the student is eligible to take the National Health Care Foundation Skill Standards Assessment with instructor approval and the completion of a portfolio.

## Career and Technical Student Organization (CTSO)

HOSA: Future Health Professionals is the intercurricular career and technical student organization providing leadership training and reinforcing specific career and technical skills. Career and Technical Student Organizations provide activities for students as an integral part of the instruction offered.

## Accommodations

Federal and state legislation requires the provision of accommodations for students with disabilities to meet individual needs and ensure equal access. Postsecondary students with disabilities must self-identify, present documentation, request accommodations if needed, and develop a plan with their counselor and/or instructors. Accommodations received in postsecondary education may differ from those received in secondary education. Accommodations change the way the student is instructed. Students with disabilities may need accommodations in such areas as instructional methods and materials, assignments and assessments, time demands and schedules, learning environment, assistive technology and special communication systems. Documentation of the accommodations requested and provided should be maintained in a confidential file.

**Florida Department of Education**
**Curriculum Framework**

**Program Title:** **Health Navigator Specialist**
**Career Cluster:** **Health Science**

| CCC | |
|---|---|
| CIP Number | 0351221100 |
| Program Type | College Credit |
| Standard Length | 31 credit hours |
| CTSO | HOSA: Future Health Professionals |
| SOC Codes (all applicable) | 11.9111 Medical and Health Services Manager<br>21.1094 Community Health Worker |

## Purpose

This certificate program is part of the Health Navigator AS degree program (1351221100).

A College Credit Certificate consists of a program of instruction of less than sixty (60) credits of college-level courses, which is part of an AS or AAS degree program and prepares students for entry into employment (Rule 6A-14.030, F.A.C.).

This program offers a sequence of courses that provides coherent and rigorous content aligned with challenging academic standards and relevant technical knowledge and skills needed to prepare for further education and careers in the Health Science career cluster; provides technical skill proficiency, and includes competency-based applied learning that contributes to the academic knowledge, higher-order reasoning and problem-solving skills, work attitudes, general employability skills, technical skills, and occupation-specific skills, and knowledge of all aspects of the Health Science career cluster.

The purpose of this program is to prepare students for employment as health navigators. SOC Codes: 11.9111 (Medical and Health Services Manager) or 21.1094 (Community Health Worker) or to provide supplemental training for persons previously or currently employed in these occupations.

The content includes but is not limited to communication skills, leadership skills, human relations and employability skills, principles of health insurance, introduction to computer literacy, health care organization, medical ethics, legal aspects, and advanced technical skills in a chosen health-related profession, health and safety.

**Additional Information** relevant to this Career and Technical Education (CTE) program is provided at the end of this document.

## Program Structure

This program is a planned sequence of instruction consisting of 31 credit hours.

## Standards

After successfully completing this program, the student will be able to perform the following:

01.0 Identify and apply basic knowledge of different aspects of wellness.
02.0 Demonstrate knowledge of various topics pertinent to the five core disciplines of public health.
03.0 Demonstrate the ability to identify U.S. health care delivery funding sources.
04.0 Demonstrate ability to work as a health navigator or community health worker.
05.0 Demonstrate knowledge of current events in the field of public health.
06.0 Demonstrate knowledge of health communication and its impact on health outcomes.
07.0 Define and describe: long-term care and types of residences.
08.0 Demonstrate the use of evidence to draw conclusions about disease etiology.
09.0 Demonstrate knowledge of the three primary levels of prevention.
10.0 Demonstrate knowledge of how the insured and uninsured interact with the United States healthcare system.

**Florida Department of Education**
**Student Performance Standards**

**Program Title:** Health Navigator Specialist
**CIP Number:** 0351221100
**Program Length:** 31 credit hours
**SOC Code(s):** 11.9111, 21.1094

| This certificate program is part of the Health Navigator (60) AS program (1351221100). At the completion of this program, the student will be able to: | |
|---|---|
| 01.0 | Identify and apply basic knowledge of different aspects of wellness. – The student will be able to: |
| 01.01 | Discuss integrating health living into one's lifestyle. |
| 01.02 | Define: physical fitness, mental health, nutrition, tobacco usage, alcohol consumption, illicit drug use, family living and how these factors connect with the concepts of wellness on a personal level. |
| 01.03 | Identify the risk factors for cardiovascular disease. |
| 01.04 | Describe the effects of tobacco and smoking on the human body. |
| 01.05 | Describe the various fitness methods to improve health. |
| 01.06 | Discuss the effects of nutrition on health and wellness. |
| 01.07 | Explain body composition and achieving a healthy weight. |
| 01.08 | Describe stress management strategies. |
| 01.09 | Discuss the use and abuse of illicit drugs in society. |
| 01.10 | Describe the effects of chronic disease on the human body. |
| 02.0 | Demonstrate knowledge of various topics pertinent to the five core disciplines of public health. – The student will be able to: |
| 02.01 | Define public health. |
| 02.02 | Describe core disciplines of public health: Community and Family Health, Environmental and Occupational Health, Health Policy and Management, Epidemiology/Biostatistics and Global Health. |
| 02.03 | Describe why public health is important. |
| 02.04 | Summarize the historical milestones in public health. |

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| | 02.05 | Identify and describe the five core disciplines of public health. |
| | 02.06 | Identify elements of public health in our everyday world. |
| | 02.07 | Explain the concepts of: prevention, detection, control of infectious and chronic conditions, health disparities, and global health. |
| | 02.08 | Compare and contrast examples of major domestic and international public health issues. |
| 03.0 | Demonstrate the ability to identify U.S. health care delivery funding sources. – The student will be able to: | |
| | 03.01 | Demonstrate an understanding of the evolutionary perspective of health services and its relevance with the existing healthcare system, facilities and services. |
| | 03.02 | Explain the social, political, and public policy implications of health-related issues, such as availability, cost, delivery, and financing. |
| | 03.03 | Describe the various health care organizations and service delivery options. |
| | 03.04 | Identify the major health professions and explain the role of each and their licensing/educational requirements. |
| | 03.05 | Compare and contrast the health care delivery systems of the U.S. with other major industrialized nations. |
| | 03.06 | Understand the array of career choices in the health care sector of the economy. |
| | 03.07 | Discuss the various sources and uses of funds for healthcare as well as market trends and future implications. |
| 04.0 | Demonstrate ability to work as a health navigator or community health worker. – The student will be able to: | |
| | 04.01 | Identify community agencies where health navigators are employed. |
| | 04.02 | Complete a field experience that provides student with descriptions of primary duties, annual salary and interaction with professional organization. |
| | 04.03 | Demonstrate an understanding of the essential duties of health navigators. |
| | 04.04 | Describe barriers to care faced by patients and consumers of placement site. |
| | 04.05 | Discuss the core health activities of placement site. |
| | 04.06 | Demonstrate an understanding of how placement site works with: local, county, state and federal agencies. |
| | 04.07 | Evaluate the role of health navigation in patient health care. |
| | 04.08 | Demonstrate communication techniques to assess patient health and needs. |
| 05.0 | Demonstrate knowledge of current events in the field of public health. – The student will be able to: | |
| | 05.01 | Identify outlets (news, media, governmental) used to communicate public health events to the general public. |
| | 05.02 | Describe the implications of current events on public health. |

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| | 05.03 | Discuss concerns related to how public health information is relayed to the public. |
| | 05.04 | Recognize how reporting of global events (e.g. epidemics, regime change, and weather events) has the potential to impact other areas. |
| | 05.05 | Locate emerging public health trends. |
| | 05.06 | Explain etiology of emerging public health trends discussed throughout semester. |
| | 05.07 | Discuss legislation designed to protect the public's right to information during major health events (epidemics, terrorism, natural disasters). |
| 06.0 | Demonstrate knowledge of health communication and its impact on health outcomes. – The student will be able to: | |
| | 06.01 | Describe key concepts and skills used to identify individuals with reduced health literacy. |
| | 06.02 | Explain how understanding health literacy is as a determinant of health. |
| | 06.03 | Discuss how to best provide culturally-appropriate communication and care starting with an awareness of one's own culture and the skills needed to provide sensitive and meaningful care and services to others. |
| | 06.04 | Discuss basic constructs of theories used in behavior change and persuasion. |
| | 06.05 | Classify health communication programs based on disease type (e.g. chronic vs. infectious). |
| | 06.06 | Determine communication methods to be used in specific settings (healthcare, school, and workplace). |
| | 06.07 | Discuss risks and rewards associated with use of digital communication in health care. |
| 07.0 | Define and describe: long-term care and types of residences. – The student will be able to: | |
| | 07.01 | Explain psychological factors associated with the graying of populations in developed areas. |
| | 07.02 | Describe demographic characteristics of aging population. |
| | 07.03 | Describe the phenomenon of increasing life expectancy. |
| | 07.04 | Discuss health promotion and prevention for aging populations. |
| | 07.05 | Compare and contrast aging populations across the 20 and 21$^{st}$ centuries. |
| | 07.06 | Summarize the geriatric medicine movement. |
| 08.0 | Demonstrate the use of evidence to draw conclusions about disease etiology. - The student will be able to: | |
| | 08.01 | Define evidenced based thinking in public health. |
| | 08.02 | Identify evidence based recommendations to determine disease etiology, benefits and basic recommendations for prevention. |

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| | 08.03 | Discuss health information concepts related to economic, legal, and social issues. |
| | 08.04 | Investigate a problem by using evidenced based thinking skills to define a health problem and determine what information is needed to make a decision. |
| | 08.05 | Locate and evaluate online health information to determine appropriate audiences are reached using specific content to the demographic group. |
| 09.0 | Demonstrate knowledge of the three primary levels of prevention. – The student will be able to: | |
| | 09.01 | Discuss implementation methods of prevention used in public health: education, motivation, and obligation. |
| | 09.02 | Describe the three levels of prevention in public health: primary, secondary, and tertiary. |
| | 09.03 | Explain how preventative methods can be used throughout the life-cycle. |
| | 09.04 | Identify individual and community prevention needs in order to connect available resources to distressed areas. |
| | 09.05 | Summarize specific primary prevention methods including: vaccinations, exercise, nutrition counseling, and birth control. |
| | 09.06 | Summarize secondary prevention methods including: screening for risk factors of cardiovascular disease and injury prevention. |
| | 09.07 | Summarize specific tertiary prevention methods including: treatment to control symptoms and prevent complications. |
| 10.0 | Demonstrate knowledge of how the insured and uninsured interact with the United States healthcare system. – The student will be able to: | |
| | 10.01 | Identify types of health insurance, e.g., Medicaid, Medicare and Medigap, exchanges, employment-based. |
| | 10.02 | Accurately describe the history of the development of the U.S. Healthcare system. |
| | 10.03 | Explain the relationship between essential services such as: preventive care, emergency care, choice of providers, institutional options, prescription drug options and coverage decisions. |
| | 10.04 | Describe issues associated with having access to care in the absence of health insurance and consequences of the decision not to obtain health insurance. |
| | 10.05 | Explain goals, limitations and basic rules for eligibility for worker's compensation. |
| | 10.06 | Discuss market and social justice philosophies in relation to health care coverage internationally. |
| | 10.07 | Describe the advantages and disadvantages of the U.S. health care coverage system. |

## Additional Information

### Laboratory Activities

Laboratory investigations that include scientific inquiry, research, measurement, problem solving, emerging technologies, tools and equipment, as well as, experimental, quality, and safety procedures are an integral part of this career and technical program/course. Laboratory investigations benefit all students by developing an understanding of the complexity and ambiguity of empirical work, as well as the skills required to manage, operate, calibrate and troubleshoot equipment/tools used to make observations. Students understand measurement error; and have the skills to aggregate, interpret, and present the resulting data. Equipment and supplies should be provided to enhance hands-on experiences for students.

### Career and Technical Student Organization (CTSO)

HOSA: Future Health Professionals is the intercurricular career and technical student organization providing leadership training and reinforcing specific career and technical skills. Career and Technical Student Organizations provide activities for students as an integral part of the instruction offered.

### Accommodations

Federal and state legislation requires the provision of accommodations for students with disabilities to meet individual needs and ensure equal access. Postsecondary students with disabilities must self-identify, present documentation, request accommodations if needed, and develop a plan with their counselor and/or instructors. Accommodations received in postsecondary education may differ from those received in secondary education. Accommodations change the way the student is instructed. Students with disabilities may need accommodations in such areas as instructional methods and materials, assignments and assessments, time demands and schedules, learning environment, assistive technology and special communication systems. Documentation of the accommodations requested and provided should be maintained in a confidential file.

**Florida Department of Education**
**Curriculum Framework**

**Program Title:** **Biotechnology Specialist**
**Career Cluster:** **Health Science**

| CCC | |
|---|---|
| CIP Number | 0626120101 |
| Program Type | College Credit Certificate (CCC) |
| Program Length | 19 credit hours |
| CTSO | HOSA: Future Health Professionals; Skills USA |
| SOC Codes (all applicable) | 19-4021 – Biological Technicians |

## Purpose

This certificate program is part of the Biotechnology Laboratory Technology AS degree program (1341010100).

A College Credit Certificate consists of a program of instruction of less than sixty (60) credits of college-level courses, which is part of an AS or AAS degree program and prepares students for entry into employment (Rule 6A-14.030, F.A.C.).

This program offers a sequence of courses that provides coherent and rigorous content aligned with challenging academic standards and relevant technical knowledge and skills needed to prepare for further education and careers in the Health Science career cluster; provides technical skill proficiency, and includes competency-based applied learning that contributes to the academic knowledge, higher-order reasoning and problem-solving skills, work attitudes, general employability skills, technical skills, and occupation-specific skills, and knowledge of all aspects of the Health Science career cluster.

The content includes but is not limited to broad biology and chemistry concepts, algebraic analysis, documentation procedures, basic laboratory techniques and concepts, as well as biohazard and safety procedures.

**Additional Information** relevant to this Career and Technical Education (CTE) program is provided at the end of this document.

**Standards**

After successfully completing this program, the student will be able to perform the following:

01.0 Demonstrate communication skills.
02.0 Demonstrate safety skills.
03.0 Demonstrate basic laboratory skills.
04.0 Demonstrate regulatory compliance.
05.0 Demonstrate appropriate decision making and problem solving techniques.
06.0 Demonstrate specific laboratory skills.
07.0 Demonstrate quality assurance/control.
08.0 Maintain facility and equipment.

**Florida Department of Education**
**Student Performance Standards**

**Program Title:** **Biotechnology Specialist**
**CIP Number:** **00626120101**
**Program Length:** **19 credit hours**
**SOC Code(s):** **19-4021**

| **This certificate program is part of the Biotechnology Laboratory Technology AS degree program (1341010100). At the completion of this program, the student will be able to:** | |
|---|---|
| 01.0 | Demonstrate communication skills. -- The student will be able to: |
| 01.01 | Comprehend and use correct scientific, technical and medical vocabulary. |
| 01.02 | Follow/analyze experimental and laboratory protocols. |
| 01.03 | Keep accurate laboratory records in notebooks or other approved mediums. |
| 01.04 | Perform basic applications in word processing, spread sheets, databases, presentations and project management. |
| 01.05 | Develop basic observational skills and related documentation strategies in written and oral form. |
| 01.06 | Ask appropriate scientific questions and recognize what is involved in experimental approaches to the solution of such questions. |
| 02.0 | Demonstrate safety skills. -- The student will be able to: |
| 02.01 | Identify and maintain first aid supplies, eye wash station, emergency shower, co-worker contact, medical information, emergency protection, chemical hygiene plan, and evacuation plan. |
| 02.02 | Follow correct safety procedures, guidelines and chemical hygiene plans. |
| 02.03 | Maintain required environmental health, safety, and laboratory training. |
| 02.04 | Maintain a safe, uncluttered and clean work area. |
| 02.05 | Handle, store, and dispose of hazardous materials per appropriate MSDS, other safety guidelines, Worker Protection Standards (WPS) and/or appropriate regulatory guidelines (i.e. state, federal, local, accreditation, etc.). |
| 02.06 | Follow standard precautions for biological pathogen, both proper handling and disposal, and define principles of contamination control including standard and transmission based precautions. |
| 02.07 | Demonstrate procedures for declaring a laboratory emergency and/or responding with appropriate institutional procedures. |
| 03.0 | Demonstrate basic laboratory skills. --The student will be able to: |

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| 03.01 | Obtain and read protocol, test procedure, standard operating procedure (SOP), equipment manuals, and proper forms. |
| 03.02 | Clean, organize and sterilize materials and laboratory instruments, when required. |
| 03.03 | Organization of supply inventory; date/label reagents and store promptly upon arrival. |
| 03.04 | Demonstrate knowledge of asepsis and practice procedures such as hand-washing and isolation. |
| 03.05 | Use titration/pipetting techniques; measure volume/weights. |
| 03.06 | Perform basic calculations, unit conversions, graphing of data and statistical analysis. |
| 03.07 | Calculate and prepare dilutions series. |
| 03.08 | Prepare solutions and reagents for laboratory use. |
| 03.09 | Collect and set up samples for analysis. |
| 03.10 | Set up general laboratory tests, including, setup equipment and perform/document tests and results. |
| 03.11 | Demonstrate knowledge of chemical cross-contamination control between reagents from weighing implements, storage containers and media. |
| 04.0 | Demonstrate regulatory compliance. -- The student will be able to: |
| 04.01 | Follow guidelines from the appropriate regulatory, accreditation, and/or certification agencies, such as FDA, OSHA, USDA, NIH, NR, DOT, EPA, CDC, ISO/IEC, and NRC. |
| 04.02 | Comply with principles using current Good Experimental Practices and quality improvement systems (e.g., GXP; GLP, GMP, GCP). |
| 05.0 | Demonstrate appropriate decision making and problem solving techniques. -- The student will be able to: |
| 05.01 | Make decisions based on accurate facts, data, and agreed-upon goals. |
| 05.02 | Demonstrate ability to evaluate data and draw conclusions. |
| 05.03 | Diagnose problem, its urgency and causes, and documenting as appropriate. |
| 06.0 | Demonstrate specific laboratory skills. -- The student will be able to: |
| 06.01 | Decontaminate and/or dispose of equipment, glassware, biologicals. |
| 06.02 | Perform microbiology skills, which may include but are not limited to, plating techniques, isolating and characterizing cell lines, propagating cell lines, and cryogenic techniques. |
| 06.03 | Perform various genetic engineering techniques including but not limited to, transformation, transfection of mammalian, insect, and/or bacterial cells. |
| 06.04 | Perform various molecular biology techniques, including but not limited to isolation, quantitation, amplification, electrophoresis and hybridization of both RNA and DNA and construction of recombinant vectors. |

| | | |
|---|---|---|
| | 06.05 | Demonstrate an understanding of translation assays, DNA libraries and isotopic and non-isotopic labeling techniques. |
| | 06.06 | Perform chemical assays including but not limited to measuring turbidity, viscosity, density, quantitative analysis, distillation techniques, titration techniques, employing dyes and indicators, lyophilization, and organic chemistry techniques. |
| | 06.07 | Collect data, perform assays, and document results of laboratory instruments. |
| 07.0 | Demonstrate quality assurance/control. -- The student will be able to: | |
| | 07.01 | Perform quality tests and document results. |
| | 07.02 | Verify test standards and maintain QA records. |
| | 07.03 | Archive samples and documents. |
| | 07.04 | Inspect and verify integrity of product, procedure, and specimen. |
| 08.0 | Maintain facility and equipment. -- The student will be able to: | |
| | 08.01 | Monitor/record the environmental condition of the facility (e.g., growth chamber, laboratory, greenhouse, storage room, animal room, freezers or manufacturing site). |
| | 08.02 | Notify appropriate personnel if sampling indicates a problem. |
| | 08.03 | Clean work area according to SOPs. |
| | 08.04 | Label equipment. |
| | 08.05 | Check calibration and perform systems diagnostics |
| | 08.06 | Check and maintain equipment, logs and perform preventative maintenance tasks according to schedule and, operate laboratory equipment, and instrumentation after familiarization with manuals and/or training. |

## Additional Information

### Laboratory Activities

Laboratory investigations that include scientific inquiry, research, measurement, problem solving, emerging technologies, tools and equipment, as well as, experimental, quality, and safety procedures are an integral part of this career and technical program/course. Laboratory investigations benefit all students by developing an understanding of the complexity and ambiguity of empirical work, as well as the skills required to manage, operate, calibrate and troubleshoot equipment/tools used to make observations. Students understand measurement error; and have the skills to aggregate, interpret, and present the resulting data. Equipment and supplies should be provided to enhance hands-on experiences for students.

### Career and Technical Student Organization (CTSO)

HOSA: Future Health Professionals and Skills USA are the intercurricular career and technical student organizations for providing leadership training and reinforcing specific career and technical skills. Career and Technical Student Organizations provide activities for students as an integral part of the instruction offered.

### Accommodations

Federal and state legislation requires the provision of accommodations for students with disabilities to meet individual needs and ensure equal access. Postsecondary students with disabilities must self-identify, present documentation, request accommodations if needed, and develop a plan with their counselor and/or instructors. Accommodations received in postsecondary education may differ from those received in secondary education. Accommodations change the way the student is instructed. Students with disabilities may need accommodations in such areas as instructional methods and materials, assignments and assessments, time demands and schedules, learning environment, assistive technology and special communication systems. Documentation of the accommodations requested and provided should be maintained in a confidential file.

**Florida Department of Education**
**Curriculum Framework**

**Program Title:** **Funeral Services**
**Career Cluster:** **Health Science**

| AS | |
|---|---|
| CIP Number | 1312030100 |
| Program Type | College Credit |
| Standard Length | 72 credit hours |
| CTSO | HOSA: Future Health Professionals |
| SOC Codes (all applicable) | 11-9061 Funeral Service Managers |

## Purpose

This program offers a sequence of courses that provides coherent and rigorous content aligned with challenging academic standards and relevant technical knowledge and skills needed to prepare for further education and careers in the Health Science career cluster; provides technical skill proficiency, and includes competency-based applied learning that contributes to the academic knowledge, higher-order reasoning and problem-solving skills, work attitudes, general employability skills, technical skills, and occupation-specific skills, and knowledge of all aspects of Health Science career cluster.

This program is designed to prepare students for employment as embalmers, funeral attendants, or funeral directors and morticians (SOC Code 119061 Funeral Directors and Morticians) or to provide supplemental training for persons previously or currently employed in these occupations.

The content includes but is not limited to techniques of embalming and restorative art, mortuary administration, funeral law, public health and sanitation, human anatomy and physiology, microbiology, pathology, mortuary social science, stress management, employability skills, leadership and human relations skills, and health and safety, including CPR.

**Additional Information** relevant to this Career and Technical Education (CTE) program is provided at the end of this document.

## Program Structure

This program is a planned sequence of instruction consisting of 72 credit hours.

**Regulated Programs**

**This program is regulated by the Florida Board of Funeral, Cemetery, and Consumer Services.**

The program must be accredited by the American Board of Funeral Service Educators and once completed a student may apply to the Division of Funeral, Cemetery and Consumer Services for their internship and to take the Florida Laws and Rules Exam to practice as a licensed embalmer or funeral director, according to Chapter 497 FS.

The intended outcomes are the same as the adopted curricular objectives of the American Board of Funeral Service Education which must be endorsed by accredited programs as curricular standards.

Upon completion of the associate in science in funeral service, graduates are qualified to write the National Funeral Service Board Examination. The program must be accredited by the American Board of Funeral Services Education, Inc., 14 Crestwood Road, Cumberland, Maine 04021 (207/829-5715) 497.000 F.S. ; 69K-15.002(1) F.A.C.

One year of internship is required in the State of Florida for the embalmer or the funeral director license. These internships may be served concurrently. Upon completion of the internship, students are eligible to write the Florida state examination for the embalmer and funeral director license.

**Standards**

After successfully completing this program, the student will be able to perform the following:

01.0 Satisfactorily perform the basic techniques of embalming and restorative art and cosmetology.
02.0 Give evidence of an understanding of the sociological, psychological, spiritual, physical, and legal needs of the family and community, and how to meet those needs in the treatment, handling, and disposition of the dead human body.
03.0 Explain the concepts of death, disinfection, preservation and restoration of a dead human body.
04.0 Identify fundamental principles of personal and public health protection measures, and define the embalmer's obligation to this function.
05.0 Identify, define, and employ the necessary technical terminology to facilitate communication and cooperation with members of allied professions and the public.
06.0 Give evidence of personal manifestations of continued professional growth through education and research.
07.0 Identify those common conditions surrounding death which may prove of potential concern to the forensic pathologist.
08.0 Take care of the dead in a manner which recognizes the inherent dignity of human-kind.
09.0 Identify the privileges of and be able to, through professional practices, fulfill the responsibilities of licensure.
10.0 Interpret and communicate the purposes, procedures, and values of funeral services.
11.0 Counsel people regarding funeralization.
12.0 Plan, implement, and direct a funeral according to the sociological, psychological and theological needs of the person being served.
13.0 Identify and comply with the laws pertaining to funeral service practice and public health.
14.0 Manage personnel, facilities, and other resources.
15.0 Apply business principles and practices to funeral service.
16.0 Recognize the importance of inter-professional and intra-professional relationship and responsibilities.
17.0 Recognize the procedures for becoming an active member of the community and participating in community affairs.
18.0 Demonstrate and understanding of entrepreneurship.

**Florida Department of Education**
**Student Performance Standards**

**Program Title:** **Funeral Services**
**CIP Number:** **1312030100**
**Program Length:** **72 credit hours**
**SOC Code(s):** **11-9061**

| **Refer to Rule 6A-14.030 (4) F.A.C., for the minimum amount of general education coursework required in the Associate of Science (AS) degree. At the completion of this program, the student will be able to:** | |
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| 01.0 | Satisfactorily perform the basic techniques of embalming and restorative art and cosmetology.<br>– The student will be able to: |
| 01.01 | Demonstrate knowledge of the body systems, with special emphasis on the circulatory system, to the degree needed to give a working basis for studies in such related subjects as embalming, pathology, public health, and restorative art. |
| 01.02 | Specify representative chemicals in embalming fluids (arterial, cavity, and accessory) and give their respective functions. |
| 01.03 | Describe the basic theories and laws of chemistry and relate their importance to both the living and deceased. |
| 01.04 | Identify and demonstrate the use of standard embalming instruments, machines and accessories. |
| 01.05 | Describe prior to, and during the procedure of embalming, the problems presented by disease processes and etiological factors. |
| 01.06 | Identify potentially harmful chemicals used in the preparation room, and the precautions to be taken with each. |
| 01.07 | Relate specified types of restoration to the correct embalming procedures. |
| 01.08 | Select, from a specified cosmetic medium, the correct colorants (compounds) to achieve a natural appearance under various conditions. |
| 01.09 | Exhibit a skill in modeling which reflects an ability to restore features of the face. |
| 01.10 | Interpret a photograph by evaluating the highlights and shadows, equal and unequal facial proportions, the specific form of the head, and the chief characteristics of each feature. |
| 01.11 | Identify and describe the norms of the head and face (direct and profile views), and each of the four facial features - identify four variations of these norms. |
| 01.12 | Classify and explain the principles of pigmentary (color) mixtures, and relate their application to cosmetic compounds and the influence of adjacent colors on one another in the funeral setting. |
| 01.13 | Name and locate three external body structures of the skull and explain how each influences surface form. |
| 01.14 | Identify and describe the use of various cosmetic and restorative materials and equipment. |

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| 02.0 | Give evidence of an understanding of the sociological, psychological, spiritual, physical, and legal needs of the family and community, and how to meet those needs in the treatment, handling, and disposition of the dead human body. – The student will be able to: |
| 02.01 | Describe the varieties of funeralization seen in major religious and ethnic sub-cultures and in fraternal and military groups in America. |
| 02.02 | Relate contemporary sociological, theological, and philosophical thought to the matter of death, dying, bereavement and mourning in America. |
| 02.03 | Discuss and illustrate the interplay in society of custom and contemporary funeralization practices. |
| 02.04 | Distinguish among taboos, mores, folkways, customs, habits, laws, rites, rituals, and ceremonies as sociological terms applied to American funerals. |
| 02.05 | State significant changes in funeralization and embalming methods during the last half century. |
| 02.06 | Describe the philosophies of death in different cultures. |
| 03.0 | Explain the concepts of death, disinfection, preservation and restoration of a dead human body. – The student will be able to: |
| 03.01 | Explain the common types of death. |
| 03.02 | Identify the physical states of matter and differentiate between physical and chemical changes. |
| 03.03 | Identify essential characteristics of autolysis, hydrolysis fermentation, and putrefaction in the area of the chemistry of decomposition. |
| 03.04 | Identify the essential characteristics of carbohydrates, lipids, and proteins in the area of basic biochemistry. |
| 03.05 | Define organic chemistry and describe the characteristic features of aliphatic and cyclic compounds, hydrocarbons, alcohols, aldehydes, ketones, acids, esters, ethers, and amines. |
| 03.06 | Identify and describe the prerequisites for specified restorative and cosmetic treatments. |
| 04.0 | Identify fundamental principles of personal and public health protection measures, and define the embalmer's obligation to this function. – The student will be able to**:** |
| 04.01 | Explain the embalming-disinfection process as a public health procedure. |
| 04.02 | Describe infectious processes and explain the methods of transmission and control of common infectious diseases, with special emphasis upon their applications to the environment of the embalmer, the funeral director, and the public. |
| 04.03 | Identify and explain special treatments for cases involving common infections, traumatic and pathological conditions. |
| 04.04 | Recognize the pathological conditions which require special procedures in the removal, handling, preparation and disposition of human remains. |
| 04.05 | Apply infection control techniques according to Center for Disease Control (CDC) guidelines. |
| 04.06 | Document the relationship between understanding normal structure and functions of the human body and development of Healthy living habits. |
| 04.07 | Describe and demonstrate personal and environmental disinfection and decontamination procedures; explain proper use of major chemical disinfectants. |

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| 05.0 | Identify, define, and employ the necessary technical terminology to facilitate communication and cooperation with members of allied professions and the public. – The student will be able to: |
| 05.01 | Demonstrate the acquisition and understanding of anatomical terminology at a level that will enable him to communicate effectively with members of allied professions and the lay public. |
| 05.02 | Identify common laboratory procedures and the common units of scientific measurement. |
| 05.03 | Identify the characteristic features of solutions, suspensions, and emulsions, and the processes of diffusion including osmosis, dialysis, and hydrolysis. |
| 05.04 | Identify a list of elements and their valences, radicals, ions, compounds and reactions related to problems faced by the embalmer and funeral director, and give their symbols, formulas, and equations. |
| 05.05 | Differentiate between the beneficial micro-organisms and the actual pathogens and opportunists commonly associated with both the living human host and dead human remains. |
| 05.06 | Demonstrate an understanding of host parasite relations and interactions, and the requirements for successful parasitism. |
| 05.07 | Identify host defense mechanisms and demonstrate general knowledge of innate, natural, and active immunologic responses. |
| 05.08 | Identify basic bacterial and fungal morphology and physiology. |
| 05.09 | Advise lay persons about the benefits of organ, tissue, bone, and whole body donation upon request. |
| 06.0 | Give evidence of personal manifestations of continued professional growth through education and research. – The student will be able to: |
| 06.01 | Identify the reasons one should cooperate in community programs for controlling disease and promoting medical research. |
| 06.02 | Give evidence of the appreciation of, and interest in, the human body as a subject for independent study and continuing intellectual growth. |
| 07.0 | Identify those common conditions surrounding death which may prove of potential concern to the forensic pathologist. – The student will be able to: |
| 07.01 | Identify and explain those special conditions attending a death whereby notification of the death is required to be given to the proper official (such as Coroner, Medical Examiner, Public Health Officer, Veterans Administration, etc.). |
| 07.02 | Identify the technical manifestations of death which may be of medico-legal significance. |
| 08.0 | Take care of the dead in a manner which recognizes the inherent dignity of human-kind. – The student will be able to: |
| 08.01 | Give evidence of respect for human remains. |
| 08.02 | Demonstrate acceptance of racial and cultural diversity. |
| 09.0 | Identify the privileges of and be able to, through professional practices, fulfill the responsibilities of licensure. – The student will be able to: |
| 09.01 | Identify the privileges and their limitations accorded the licensee with regard to caring for the dead, and serving the living. |
| 09.02 | Identify the responsibilities of the funeral director to those who have called him with regard to: |

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| | 09.02.01 | Providing services and merchandise as selected. |
| | 09.02.02 | Explaining the financial aspects of the funeral, and pricing method used. |
| | 09.02.03 | Explaining death benefits and/or burial allowances. |
| | 09.02.04 | Notifying the clergy of the death, if appropriate. |
| | 09.02.05 | Coordinating with the clergy on religious aspects of the funeral. |
| | 09.02.06 | Explaining merchandise and related representations regarding final disposition. |
| | 09.02.07 | Preparing a Statement of Goods and Services Selected pertaining to services, selected merchandise, supplemental items, and cash advances. |
| | 09.02.08 | Explaining applicable laws, rules and regulations. |
| | 09.02.09 | Referring families for professional counseling as appropriate. |
| 09.03 | Identify the responsibilities of the funeral director to the profession with regard to: | |
| | 09.03.01 | Costs procedures, and communication when transferring human remains to another funeral establishment. |
| | 09.03.02 | Public education regarding funeralization. |
| 09.04 | Identify the responsibilities of the funeral director to the clergy in the matter of the policies, rules and regulations of religious institutions. | |
| 09.05 | Perform the following tasks applicable to the state in which he/she intends to gain a license: | |
| | 09.05.01 | State the limitations placed upon the practice of the funeral director/embalmer. |
| | 09.05.02 | Summarize the law, rules and regulations pertaining to: |
| | 09.05.02.01 | The transportation of the dead. |
| | 09.05.02.02 | Requirements and specifications of the funeral home, including the preparation room. |
| | 09.05.02.03 | Define terms specified in the license laws, rules and regulations. |
| | 09.05.02.04 | Identify the qualifications required of applicants for funeral director/mortician license. |
| | 09.05.02.05 | Identify the grounds for issuance, revocation, suspension or refusal to renew or issue licenses. |
| | 09.05.02.06 | Identify requirements for the conducting of funerals. |
| | 09.05.02.07 | Identify the procedures for filing a complaint concerning a violation of the licensing law. |

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| | 09.05.02.08 Identify provisions regarding reciprocity endorsement and emergency licensing. |
| 10.0 | Interpret and communicate the purposes, procedures, and values of funeral services. – The student will be able to: |
| | 10.01 Identify the purposes which the funeral serves for the family, friends, church, occupational associates, and community of the deceased. |
| | 10.02 Identify the values of the funeral. |
| | 10.03 Define common terms used in funeral services. |
| | 10.04 Identify the psychological purposes and values of the funeral. |
| | 10.05 Identify the sociological purposes and values of the funeral. |
| | 10.06 Organize and be prepared to discuss the purposes and values of the funeral. |
| | 10.07 Identify the philosophical purposes and values of funeral service. |
| 11.0 | Counsel people regarding funeralization. – The student will be able to: |
| | 11.01 Identify the major financial considerations that confront a bereaved family. |
| | 11.02 Identify the times or situations during which a funeral director will make use of counseling. |
| | 11.03 State the areas of counseling normally covered during funeralizations. |
| | 11.04 Describe the process of funeralization. |
| | 11.05 Describe contemporary opinions regarding psychology of death, grief, and bereavement. |
| | 11.06 Describe how the manner and cause of death affects the psychological needs of the bereaved. |
| | 11.07 List the information of importance to obtain during each type of counseling situation. |
| | 11.08 Identify and appraise the basic personal and personality problems that may appear during counseling situations. |
| | 11.09 Classify and analyze the various forms of funeral rites. |
| | 11.10 Describe contemporary opinions regarding sociology of death, grief, and bereavement. |
| | 11.11 Describe three or more types of counseling techniques applicable to funeral services and give reasons for the use of each in individual circumstances. |
| | 11.12 Describe recent developments pertaining to the theologies of death, grief and bereavement. |
| | 11.13 Describe the effects of the Uniform Anatomical Gift Act on funeralization. |

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| | 11.14 | Identify and describe stages of dying. |
| 12.0 | Plan, implement, and direct a funeral according to the sociological, psychological and theological needs of the person being served. – The student will be able to: | |
| | 12.01 | Develop a warm, friendly and tactful attitude towards the family at the first meeting. |
| | 12.02 | Identify the items of information which are necessary to complete the following forms: |
| | 12.02.01 | Obituary |
| | 12.02.02 | Death certificate via the Electronic Death Registration System (EDRS) |
| | 12.02.03 | Social Security forms (SSA, 719, SSA 721) |
| | 12.02.04 | Veteran's forms (Marker, Flag, Burial Allowance) |
| | 12.02.05 | Burial/Transportation permits |
| | 12.02.06 | Release/Authorization forms |
| | 12.03 | Identify the person(s) who are qualified to give permission for release of the deceased from a hospital, or to sign the hospital death record, if required. |
| | 12.04 | Identify the information to be secured from, and given to, the family upon initial family contact. |
| | 12.05 | Describe the multiple steps required between initial notification of death and removal of the deceased. |
| | 12.06 | Identify person(s) who qualify to authorize autopsy and embalming, and to approve the purpose and disclosure statement. |
| | 12.07 | Identify the items and considerations usually included in the arrangement conference. |
| | 12.08 | Identify the types of death certificates and their uses. |
| | 12.09 | Identify the appropriate times usually considered necessary to meet the funeral needs of those being served. |
| | 12.10 | Identify the consideration normally involved in setting the order for the processional and recessional of a funeral service including casket, casket bearer, children, clergy, friends, fraternal orders, funeral directors, honorary bearers, next of kin, relatives, and service organization. |
| | 12.11 | Describe the multiple steps required between initial notification of death and removal of the deceased when the bereaved are not present at the time of death, regardless of the place or manner of death - including, but not limited to, the funeral director's determination of the need for a personal conference and/or counseling of the bereaved prior to the funeral arrangement conference. |
| | 12.12 | Identify the items of clothing ordinarily required for the deceased. |
| | 12.13 | Describe the proper techniques and equipment employed in the dignified removal of remains under diverse conditions. |
| | 12.14 | Identify the reasons which require a discussion involving the family, the officiating clergyman, and the funeral director regarding |

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| | visitation hours, time of funeral, and other aspects of the service. | |
| 12.15 | Identify the purpose of the Burial-Transit Permit. | |
| 12.16 | Write obituary and death notices. | |
| 12.17 | Identify the purpose and content of pre-selection counseling. | |
| 12.18 | Identify the participants functioning in funeral service and explain their duties. | |
| 12.19 | Describe considerations involved in the dignified movement of casketed remains. | |
| 12.20 | State considerations for determining the order of the funeral procession. | |
| 12.21 | Coordinate a variety of committal rites when these are a part of a funeral. | |
| 12.22 | Identify the psychological and sociological value of the funeral arrangement conference. | |
| 12.23 | Identify methods of dealing with inter-personal conflicts among family members. | |
| 12.24 | Discuss dismissal procedures for leaving the grave site. | |
| 12.25 | Explain the problems involved in harmonizing the colors of caskets in the funeral setting. | |
| 12.26 | Describe the various types of floral arrangements and the considerations involved in their placement. | |
| 12.27 | Identify requirement/procedure pertaining to cremation, calcination and burial at sea. | |
| 13.0 | Identify and comply with the laws pertaining to funeral service practice and public health. – The student will be able to: | |
| 13.01 | Identify legally: | |
| | 13.01.01 | The nature of the right of the funeral director to take custody of a dead body, and the length of time such custody may be exercised. |
| | 13.01.02 | The procedures for recovering the body. |
| | 13.01.03 | The theory governing the right to recover for mutilation of a body, and the reasons for recovery of damages when mutilation results from negligence. |
| | 13.01.04 | The basis of a funeral director's liability for the negligence of a volunteer driver in a funeral procession. |
| | 13.01.05 | The legal duty of a funeral director regarding permits required by law. |
| | 13.01.06 | The reasons for legal limitation on a funeral bill charged against an estate where creditor's claims exceed the assets of the estate. |
| | 13.01.07 | How a testator may provide in their will for the payment of funeral expenses. |

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| | 13.01.08 | The duty of the funeral director for compliance with the Federal Trade Commission Funeral Rules. |
| | 13.01.09 | The duty of the funeral director for compliance with the Magnuson-Moss Warranty Act (1975). |
| | 13.01.10 | The duty of the funeral director for compliance with the provisions of Federal Wage and Hour Laws. |
| 13.02 | Describe status of a funeral bill as a charge against the estate. | |
| 13.03 | Identify: | |
| | 13.03.01 | The conditions under which a funeral director must have permission before permitting an autopsy in their establishment, and state whether that permission may be qualified, restricted or revoked. |
| | 13.03.02 | The liability of an embalmer for shaving a beard, cutting hair or otherwise altering the appearance of a body. |
| | 13.03.03 | The legal duty of the funeral director regarding the personal effects of a decedent. |
| | 13.03.04 | The extent of control a funeral director has over a funeral, and their legal duties to those attending a funeral or viewing a body at their funeral home. |
| | 13.03.05 | The general rule in the determination of the validity of funeral expenses. |
| | 13.03.06 | Which items are allowable in a funeral bill and which items are not allowable. |
| | 13.03.07 | The legal basis for the modifications of the common law rule imposing liability upon the husband for the wife's funeral expenses. |
| | 13.03.08 | Under what legal basis a widow may be required to pay the funeral expense of her deceased indigent husband. |
| | 13.03.09 | The liability of the funeral director for the custody of the remains. |
| 13.04 | Identify: | |
| | 13.04.01 | The liability of a volunteer who individually contracts to pay a funeral bill. |
| | 13.04.02 | The liability of an executor, nominated personal representative, or administrator for funeral expenses. |
| | 13.04.03 | Why a funeral director should be familiar with the law of disinterment. |
| | 13.04.04 | The circumstances under which exhumation is permitted in criminal cases, and in civil cases. |
| | 13.04.05 | The usual procedure for obtaining a disinterment authorization, and the legal principles under which disinterment statutes are upheld. |
| | 13.04.06 | Who has the primary right to disinter a body, and the nature of the crime of disinterment without proper authorization. |
| | 13.04.07 | The grounds upon which a funeral home can be prohibited from further operation in a residential district. |
| | 13.04.08 | The conditions under which a funeral home or cemetery may be considered a nuisance per se. |

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| | 13.04.09 | Why the power of eminent domain may be invoked to acquire land for a public cemetery. |
| | 13.04.10 | The power under which cemeteries may be regulated by the state, and what specific action must be taken to convert land to cemetery use. |
| | 13.04.11 | The authority under which a private cemetery may enforce rules which control burial in it. |
| | 13.04.12 | Why the owner of a cemetery lot may not use it for purposes other than burial, and whether or not he has the right to decorate and mark the grave. |
| | 13.04.13 | Under what authority cemeteries are required to provide admittance to graves. |
| | 13.04.14 | What kind of offense is desecration of a grave? |
| | 13.04.15 | The proper position the funeral director should take when survivors of a decedent disputes the exercises of the right of disposition. |
| 13.05 | Identify: | |
| | 13.05.01 | The essentials of a valid contract. |
| | 13.05.02 | The reasons for maintaining death certificates. |
| | 13.05.03 | How the remains may be transported by common carrier. |
| | 13.05.04 | The legal consideration where persons die without medical attention. |
| | 13.05.05 | The general order of nearest of kin including all relatives. |
| | 13.05.06 | The legal implications of reasonable funeral expenses. |
| | 13.05.07 | Two reasons for filing an embalming report for each body prepared by the funeral home. |
| | 13.05.08 | The function of a court of equity. |
| | 13.05.09 | Two classes of bodies legally available for dissection. |
| | 13.05.10 | The legal doctrine regarding the photographing of a dead body. |
| | 13.05.11 | The privileges and limitations of one holding the power of attorney. |
| | 13.05.12 | The liability of the funeral director for the custody of the remains. |
| 13.06 | Describe the legal basis for funeral service licensure stating the legal obligation of funeral and its purpose. | |
| 13.07 | Identify: | |
| | 13.07.01 | The doctrine of Stare Decisis. |

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| | 13.07.02 | Whether a dead body may be the subject of an action of replevin (holding a body for ransom). |
| | 13.07.03 | The authority of a ship's Captain over dead bodies and any other applicable maritime laws or traditions. |
| | 13.07.04 | The restrictions on burials of those dying of a communicable disease. |
| | 13.07.05 | The conditions under which a dead body must be embalmed. |
| | 13.07.06 | The effect of the decedent's wishes with respect to exercising the right and duty of disposition. |
| | 13.07.07 | The proper position the funeral director should take when survivors of a decedent disputes the exercise of the right of disposition. |
| 13.08 | Define cremation and be able to identify all authorizations required to maintain legality of the procedure including informed consent. | |
| 13.09 | Describe the rights of a party in controlling a funeral, and the rights of a party to attend a funeral. | |
| 13.10 | Define "funeral contract", and state the legality of funeral contracts made by a decedent prior to death. | |
| 13.11 | Describe the rights of the decedent in pre-arranging their own funeral. | |
| 13.12 | Describe the legal limitation imposed in pre-arrangement agreements. | |
| 13.13 | Describe the legal status of a dead body. | |
| 13.14 | Identify the legal theory governing the right to recover from mutilation of a body, and the reasons for recovery of damages when mutilation results from negligence. | |
| 13.15 | Identify the circumstances under which the state or one of its subdivisions is liable for funeral expenses. | |
| 13.16 | Define and give the purpose of a Coroner's/Medical investigator's inquest and inquiry. | |
| 13.17 | Identify the rules and regulations governing burial in a National Cemetery. | |
| 13.18 | Distinguish between the property and no-property theories of dead human bodies. | |
| 13.19 | Identify two sources from which the rights and duties of a funeral director are derived. | |
| 13.20 | Identify those steps a funeral director should take before building or purchasing a funeral home. | |
| 13.21 | Distinguish between cooperation, a partnership, and a proprietorship, and state the advantages and disadvantages of each. | |
| 13.22 | Identify forms of legally binding sales contracts. | |
| 13.23 | Identify the conditions under which a note would be considered void. | |
| 14.0 | Manage personnel, facilities, and other resources. – The student will be able to: | |

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| 14.01 | Answer the telephone properly. | |
| 14.02 | Receive initial contact information accurately and appropriately. | |
| 14.03 | Identify importance of: | |
| | 14.03.01 | The appearance and cleanliness of the funeral home, preparation room, funeral coach, limousine, and parking lot. |
| | 14.03.02 | The need for confidentiality of funeral home records, family records and financial data. |
| | 14.03.03 | Maintaining staff communications. |
| 14.04 | Identify the procedure for filing the death certificate at the proper agency and obtaining related permits if required. | |
| 14.05 | Identify equipment necessary for the removal of an adult, child or infant from a hospital, residence or other place of death. | |
| 14.06 | Identify all equipment appropriate for any funeral service. | |
| 14.07 | Identify the procedure for properly receiving those who make a visitation to the funeral home. | |
| 14.08 | Identify the procedures for dressing and casketing the remains. | |
| 14.09 | Identify the procedures for placing the deceased in a visitation room. | |
| 14.10 | Identify equipment needed to accomplish interment, inurnment, and entombment. | |
| 14.11 | Identify the procedures for the completion of insurance forms. | |
| 14.12 | Complete the recording of information in a register book. | |
| 15.0 | Apply business principles and practices to funeral service. – The student will be able to: | |
| 15.01 | Prepare a financial memorandum pertaining to services provided, merchandise selected, cash advances, and supplemental items. | |
| 15.02 | Define and properly use the terminology associated with funeral merchandise, merchandise display, and funeral supplies. | |
| 15.03 | Identify, define, and describe the various types of outer enclosures. | |
| 15.04 | Differentiate between Functional, Unit, Bi-Unit and Itemization methods of quoting the price(s) of funeral service. | |
| 15.05 | Apply basic accounting principles in keeping mortuary records. | |
| 15.06 | Identify the major items of income and expenses which should be included in the budget of a funeral home. | |
| 15.07 | Define basic accounting terms. | |

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| | 15.08 Analyze financial data, make financial decisions, and recognize the effects of economies on existing funeral services. |
| | 15.09 Identify the dual role of the funeral director, and list the major responsibilities of each role. |
| | 15.10 Distinguish between the direct and indirect approaches in helping clients to select merchandise, and list the advantages and disadvantages of each method. |
| | 15.11 Identify the insurance needs of a funeral director, and funeral service practice. |
| | 15.12 Identify the application of the Federal Truth in Lending Act to funeral service. |
| | 15.13 Identify the importance of purchase disclosures. |
| | 15.14 Identify the applications of the Federal Wage and Hour Act to funeral service. |
| | 15.15 Distinguish a cognovit from a promissory note. |
| 16.0 | Recognize the importance of inter-professional and intra-professional relationship and responsibilities. – The student will be able to: |
| | 16.01 Identify common interest areas existing between funeral directors, florists, cemeterians, monument dealers, news media, the legal profession, the judiciary, hospital administrators, governmental agencies, and local police. |
| | 16.02 Identify common concerns inherent in physician-funeral director relationships. |
| | 16.03 Name the major funeral director associations. |
| | 16.04 Describe the structure and function of the International Conference of Funeral Service Examining Boards, Inc. |
| | 16.05 Describe the structure of "multi-unit" funeral home organizations. |
| | 16.06 Describe the structure and function of the Commission of Schools of the American Board of Funeral Service Education. |
| | 16.07 Describe the structure and function of the American Board of Funeral Service Education. |
| | 16.08 Describe the membership structure of the National Funeral Home Associations. |
| 17.0 | Recognize the procedures for becoming an active member of the community and participating in community affairs. – The student will be able to: |
| | 17.01 Identify the necessary items to be considered in establishing a funeral home-public relations program. |
| | 17.02 Distinguish between institutional and funeral home advertising and state the primary purpose of each. |
| 18.0 | Demonstrate and understanding of entrepreneurship. – The student will be able to: |
| | 18.01 Define entrepreneurship. |
| | 18.02 Describe the importance of entrepreneurship to the American economy. |

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| 18.03 List the advantages and disadvantages of business ownership. |
| 18.04 Identify the risks involved in ownership of a business. |
| 18.05 Identify the necessary personal characteristics of a successful entrepreneur. |
| 18.06 Identify the business skills needed to operate a business efficiently and effectively. |

## Additional Information

### Laboratory Activities

Laboratory investigations that include scientific inquiry, research, measurement, problem solving, emerging technologies, tools and equipment, as well as, experimental, quality, and safety procedures are an integral part of this career and technical program/course. Laboratory investigations benefit all students by developing an understanding of the complexity and ambiguity of empirical work, as well as the skills required to manage, operate, calibrate and troubleshoot equipment/tools used to make observations. Students understand measurement error; and have the skills to aggregate, interpret, and present the resulting data. Equipment and supplies should be provided to enhance hands-on experiences for students.

### Special Notes

The program must be accredited by the American Board of Funeral Service Educators and once completed a student may apply to the Division of Funeral, Cemetery and Consumer Services for their internship and to take the Florida Laws and Rules Exam to practice as a licensed embalmer or funeral director, according to Chapter 497 FS.

The intended outcomes are the same as the adopted curricular objectives of the American Board of Funeral Service Education which must be endorsed by accredited programs as curricular standards.

Upon completion of the associate in science in funeral service, graduates are qualified to write the National Funeral Service Board Examination. The program must be accredited by the American Board of Funeral Services Education, Inc., 14 Crestwood Road, Cumberland, Maine 04021 (207/829-5715) 497.000 F.S. ; 69K-15.002(1) F.A.C.

One year of internship is required in the State of Florida for the embalmer or the funeral director license. These internships may be served concurrently. Upon completion of the internship, students are eligible to write the Florida state examination for the embalmer and funeral director license.

### Career and Technical Student Organization (CTSO)

HOSA: Future Health Professionals is the intercurricular career and technical student organization providing leadership training and reinforcing specific career and technical skills. Career and Technical Student Organizations provide activities for students as an integral part of the instruction offered.

### Accommodations

Federal and state legislation requires the provision of accommodations for students with disabilities to meet individual needs and ensure equal access. Postsecondary students with disabilities must self-identify, present documentation, request accommodations if needed, and develop a plan with their counselor and/or instructors. Accommodations received in postsecondary education may differ from those received in secondary education. Accommodations change the way the student is instructed. Students with disabilities may need accommodations in such areas as instructional methods and materials, assignments and assessments, time demands and schedules, learning environment, assistive technology and special communication systems. Documentation of the accommodations requested and provided should be maintained in a confidential file.

## Certificate Programs

A College Credit Certificate consists of a program of instruction of less than sixty (60) credits of college-level courses, which is part of an AS or AAS degree program and prepares students for entry into employment (Rule 6A-14.030, F.A.C.). This AS degree program includes the following College Credit Certificates:

Florida Funeral Director (0312030102) - 31 credit hours

Standards for the above certificate programs are contained in separate curriculum frameworks.

**Florida Department of Education**
**Curriculum Framework**

**Program Title:** **Biotechnology Laboratory Technology**
**Career Cluster:** **Health Science**

| AS | |
|---|---|
| CIP Number | 1341010100 |
| Program Type | College Credit |
| Standard Length | 61 credit hours |
| CTSO | HOSA: Future Health Professionals; Skills USA |
| SOC Codes (all applicable) | 19-4021 Biological Technicians |

## Purpose

This program offers a sequence of courses that provides coherent and rigorous content aligned with challenging academic standards and relevant technical knowledge and skills needed to prepare for further education and careers in the Health Science career cluster; provides technical skill proficiency, and includes competency-based applied learning that contributes to the academic knowledge, higher-order reasoning and problem-solving skills, work attitudes, general employability skills, technical skills, and occupation-specific skills, and knowledge of all aspects of Health Science career cluster.

This program is designed to prepare students for employment as Biotechnology Research Technicians, Biological Technicians (SOC Code 19-4021) or cell culture technicians or biotechnology manufacturing technician and/or to supply supplemental training for persons previously or currently employed in these occupation.

The content includes but is not limited to broad biology and chemistry concepts, algebraic and statistical analysis, basic microbiology concepts, biohazard and safety procedures, human anatomy and physiology or botany, core biotechnical laboratory techniques and industry workplace experience. It includes components designed to enhance critical thinking and technical communication skills.

**Additional Information** relevant to this Career and Technical Education (CTE) program is provided at the end of this document.

## Program Structure

This program is a planned sequence of instruction consisting of 61 credit hours.

**Standards**

After successfully completing this program, the student will be able to perform the following:

01.0 Demonstrate communication skills.
02.0 Demonstrate safety skills.
03.0 Demonstrate basic laboratory skills.
04.0 Demonstrate regulatory compliance.
05.0 Demonstrate appropriate decision making and problem solving techniques.
06.0 Demonstrate specific laboratory skills.
07.0 Demonstrate quality assurance/control.
08.0 Maintain facility and equipment.
09.0 Demonstrate knowledge and proper care/use of test animals/plants. (optional)
10.0 Demonstrate skills in bioinformatics. (optional)

**Florida Department of Education**
**Student Performance Standards**

**Program Title:** **Biotechnology Laboratory Technology**
**CIP Number:** **1341010100**
**Program Length:** **61 credit hours**
**SOC Code(s):** **19-4021**

| **Refer to Rule 6A-14.030 (4) F.A.C., for the minimum amount of general education coursework required in the Associate of Science (AS) degree. At the completion of this program, the student will be able to:** | |
|---|---|
| 01.0 | Demonstrate communication skills. -- The student will be able to: |
| 01.01 | Make professional oral and written presentations. |
| 01.02 | Comprehend and use correct scientific, technical and medical vocabulary. |
| 01.03 | Follow/analyze experimental and laboratory protocols. |
| 01.04 | Prepare identify and apply changes to control procedures. |
| 01.05 | Write or update manuals, SOP's protocols, reports and technical summaries. |
| 01.06 | Keep accurate laboratory records in notebooks or other approved mediums. |
| 01.07 | Perform computerized research and web searches, including, but not limited to Pub Med and identify basic reference resources in biotechnology, including, but not limited to original journal articles. |
| 01.08 | Recognize differences between primary scientific references and secondary information sources. |
| 01.09 | Perform basic applications in word processing, spread sheets, databases, presentations and project management. |
| 01.10 | Develop basic observational skills and related documentation strategies in written and oral form. |
| 01.11 | Ask appropriate scientific questions and recognize what is involved in experimental approaches to the solution of such questions. |
| 02.0 | Demonstrate safety skills. -- The student will be able to: |
| 02.01 | Identify and maintain first aid supplies, eye wash station, emergency shower, co-worker contact, medical information, emergency protection, chemical hygiene plan and evacuation plan. |
| 02.02 | Follow correct safety procedures, guidelines and chemical hygiene plans. |
| 02.03 | Maintain required environmental health, safety, and laboratory training. |

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| | 02.04 | Maintain a safe, uncluttered and clean work area. |
| | 02.05 | Handle, store, and dispose of hazardous materials per appropriate MSDS, other safety guidelines, Worker Protection Standards (WPS), and/or appropriate regulatory guidelines (i.e.. State, federal, local, accreditation, etc.). |
| | 02.06 | Follow standard precautions for biological pathogen, both proper handling and disposal, and define principles of contamination control including standard and transmission based precautions. |
| | 02.07 | Demonstrate procedures for declaring a laboratory emergency and/or responding with appropriate institutional procedures. |
| 03.0 | Demonstrate basic laboratory skills. -- The student will be able to: | |
| | 03.01 | Obtain and read protocol, test procedure, standard operating procedure (SOP), equipment manuals, and proper forms. |
| | 03.02 | Prioritize and perform multiple tasks in a timely manner, based upon priorities communicated by supervisor. |
| | 03.03 | Clean, organize and sterilize materials and laboratory instruments, when required. |
| | 03.04 | Organization of supply inventory; date/label reagents and store promptly upon arrival. |
| | 03.05 | Demonstrate knowledge of asepsis and practice procedures such as hand-washing and isolation. |
| | 03.06 | Use titration/pipetting techniques; measure volume/weights. |
| | 03.07 | Perform basic calculations, unit conversions, graphing of data and statistical analysis. |
| | 03.08 | Calculate and prepare dilutions series. |
| | 03.09 | Prepare solutions and reagents for laboratory use. |
| | 03.10 | Monitor physical properties of reagents, buffers, media, and solutions and determine optimum conditions for use. |
| | 03.11 | Obtain and review appropriate procedures and test forms, prepare for laboratory inspections and respond to the reports. |
| | 03.12 | Collect and set up samples for analysis. |
| | 03.13 | Set up general laboratory tests, including, setup equipment and perform/document tests and results. |
| | 03.14 | Demonstrate knowledge of chemical cross-contamination control between reagents from weighing implements, storage containers and media. |
| | 03.15 | Make estimations and approximations and judge the reasonableness of the result. |
| 04.0 | Demonstrate regulatory compliance. -- The student will be able to: | |
| | 04.01 | Follow guidelines from the appropriate regulatory, accreditation, and/or certification agencies, such as FDA, OSHA, USDA, NIH, NR, DOT, EPA, CDC, ISO/IEC, and NRC. |
| | 04.02 | Comply with principles using current Good Experimental Practices and quality improvement systems (e.g., GXP; GLP, GMP, GCP). |

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| 05.0 | Demonstrate appropriate decision making and problem solving techniques. -- The student will be able to: |
| 05.01 | Identify decision to be made and compare alternatives. |
| 05.02 | Apply decision making skills in the workplace. |
| 05.03 | Make decisions based on accurate facts, data, and agreed-upon goals. |
| 05.04 | Evaluate the decision made. |
| 05.05 | Demonstrate ability to evaluate data and draw conclusions. |
| 05.06 | Diagnose problem, its urgency and causes, and documenting as appropriate. |
| 05.07 | Explore possible solutions to a problem and compare/contrast advantages. |
| 05.08 | Determine appropriate action, implement it and evaluate results. |
| 06.0 | Demonstrate specific laboratory skills. -- The student will be able to: |
| 06.01 | Perform various techniques associated with mammalian and/or insect cell culture, including isolation, maintenance, characterization, and storage of pure cultures. |
| 06.02 | Decontaminate and/or dispose of equipment, glassware, and biologicals. |
| 06.03 | Perform microbiology skills, which may include but are not limited to, plating techniques, isolating and characterizing cell lines, propagating cell lines, and cryogenic techniques. |
| 06.04 | Perform various genetic engineering techniques including but not limited to, transformation, transfection of mammalian, insect, and/or bacterial cells. |
| 06.05 | Perform bioassays. |
| 06.06 | Perform immunological techniques, including but not limited to, enzyme-linked immunosorbent assays, use of monoclonal and polyclonal antibodies, and Western blot techniques. |
| 06.07 | Perform various molecular biology techniques, including but not limited to isolation, quantitation, amplification, electrophoresis and hybridization of both RNA and DNA and construction of recombinant vectors. |
| 06.08 | Demonstrate an understanding of translation assays, DNA libraries and isotopic and non-isotopic labeling techniques. |
| 06.09 | Perform various protein techniques including but not limited to, separation, isolation, characterization, quantitation, monitoring protein stability, gel electrophoresis, concentration (filter and dialyze), and conduct enzyme activity assays. |
| 06.10 | Perform chemical assays including but not limited to measuring turbidity, viscosity, density, quantitative analysis, distillation techniques, titration techniques, employing dyes and indicators, lyophilization and organic chemistry techniques. |
| 06.11 | Collect data, perform assays, and document results of laboratory instruments. |
| 06.12 | Demonstrate knowledge of instrument-based separation, including but not limited to various chromatography techniques and other separation methodologies (e.g.. FACS). |

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| | 06.13 Understand the principles underlying spectroscopic analysis. |
| 07.0 | Demonstrate quality assurance/control. -- The student will be able to: |
| | 07.01 Perform quality tests and document results. |
| | 07.02 Verify test standards and maintain QA records. |
| | 07.03 Archive samples and documents. |
| | 07.04 Inspect and verify integrity of product, procedure, and specimen. |
| | 07.05 Understand the role of statistical trend analysis for the release of final product. |
| | 07.06 Investigate complaints and take corrective action. |
| 08.0 | Maintain facility and equipment. -- The student will be able to: |
| | 08.01 Monitor/record the environmental condition of the facility (e.g., growth chamber, laboratory, greenhouse, storage room, animal room, freezers, or manufacturing site). |
| | 08.02 Notify appropriate personnel if sampling indicates a problem. |
| | 08.03 Clean work area according to SOPs. |
| | 08.04 Label equipment. |
| | 08.05 Check calibration and perform systems diagnostics. |
| | 08.06 Check and maintain equipment, logs and perform preventative maintenance tasks according to schedule and, operate laboratory equipment and instrumentation after familiarization with manuals and/or training. |
| 09.0 | Demonstrate knowledge and proper care/use of test animals/plants. (optional) - The student will be able to: |
| | 09.01 Demonstrate the special requirements of receiving and transporting animals. |
| | 09.02 Demonstrate the role of separate in-process, quarantine and release areas. |
| | 09.03 Follow SOP regarding care, monitoring, and preparation of diets. |
| | 09.04 Follow SOP regarding cleaning, maintenance and sterilization of cages. |
| | 09.05 Monitor animal health and keep health records/logs. |
| | 09.06 Follow USDA/IACUC guidelines for animal care. |
| | 09.07 Follow SOP regarding humane methods for properly restraining and handling animals. |

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| | 09.08 | Collect and process specimens; collect data and document result. |
| | 09.09 | Perform various techniques associated with plant culture including but not limited to, grafting, cloning, and characterization. |
| | 09.10 | Perform maintenance of plants for optimal growth. |
| | 09.11 | Apply agrochemical safety. |
| | 09.12 | Maintain and monitor insect populations. |
| | 09.13 | Maintain plant growth media. |
| | 09.14 | Perform additional agribiotechnology skills such as inoculating plant and/or soil with biological materials, gathering pollen and bundle pollinate, applying plant pesticides safely. |
| 10.0 | Demonstrate skills in bioinformatics. (optional) - The student will be able to: | |
| | 10.01 | Explain methods of DNA sequencing and explain parameters that measure DNA sequence quality. |
| | 10.02 | Identify DNA sequences using Basic Local Alignment Search Tool (BLAST). |
| | 10.03 | Discuss and give examples of single nucleotide polymorphisms (SNPs). |
| | 10.04 | Use appropriate software to design and test polymerase chain reaction (PCR) primer design. |
| | 10.05 | Explain and demonstrate how to use National Center for Biotechnology Information (NCBI) databases. |
| | 10.06 | Perform advanced NCBI queries and align structures. |
| | 10.07 | Use appropriate software to elucidate molecular structures. |
| | 10.08 | Explain the concept of phylogenetic trees and discuss structure function relationships. |

## Additional Information

### Laboratory Activities

Laboratory investigations that include scientific inquiry, research, measurement, problem solving, emerging technologies, tools and equipment, as well as, experimental, quality, and safety procedures are an integral part of this career and technical program/course. Laboratory investigations benefit all students by developing an understanding of the complexity and ambiguity of empirical work, as well as the skills required to manage, operate, calibrate and troubleshoot equipment/tools used to make observations. Students understand measurement error; and have the skills to aggregate, interpret, and present the resulting data. Equipment and supplies should be provided to enhance hands-on experiences for students.

### Special Notes

This program focuses on broad, transferable skills and stresses understanding and demonstration of the following elements of the health care industry; planning, management, finance, technical and production skills, underlying principles of technology, labor issues, community issues and health, safety, and environmental issues.

This program meets the Department of Health's education requirements for HIV/AIDS, Domestic Violence and Prevention of Medical Errors. Although not a requirement for initial licensure, it is a requirement for renewal, therefore the instructor may provide a certificate for renewal purposes to the student verifying these requirements have been met.

### Career and Technical Student Organization (CTSO)

HOSA: Future Health Professionals and Skills USA are the intercurricular career and technical student organizations providing leadership training and reinforcing specific career and technical skills. Career and Technical Student Organizations provide activities for students as an integral part of the instruction offered.

### Accommodations

Federal and state legislation requires the provision of accommodations for students with disabilities to meet individual needs and ensure equal access. Postsecondary students with disabilities must self-identify, present documentation, request accommodations if needed, and develop a plan with their counselor and/or instructors. Accommodations received in postsecondary education may differ from those received in secondary education. Accommodations change the way the student is instructed. Students with disabilities may need accommodations in such areas as instructional methods and materials, assignments and assessments, time demands and schedules, learning environment, assistive technology and special communication systems. Documentation of the accommodations requested and provided should be maintained in a confidential file.

### Certificate Programs

A College Credit Certificate consists of a program of instruction of less than sixty (60) credits of college-level courses, which is part of an AS or AAS degree program and prepares students for entry into employment (Rule 6A-14.030, F.A.C.). This AS degree program includes the following College Credit Certificates:

Biotechnology Specialist (0626120101) – 19 credit hours

Biotechnology Laboratory Specialist (0341010101) – 30 credit hours

Standards for the above certificate programs are contained in separate curriculum frameworks.

**Florida Department of Education**
**Curriculum Framework**

**Program Title:** **Surgical Services**
**Career Cluster:** **Health Science**

| AS | |
|---|---|
| CIP Number | 1351000002 |
| Program Type | College Credit |
| Standard Length | 64 credit hours |
| CTSO | HOSA: Future Health Professionals |
| SOC Codes (all applicable) | 29-2055 Surgical Technologists<br>31-9093 Medical Equipment Preparers<br>31-9099 Healthcare Support Workers, All Other |

## Purpose

This program offers a sequence of courses that provides coherent and rigorous content aligned with challenging academic standards and relevant technical knowledge and skills needed to prepare for further education and careers in the Health Science career cluster; provides technical skill proficiency, and includes competency-based applied learning that contributes to the academic knowledge, higher-order reasoning and problem-solving skills, work attitudes, general employability skills, technical skills, and occupation-specific skills, and knowledge of all aspects of Health Science career cluster.

The purpose of the program is to prepare students for employment in a specialized healthcare field.

The program focuses on a core program of broad transferable skills and stresses understanding and demonstration of the following elements for employment in a specialized health science career field. The program specialization component focuses on advanced technical skills in a chosen health care targeted occupation including the applicable healthcare technology and healthcare applications.

The content includes but is not limited to communication skills, leadership skills, human relations, interpersonal skills, legal and ethical responsibilities, employability skills, anatomy, medical terminology, microbiology and infection control, the health care organization, health, safety and quality, use and care of standard equipment and supplies, CPR/Heartsaver, and basic computer literacy.

**Additional Information** relevant to this Career and Technical Education (CTE) program is provided at the end of this document.

## Program Structure

This program is a planned sequence of instruction consisting of 64 credit hours.

## Standards

After successfully completing this program, the student will be able to perform the following:

01.0 Demonstrate knowledge of the health care delivery system and health occupations.
02.0 Demonstrate the ability to communicate and use interpersonal skills effectively.
03.0 Demonstrate legal and ethical responsibilities.
04.0 Demonstrate an understanding of and apply wellness and disease concepts.
05.0 Recognize and practice safety and security procedures.
06.0 Recognize and respond to emergency situations.
07.0 Recognize and practice infection control procedures.
08.0 Demonstrate an understanding of information technology applications in healthcare.
09.0 Demonstrate employability skills.
10.0 Demonstrate knowledge of blood borne diseases, including HIV/AIDS.
11.0 Apply basic math and science skills.
12.0 Demonstrate language arts knowledge and skills.
13.0 Solve problems using critical thinking skills, creativity and innovation.
14.0 Describe the roles within teams, work units, departments, organizations, inter-organizational systems, and the larger environment.
15.0 Demonstrate leadership and teamwork skills needed to accomplish team goals and objectives.

**In addition, students will complete the objectives in one of the following specialization tracks:**

Standards 16-26 must be completed by students specializing in the Central Sterile Processing Technologist track:

16.0 Describe supply distribution systems and the principles of inventory control.
17.0 Demonstrate the ability to recall and dispose of or reprocess sterile supplies.
18.0 Identify fundamentals of procurement skills.
19.0 Demonstrate the roles and responsibilities of the central supply worker.
20.0 Recognize basic principles of microbiology.
21.0 Interpret and apply medical terminology and anatomical terms as they relate to equipment and supplies issued by central service personnel.
22.0 Describe how central service is involved in controlling infections in hospitals.
23.0 Explain the purpose of occupational safety and health Act.
24.0 Receive, decontaminate, clean, prepare, disinfect and sterilize reusable items.
25.0 Demonstrate the use of sterilization process monitors, including temperature and frequency of appropriate chemical indicators and bacterial spore tests for all sterilizers.
26.0 Demonstrate the ability to identify and select appropriate instrumentation or equipment that meets the needs of the specialty.

Standards 27- 34 must be completed by students specializing in the Endoscopic Technician track:

27.0 Demonstrate central supply technician skills.
28.0 Demonstrate competencies in the core components of the endoscopy technician related to communication and interpersonal Skills.
29.0 Demonstrate an understanding of the basic sciences related to endoscopy.
30.0 Describe and practice safety measures in the endoscopy environment.
31.0 Perform patient care endoscopy procedures related to the endoscopy environment and describe methods for meeting patient's needs.
32.0 Demonstrate knowledge of the basic endoscopy skills necessary to function safely and effectively.
33.0 Demonstrate competencies in the core components of the endoscopy technician related to knowledge and skills.
34.0 Demonstrate competencies in the core components of the endoscopy technician related to legal and ethical responsibilities.

Standards 35- 43 must be completed by students specializing in the Surgical Technologist track:

35.0 Demonstrate central supply skills.
36.0 Use communication and interpersonal skills as related to surgical technology.
37.0 Demonstrate an understanding of the basic sciences related to surgical technology.
38.0 Demonstrate knowledge of pharmacology and math calculation principles related to the surgical environment.
39.0 Describe and practice safety measures in the surgical environment.
40.0 Assist the RN circulator with patient care procedures related to the surgical environment and describe methods for meeting patient's needs.
41.0 Demonstrate knowledge of the skills necessary to function safely and effectively.
42.0 Demonstrate knowledge of and assist with surgical procedures.
43.0 Demonstrate an understanding of legal and ethical responsibilities specific to surgical technology.

**Florida Department of Education**
**Student Performance Standards**

**Program Title:** **Surgical Services**
**CIP Number:** **1351000002**
**Program Length:** **64 Credit Hours**
**SOC Code(s):** **29-2055, 31-9093, 31-9099**

Standards 1-11 are referred to as the **Health Science Core** and are required standards in this program. Secondary and Postsecondary students completing the health science core will not have to repeat the core in any other health science program in which it is a part. When the recommended sequence is followed, the structure allows students to complete at specified points for employment or remain for advanced training or cross-training.

To ensure consistency whenever these courses are offered, the health science core standards (1-11) have been placed in a separate document.

| **Refer to Rule 6A-14.030 (4) F.A.C., for the minimum amount of general education coursework required in the Associate of Science (AS) degree. At the completion of this program, the student will be able to:** | |
|---|---|
| 12.0 | Demonstrate language arts knowledge and skills. – The students will be able to: |
| | 12.01 Locate, comprehend and evaluate key elements of oral and written information. |
| | 12.02 Draft, revise, and edit written documents using correct grammar, punctuation and vocabulary. |
| | 12.03 Present information formally and informally for specific purposes and audiences. |
| 13.0 | Solve problems using critical thinking skills, creativity and innovation. – The students will be able to: |
| | 13.01 Employ critical thinking skills independently and in teams to solve problems and make decisions. |
| | 13.02 Employ critical thinking and interpersonal skills to resolve conflicts. |
| | 13.03 Identify and document workplace performance goals and monitor progress toward those goals. |
| | 13.04 Conduct technical research to gather information necessary for decision-making. |
| 14.0 | Describe the roles within teams, work units, departments, organizations, inter-organizational systems, and the larger environment. – The students will be able to: |
| | 14.01 Describe the nature and types of business organizations. |
| | 14.02 Explain the effect of key organizational systems on performance and quality. |

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| | 14.03 List and describe quality control systems and/or practices common to the workplace. |
| | 14.04 Explain the impact of the global economy on business organizations. |
| 15.0 | Demonstrate leadership and teamwork skills needed to accomplish team goals and objectives. – The students will be able to: |
| | 15.01 Employ leadership skills to accomplish organizational goals and objectives. |
| | 15.02 Establish and maintain effective working relationships with others, in order to accomplish objectives and tasks. |
| | 15.03 Conduct and participate in meetings to accomplish work tasks. |
| | 15.04 Employ mentoring skills to inspire and teach others. |
| | 15.05 Analyze attributes and attitudes of an effective leader. |
| | 15.06 Recognize factors and situations that may lead to conflict. |
| | 15.07 Demonstrate effective techniques for managing team conflict. |
| **The following standards 16-26 are necessary for those completing the Central Sterile Processing Technologist Specialization Track:** | |
| 16.0 | Describe supply distribution systems and the principles of inventory control. -- The student will be able to: |
| | 16.01 Define the benefits of inventory control. |
| | 16.02 Describe the methods of inventory control. |
| | 16.03 Compare the advantages and disadvantages of each distribution methods. |
| | 16.04 Process a requisition marked "stat" - locate article, price, etc. |
| | 16.05 Demonstrate the process of stock rotation. |
| | 16.06 Identify the uses of sterility maintenance covers. |
| | 16.07 Describe the processes for loaner instrumentation and equipment. |
| | 16.08 Describe the process of product evaluation. |
| | 16.09 Describe the procedures for tracking the usage of medical/surgical supplies, patient care equipment and specialty carts. |
| | 16.10 Describe the procedures for documenting supply and equipment charges. |
| | 16.11 Demonstrate the methods of case cart preparation and the utilization of preference cards. |

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| 17.0 | Demonstrate the ability to recall and dispose of or reprocess sterile supplies. -- The student will be able to: |
| 17.01 | Explain the factors that affect how long a package can be considered safe for use. |
| 17.02 | Explain the differences between event related, date related, and manufacturer recommendations. |
| 17.03 | State the methods of determining expiration dates. |
| 17.04 | List the steps in reprocessing outdated hospital packaged items. |
| 17.05 | List conditions that would make a product unsafe for use. |
| 17.06 | Describe the use of tamper evident seals. |
| 17.07 | Describe the methods of reprocessing. |
| 17.08 | Identify standards and facility policies on reprocessing of single use items. |
| 17.09 | Describe the process of recall for medical/surgical supplies. |
| 18.0 | Identify fundamentals of procurement skills. -- The student will be able to: |
| 18.01 | Describe procurement system. |
| 18.02 | Communicate with other hospitals, facilities, or company representatives for procurement of supplies and equipment. |
| 18.03 | Describe several different methods of procurement of supplies. |
| 18.04 | Describe basics of receiving items, including documentation of receiving and release to other facilities. |
| 19.0 | Demonstrate the roles and responsibilities of the central supply worker. -- The student will be able to: |
| 19.01 | Describes professional standards related to personal hygiene and dress codes. |
| 19.02 | Identifies relevant federal, state, and local guidelines, standards and regulations. |
| 19.03 | Describes the function and workflow of the sterile processing department. |
| 19.04 | Apply ergonomic considerations and appropriate body mechanics for lifting, turning, pulling, pushing, and reaching. |
| 19.05 | Apply policies and procedures related to sterile processing functions (safety, infection control, disaster control, disaster, MSDS, incident reports, etc.). |
| 19.06 | Describes importance of following device, equipment, instrument or supply manufacturer's instructions for processing, operation, and troubleshooting. |
| 20.0 | Recognize basic principles of microbiology. -- The student will be able to: |

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| | 20.01 Describe terms related to microbiology and the control of microorganisms in central sterile processing departments. |
| | 20.02 Identify the main categories of microorganisms. |
| | 20.03 Describe the life functions of microorganisms. |
| | 20.04 Describe conditions affecting the growth of bacteria. |
| | 20.05 Describe special methods used to destroy harmful microorganisms on fomites in the environment. |
| | 20.06 List the helpful microorganisms. |
| | 20.07 Describe how the body controls the growth of pathogenic microorganisms. |
| | 20.08 Identify pathogenic microorganisms commonly found in central service departments. |
| 21.0 | Interpret and apply medical terminology and anatomical terms as they relate to equipment and supplies issued by central service personnel. -- The student will be able to: |
| | 21.01 Identify word elements for medical terms. |
| | 21.02 Relate anatomical concepts to orthopedic devices and other supplies and equipment issued by the CS Department. |
| 22.0 | Describe how central service is involved in controlling infections in hospitals. -- The student will be able to: |
| | 22.01 Describe nosocomial infections. |
| | 22.02 Describe the types of isolation. |
| | 22.03 Describe the organization and functions of CS. |
| | 22.04 Describe the CS responsibilities for infection control and traffic patterns when in the operating room and other departments. |
| | 22.05 Identify proper storage and transportation standards for supplies in the facility (receivables, sterile, clean, or contaminated). |
| | 22.06 Describe the organizational patterns of health care facilities. |
| 23.0 | Explain the purpose of occupational safety and health act. -- The student will be able to: |
| | 23.01 Describe how employees are protected under OSHA. |
| | 23.02 Describe potential workplace hazards in CS. (wet floors, chemicals, fumes, gases, steam, electrical outlets, body fluids, microorganisms, sharps, and medical wastes). |
| | 23.03 Describe the role preventive maintenance plays in patient and personnel safety in the hospital. |
| | 23.04 Explain the purpose of Florida's "Right to Know" law and its provisions. |

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| | 23.05 Describe the protocol for personal injury including the completion of incident/occupancy reports and follow up. |
| | 23.06 Implement appropriate regulatory and accreditation agency patient safety guidelines. |
| 24.0 | Receive, decontaminate, clean, prepare, disinfect and sterilize reusable items. -- The student will be able to: |
| | 24.01 Describe the importance of thorough cleaning to the overall objectives of making items safe for patient use. |
| | 24.02 Explain the importance of following manufacturers' instructions in cleaning each item for reprocessing. |
| | 24.03 Describe the levels of disinfection, the cleaning process and methods of disinfection for the environment, instruments, syringes, needles, rubber goods and equipment. |
| | 24.04 Describe the mechanisms of action for each disinfection method including ultrasonic machines and washer/sterilizers. |
| | 24.05 Describe the strategies for managing difficult to control microorganisms that require isolation techniques and specialized decontamination methods including Creutzfeldt-Jakob Disease (CJD). |
| | 24.06 Describe the factors affecting decontamination (water temperature, loading procedures, water impurities, opening and disassembling). |
| | 24.07 Distinguish correct reprocessing policies related to single use, limited use, and reusable items. |
| | 24.08 Describe decontamination methods for drill systems and batteries. |
| | 24.09 Describe the function of case cart washers, and alternative methods of cleaning. |
| | 24.10 Describe the need for testing and monitoring all decontamination machines for proper function and cleaning agents. |
| | 24.11 Explain the importance of using correct chemicals for cleaning in regards to water quality, PH, filters, softeners, enzymes, lubricants. |
| | 24.12 Describe the types, characteristics, and uses of chemicals, solutions, and gases utilized for decontamination. (Detergents, disinfectants, enzymatics, germicides). |
| | 24.13 Demonstrate the decontamination process for instruments, syringes, needles, rubber goods and equipment. |
| | 24.14 Demonstrate flexible endoscopic leak testing, decontamination, and reprocessing. |
| | 24.15 Demonstrates decontamination and proper handling of rigid scopes. |
| | 24.16 Describes the methods of high level disinfection including manual and automated endoscopic reprocessor (AER). |
| | 24.17 Describe the types of sterilizers and methods of sterilization. |
| | 24.18 Describe the primary objectives in selecting the correct packaging materials for both the individual item and the sterilization method to be used. |
| | 24.19 Describe the principles of packaging. |
| | 24.20 Describe the characteristics of packaging materials in relationship to sterilization methods. |

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| | 24.21 Describe the principles of linen pack and tray construction/assembly. |
| | 24.22 Describe the recommended labeling methodologies. |
| | 24.23 Identify basic surgical procedure trays, instruments, supplies, and accessories. |
| | 24.24 Explain the principles utilized when loading different kinds of wrapped packs or packages into a sterilizer to be assured of sterilant penetration. |
| | 24.25 Recognize equipment malfunction and list corrective actions. |
| | 24.26 Demonstrate the wrapping of procedures trays, instruments and other supplies. |
| | 24.27 Demonstrate loading of different kinds of wrapped packs or packages into a sterilizer to be assured of sterilant penetration. |
| | 24.28 Describe how sterile supplies should be handled. |
| | 24.29 Demonstrate handling, transportation and storage of clean, sterile and nonsterile supplies and equipment. |
| 25.0 | Demonstrate the use of sterilization process monitors, including temperature and frequency of appropriate chemical indicators and bacterial spore tests for all sterilizers. -- The student will be able to: |
| | 25.01 Describe the types of sterilization, sterilization cycles, and parameters for each. |
| | 25.02 Describe the importance of the manufacturer's recommendations for the safe operation of each type of sterilizer. |
| | 25.03 Describe the methods of sterilization monitoring. |
| | 25.04 Demonstrate the process of preparing and documenting the sterilizer load contents for each sterilizer correctly according to the manufacturer's recommendations. |
| | 25.05 Demonstrate the operation, testing, and monitoring of sterilizers. |
| | 25.06 Demonstrate the ability to interpret and document monitoring devices, printouts, and charts accurately for each sterilization system utilized. |
| | 25.07 Identify the standards for, and facility policy regarding, frequency of monitoring for all sterilizers. |
| 26.0 | Demonstrate the ability to identify and select appropriate instrumentation or equipment that meets the needs of the specialty. -- The student will be able to: |
| | 26.01 Describe instrument terminology and identify the anatomy of surgical instruments (jaws, shanks, box locks, rings, etc.). |
| | 26.02 Describe the types and functions of instruments. |
| | 26.03 Describe the types of instrument construction. |
| | 26.04 Demonstrate appropriate techniques for inspection and testing of instruments. |
| | 26.05 Identify instrumentation and equipment by name and usage. |

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| 26.06 | Correctly label instrumentation and equipment. |
| 26.07 | Demonstrate the methods of instrument identification, marking, and tracking of use. |
| 26.08 | Demonstrate the assembly of various instrument sets and specialty equipment. |
| 26.09 | Demonstrate the process regarding the manufacturer's recommendations for instrument and equipment care including handling, operation, maintenance, and troubleshooting. |
| **The following standards 27-34 are necessary for those completing the Endoscopic Technician Specialization track:** | |
| 27.0 | Demonstrate central supply technician skills. -- The student will be able to: |
| 27.01 | Apply the principles of medical and sterile asepsis to the processing and use of instruments, equipment and supplies. |
| 27.02 | Apply infection control techniques following Center for Disease Control (CDC) guidelines. |
| 27.03 | Inspect equipment and supplies for condition and quantity. |
| 27.04 | Identify principles and demonstrate techniques of disinfection and sterilization. |
| 27.05 | Decontaminate instruments, equipment and environment. |
| 27.06 | Identify/correct and/or report package integrity. |
| 27.07 | Replenish supplies and equipment. |
| 27.08 | Identify instruments, equipment and supplies for any procedure. |
| 27.09 | Demonstrate the ability to label, package goods and supplies as required. |
| 27.10 | Demonstrate various storage, case cart preparation and supply distribution methods for instruments, equipment and supplies. |
| 27.11 | Describe the types and use of inventory control systems. |
| 28.0 | Demonstrate competencies in the core components of the endoscopy technician related to communication and interpersonal skills. – The student will be able to: |
| 28.01 | Use various forms of communication in the role of Endoscopy Technician to communicate relevant, accurate, and complete information in a concise and clear manner. |
| 28.02 | Collaborate with the patient, physician, and other members of the Healthcare team to assess, plan, implement, and evaluate the patient's endoscopy care to promote positive outcomes. |
| 28.03 | Demonstrate proper use of communication technology including but not limited to intercoms, computers, written documentation logs and paging systems. |
| 28.04 | Demonstrate patient interviewing techniques. |

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| | 28.05 Facilitate teamwork as a patient advocate and assistant to the physician. |
| | 28.06 Demonstrate competency regarding reporting and documentation responsibilities. |
| 29.0 | Demonstrate an understanding of the basic sciences related to endoscopy. -- The student will be able to: |
| | 29.01 Apply knowledge of the microbial environment to the care of the patient. |
| | 29.02 Relate anatomy, physiology and pathophysiology, to endoscopy procedures. |
| | 29.03 Apply the principles of medical and surgical asepsis to endoscopy procedures performed. |
| | 29.04 Discuss electricity, computers, and robotics as they relate to endoscopy procedures performed. |
| | 29.05 Apply knowledge of the pharmacologic agents used in the treatment of the endoscopy patient. |
| 30.0 | Describe and practice safety measures in the endoscopy environment. -- The student will be able to: |
| | 30.01 Inspect emergency equipment and supplies for condition and quantity. |
| | 30.02 Implement appropriate Joint Commission patient safety goals. |
| | 30.03 Apply knowledge of endoscopy hazards to safe patient care. |
| 31.0 | Perform patient care endoscopy procedures related to the endoscopy environment and describe methods for meeting patient's needs. -- The student will be able to: |
| | 31.01 Perform safe patient transfer/transportation techniques used in the endoscopy unit setting. |
| | 31.02 Apply the principles of safe positioning and restraining patient for endoscopy procedures. |
| | 31.03 Apply the principles of safe usage of the electrosurgical unit, laser, endoscopes, and other equipment utilized. |
| | 31.04 Identify the roles of the members of the endoscopy team during each phase of endoscopy procedures. |
| | 31.05 Assist the registered nurse and physician with the care of the endoscopy patient. |
| | 31.06 Apply the principles of patient assessment and preparation. |
| | 31.07 Describe the perioperative techniques, methods and management of anesthesia related to the type of endoscopy procedure. |
| | 31.08 Apply knowledge of endoscopy assisting techniques such as splinting and assisting with specimens. |
| 32.0 | Demonstrate knowledge of the basic endoscopy skills necessary to function safely and effectively. -- The student will be able to: |
| | 32.01 Demonstrate an understanding of the gastrointestinal system, respiratory system and relevant disease processes. |

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| | 32.02 | Select instruments, equipment and supplies for endoscopy procedures using physician preference/procedure cards. |
| | 32.03 | Measure and pour sterile solutions and medications. |
| | 32.04 | Differentiates appropriately the use of medical aseptic and/or sterile technique regarding the donning of sterile gloves and the use of instruments, supplies and equipment for the scenario given. |
| | 32.05 | Describes the principles of positioning, draping patient, passing instruments, monitoring field and manipulation of scope. |
| | 32.06 | Demonstrates the preparation and/or updates procedure cards to meet a specific surgeon's preferences correctly. |
| 33.0 | Demonstrate competencies in the core components of the endoscopy technician related to knowledge and skills. -- The student will be able to: | |
| | 33.01 | Prioritize care or actions to be taken in a given circumstance to expedite the procedure or emergency situation. |
| | 33.02 | Describe preoperative diagnosis, common complications, and operative pathophysiology related to the specific endoscopy procedures performed. |
| | 33.03 | Describe and apply common patient diagnostic and monitoring devices as applicable to the endoscopy specialty. |
| | 33.04 | Assist physician and/or healthcare team with preoperative preparation of the patient to facilitate proper patient care including but not limited to positioning, draping, and setup preparation. |
| | 33.05 | Identify gross anatomical structures correctly during endoscopy procedures. |
| | 33.06 | Demonstrate appropriate tissue handling techniques including the care of the endoscopy specimens. |
| | 33.07 | Describe the appropriate sequence for common endoscopy procedures. |
| | 33.08 | Utilize appropriate techniques to assist with facilitating visualization. |
| | 33.09 | Demonstrate appropriate safe endoscopy techniques when the case involves either thermal, radiological, laparoscopic, environmental, or other known endoscopy hazard. |
| | 33.10 | Select appropriate instruments, equipment and supplies for the procedure. |
| | 33.11 | Demonstrate competence with technology including the use of instruments, equipment and supplies for the endoscopy procedure. |
| | 33.12 | Assist the registered nurse and physician with postoperative care of the patient to facilitate proper patient care. |
| | 33.13 | Demonstrate appropriate response to emergency situations including respiratory/cardiac arrest situations, sudden hypoxia, hemorrhage, shock, endoscopy misadventures, contamination, perforation of viscous or cavity, critical equipment failure, and injury. |
| | 33.14 | Facilitate the continuity of care within the healthcare setting to access available resources and services. |
| 34.0 | Demonstrate competencies in the core components of the endoscopy technician related to legal and ethical responsibilities. -- The student will be able to: | |
| | 34.01 | State methods, standards and aids that assist an Endoscopy Technician with interpreting and following legal responsibilities. |

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| | 34.02 Explain the job requirements. |
| | 34.03 Demonstrate an understanding of the legal, ethical, moral, and professional responsibilities of working as an endoscopy technician, and the professional skills necessary to fulfill the role. |
| | 34.04 Provide health care within the ethical/legal framework of the job description including role responsibilities and limitations. |
| **The following standards 35-43 are necessary for those completing the Surgical Technologist Specialization Track:** | |
| 35.0 | Demonstrate central supply skills. – The student will be able to: |
| | 35.01 Apply the principles of medical/surgical asepsis including attire, environmental control and traffic patterns to control and manage dirty, clean and sterile areas of the operating room and central supply. |
| | 35.02 Apply infection control techniques following Center for Disease Control (CDC) guidelines. |
| | 35.03 Inspect and send out for repair instruments, equipment and supplies regarding condition and quantity. |
| | 35.04 Describe the methods of disinfection and sterilization. |
| | 35.05 Demonstrate the handling, inspection and notification process regarding package integrity. |
| | 35.06 Demonstrate correctly decontamination techniques for instruments, equipment, and the environment used for surgical procedures. |
| | 35.07 Describe clean and sterile transportation, restocking, and storage principles for instruments, supplies and equipment. |
| | 35.08 Identify instruments, supplies and equipment for any surgical procedure. |
| | 35.09 Describe various supply distribution and inventory control methods. |
| | 35.10 Demonstrate ability to prepare and label items for high level disinfection and sterilization correctly. |
| | 35.11 Demonstrate the techniques of high level disinfection and sterilization for immediate use items. |
| | 35.12 Demonstrate case cart preparation and management. |
| 36.0 | Use communication and interpersonal skills as related to surgical technology. – The student will be able to: |
| | 36.01 Describe various forms of communication in the role of surgical technologist. |
| | 36.02 Analyze and select the appropriate behavioral response unique to the patient's needs. |
| | 36.03 Describe the concepts of conflict resolution, assertive behavior and the principles of teamwork in the surgical environment. |
| 37.0 | Demonstrate an understanding of the basic sciences related to surgical technology. – The student will be able to: |
| | 37.01 Describe the concepts of microbiology and relate key principles to the surgical environment. |

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| | 37.02 | Compare and contrast the structure and characteristics of microorganisms found in the surgical environment. |
| | 37.03 | Relate medical terminology, medical abbreviations, and anatomy and physiology to surgical specialties and specific procedures. |
| | 37.04 | Analyze patient defense mechanisms, the chain of infection and the infectious process as related to surgical practice. |
| | 37.05 | Demonstrate infection and disease transmission control techniques following the Center for Disease Control (CDC) and Occupational Safety and Health Administration (OSHA) guidelines for surgery. |
| | 37.06 | Correlate wound classifications and wound healing principles with wound management guidelines. |
| | 37.07 | Discuss the principles of information technology, electricity and robotics as they relate to surgery. |
| 38.0 | Demonstrate knowledge of pharmacology and math calculation principles related to the surgical environment. -- The student will be able to: | |
| | 38.01 | Describe the roles of the anesthesia provider and circulating nurse. |
| | 38.02 | Analyze the administration of anesthesia including the methods, agents, and techniques. |
| | 38.03 | Describe the preoperative examination and preparation process for both surgery and anesthesia. |
| | 38.04 | Describe potential anesthesia and operative complications and interventions for each. |
| | 38.05 | Define the terminology and describe the basic concepts of pharmacology including pharmacokinetics and pharmacodynamics. |
| | 38.06 | Identify the classifications, actions, effects and precautions for common drugs used at the sterile field and within the surgical environment. |
| | 38.07 | Demonstrate the application of the six rights of medication administration. |
| | 38.08 | Analyze and assemble correctly all medication supplies, for each drug to be used on the sterile field. |
| | 38.09 | Demonstrate the appropriate methods of transferring and accepting medications onto the sterile field. |
| | 38.10 | Prepare, manage and label sterile solutions and medications accurately within the sterile field. |
| | 38.11 | Correctly calculate common medication conversions and dosages. |
| | 38.12 | Demonstrate preparation and passing of medication mixtures using ratio and proportions correctly. |
| | 38.13 | Maintains an accurate account of the amount of each medication and/or solution used at the field and notifies circulator as appropriate to the situation to ensure accurate documentation. |
| 39.0 | Describe and practice safety measures in the surgical environment. – The student will be able to: | |
| | 39.01 | Describe the role, job duties and responsibilities of the surgical technologist in the healthcare setting. |
| | 39.02 | Inspect emergency equipment and supplies for condition and quantity. |

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| | 39.03 | Demonstrate appropriate safety measures to prevent operating room fires and electrical shock from equipment. |
| | 39.04 | Describe appropriate safety measures for laser and electrosurgical unit usage in surgery. |
| | 39.05 | Implement appropriate regulatory and accreditation agency patient safety guidelines. |
| | 39.06 | Describe the role of the surgical technologist in a disaster situation. |
| | 39.07 | Describe the role of the surgical technologist in an emergency patient situation. |
| | 39.08 | Prepare the operative site. |
| | 39.09 | Perform steps for Foley catheter insertion and connecting to drainage correctly. |
| 40.0 | Assist the RN circulator with patient care procedures related to the surgical environment and describe methods for meeting patient's needs. – The student will be able to: | |
| | 40.01 | Demonstrate patient transfer/transportation techniques used in the operating room (OR). |
| | 40.02 | Describe appropriate review of the chart including preoperative identification, preoperative checklists, diagnostic tests, lab values and surgical consent. |
| | 40.03 | Monitor OR traffic, placement of sterile tables and ensure steps are taken to reduce microbial fallout. |
| | 40.04 | Assist with positioning and apply safety devices correctly to the patient for surgery. |
| | 40.05 | Describe the function, assembly, application and care of critical specialty equipment utilized. |
| | 40.06 | Correlate anesthesia monitoring devices, patient complications and interventions with maintaining patient homeostasis. |
| | 40.07 | Demonstrate correctly the connection and operation of essential equipment for the surgical procedure. |
| | 40.08 | Demonstrate applicable wound management principles including the placement and security of catheters, wound drainage systems, sterile dressings and splint applications. |
| | 40.09 | Discuss relevant and unique factors regarding postoperative care specific to the procedure. |
| 41.0 | Demonstrate knowledge of the skills necessary to function safely and effectively. – The student will be able to: | |
| | 41.01 | Demonstrate the use of various forms of communication in the role of surgical technologist. |
| | 41.02 | Maintain current documentation in the clinical setting relative to the surgical technologist role. |
| | 41.03 | Demonstrate proper use of the communication systems. |
| | 41.04 | Select and verify required instrumentation, equipment and supplies, including any implants needed for specific surgical procedures using core knowledge and the applicable surgeon preference/procedure cards. |
| | 41.05 | Demonstrate the surgical scrub and donning of sterile gown and gloves. |

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| | 41.06 | Demonstrate application of aseptic and sterile technique principles including the appropriate corrective action for common breaks in sterile technique. |
| | 41.07 | Demonstrate proper draping of tables, solution stands, mayo stand, patient and equipment. |
| | 41.08 | Demonstrate the set up and management of the sterile mayo stand and/or instrument table(s). |
| | 41.09 | Select suture and needle appropriately for each scenario given based on function and type. |
| | 41.10 | Prepare, pass and monitor sharps, sutures, ligatures, ties and staples. |
| | 41.11 | Demonstrate assisted gowning/gloving for surgeon and other sterile team members. |
| | 41.12 | Participate in the surgical time out to prevent wrong site surgery and delays in the surgical procedure. |
| | 41.13 | Prepare and pass instruments, equipment, tissue replacement materials, implants and supplies efficiently. |
| | 41.14 | Monitor the surgical site regarding counted items, stage of surgery, tissue appearance and patient's body fluids. |
| | 41.15 | Demonstrate correctly the initiation and completion of counts regarding sponges, sharps, instruments and miscellaneous items used within the patient's wound to prevent foreign body retention. |
| | 41.16 | Demonstrate ability to maintain retraction, cut suture, provide retraction and hold instruments in the second assistant role as directed by the surgeon. |
| | 41.17 | Demonstrate ability to prepare, validate, handle and preserve specimen on and off the sterile field accurately for laboratory analysis. |
| 42.0 | Demonstrate knowledge of and assist with surgical procedures. – The student will be able to: | |
| | 42.01 | Correlate the preoperative diagnosis, diagnostic interventions, common complications, and operative pathophysiology relative to specific surgical procedures. |
| | 42.02 | Describe the types of incisions, methods of wound closure, and mechanisms of wound management. |
| | 42.03 | Describe the usual sequence of a common surgical procedure (i.e. incision into the anatomy, dissection of the anatomy, operative steps of the procedure, and closing of the anatomy). |
| | 42.04 | Select the appropriate instrument, equipment, or supply for each step of the procedure. |
| | 42.05 | Demonstrate effective perioperative case management ensuring cost control and time/motion economy methods are utilized to maximize the efficiency of the OR team. |
| 43.0 | Demonstrate an understanding of legal and ethical responsibilities specific to surgical technology. – The student will be able to: | |
| | 43.01 | State methods, standards and aids that assist a surgical technologist with interpreting and following legal responsibilities. |
| | 43.02 | Provide health care within the ethical/legal framework of the surgical technologist's role. |
| | 43.03 | Describe the principles of problem solving and confidentiality in ethical decision making and risk management. |

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| 43.04 Describe the key qualities related to the development of a surgical conscience. |

## Additional Information

### Laboratory Activities

Laboratory investigations that include scientific inquiry, research, measurement, problem solving, emerging technologies, tools and equipment, as well as, experimental, quality, and safety procedures are an integral part of this career and technical program/course. Laboratory investigations benefit all students by developing an understanding of the complexity and ambiguity of empirical work, as well as the skills required to manage, operate, calibrate and troubleshoot equipment/tools used to make observations. Students understand measurement error; and have the skills to aggregate, interpret, and present the resulting data. Equipment and supplies should be provided to enhance hands-on experiences for students.

The Human Patient Simulator (HPS) or other accepted simulation scenarios may be used for a limited number of clinical hours. A low teacher-student ratio in the lab and clinical area is strongly recommended. The recommended maximum ratio is 1:8.

### Special Notes

### Specialization Track Descriptions:

**Specialization Track:** **Central Sterile Processing Technologist**
**Specialization Length:** **30 credit hours**

**Specialization Concepts and Content:** The purpose of this track is to prepare students for initial employment with an occupational title as a Central Sterile Processing Technician in various specialized areas, or to provide supplemental training for persons previously or currently employed in these occupations.

**Specialization Track:** **Endoscopic Technician**
**Specialization Length:** **24 credit hours**

**Specialization Concepts and Content:** The purpose of this track is to prepare students for initial employment with an occupational title as Endoscopic or Gastrointestinal Lab (GI Lab) Technician in various specialized areas, or to provide supplemental training for persons previously or currently employed in these occupations.

**Specialization Track:** **Surgical Technologist**
**Specialization Length:** **49 credit hours**

**Specialization Concepts and Content:** The purpose of this track is to prepare students for initial employment with an occupational title as a Surgical Technologist in various specialized areas, or to provide supplemental training for persons previously or currently employed in these occupations.

This program meets the Department of Health's education requirements for HIV/AIDS, Domestic Violence and Prevention of Medical Errors. Although not a requirement for initial licensure, it is a requirement for renewal, therefore the instructor may provide a certificate for renewal purposes to the student verifying these requirements have been met.

If students in this program are seeking a licensure, certificate or registration through the Department of Health, please refer to 456.0635 F.S. for more information on disqualification for a license, certificate, or registration through the Department of Health.

The Specialization Core Curriculum should be taught by qualified staff as outlined in the most recent approved Commission on Accreditation on Allied Health Education programs (CAAHEP) or other national recognized accreditation standards and guidelines for that specialization.

Entering students who have successfully completed the program 0317.021100, Surgical Technology or currently Nationally Certified as a CST (Certified Surgical Technologist), should be given appropriate advanced standing.

After successful completion of an accredited program, students are eligible to take the national certification examination as applicable to the specialization.

The standard length for the AS degree program is 64 college credits.

Outcomes 01-11 are referred to as the Health Careers Core and do not have to be completed if the student has previously completed the Core in another health science program. The CORE should be taken first or concurrently with the first course in the program. Following the successful completion of the core, the student is eligible to take the National Health Care Foundation Skill Standards Assessment with instructor approval and the completion of a portfolio.

**Career and Technical Student Organization (CTSO)**

HOSA: Future Health Professionals is the intercurricular career and technical student organization providing leadership training and reinforcing specific career and technical skills. Career and Technical Student Organizations provide activities for students as an integral part of the instruction offered.

**Accommodations**

Federal and state legislation requires the provision of accommodations for students with disabilities to meet individual needs and ensure equal access. Postsecondary students with disabilities must self-identify, present documentation, request accommodations if needed, and develop a plan with their counselor and/or instructors. Accommodations received in postsecondary education may differ from those received in secondary education. Accommodations change the way the student is instructed. Students with disabilities may need accommodations in such areas as instructional methods and materials, assignments and assessments, time demands and schedules, learning environment, assistive technology and special communication systems. Documentation of the accommodations requested and provided should be maintained in a confidential file.

**Certificate Programs**

A College Credit Certificate consists of a program of instruction of less than sixty (60) credits of college-level courses, which is part of an AS or AAS degree program and prepares students for entry into employment (Rule 6A-14.030, F.A.C.). This AS degree program includes the following College Credit Certificates:

Central Sterile Processing Technologist, 0351090903– 30 Credits
Endoscopy Technician, 0351099902 – 24 Credits
Surgical Technologist, 0351090904 – 49 Credits

Standards for the above certificate programs are contained in separate curriculum frameworks.

**Florida Department of Education**
**Curriculum Framework**

**Program Title:** **Dental Assisting Technology and Management**
**Career Cluster:** **Health Science**

| AS | |
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| CIP Number | 1351060104 |
| Program Type | College Credit |
| Standard Length | 70 credit hours |
| CTSO | HOSA: Future Health Professionals |
| SOC Codes (all applicable) | 31-9091 Dental Assistants |

## Purpose

This program offers a sequence of courses that provides coherent and rigorous content aligned with challenging academic standards and relevant technical knowledge and skills needed to prepare for further education and careers in the Health Science career cluster; provides technical skill proficiency, and includes competency-based applied learning that contributes to the academic knowledge, higher-order reasoning and problem-solving skills, work attitudes, general employability skills, technical skills, and occupation-specific skills, and knowledge of all aspects of Health Science career cluster.

The program is designed to prepare students for employment as dental assistants 66002 (SOC code 31-9091), dental auxiliaries as practice managers, educational managers for dental companies, and dental assisting educators. The program will prepare students for the Dental Assisting National Board Examination as well as state requirements. The program should meet the requirements of the Commission on Dental Accreditation of the American Dental Association and standards recommended by the Florida Board of Dentistry.

The content includes but is not limited to dental and general anatomy, dental terminology, nutrition, microbiology, dental pharmacology and anesthesia, chairside assisting, expanded functions, dental office emergencies/CPR, dental radiography, maintenance and asepsis of dental operatory and instruments, dental instrument and equipment utilization, dental specialty procedures, basic dental laboratory procedures, dental materials, preventive dentistry, employability skills, leadership and human relations skills, ethics and jurisprudence, dental office and patient management, general studies, physical sciences, business principles, educational leadership, and communication skills.

**Additional Information** relevant to this Career and Technical Education (CTE) program is provided at the end of this document.

## Program Structure

This program is a planned sequence of instruction consisting of 70 credit hours.

## Standards

After successfully completing this program, the student will be able to perform the following:

01.0 Demonstrate knowledge of the dental health care delivery system and dental health occupations.
02.0 Use oral and written communication skills in creating, expressing and interpreting information and ideas.
03.0 Describe the legal and ethical responsibilities of the dental health care worker.
04.0 Demonstrate an understanding of general anatomy and physiology and apply wellness and disease concepts.
05.0 Demonstrate the importance of health, safety, and environmental management systems in dental organizations and their importance to organizational performance and regulatory compliance.
06.0 Recognize and respond to emergency situations.
07.0 Use information technology tools.
08.0 Explain the importance of employability skills.
09.0 Demonstrate knowledge of blood borne diseases, including HIV/AIDS.
10.0 Demonstrate leadership and teamwork skills needed to accomplish team goals and objectives.
11.0 Use dental terminology.
12.0 Identify structures and explain functions and pathologies of dental and general head and neck anatomy.
13.0 Identify principles of microbiology and disease prevention and perform infection control procedures.
14.0 Identify, describe, maintain and utilize dental instruments and equipment.
15.0 Record patient assessment and treatment data.
16.0 Identify the functions of pharmacology and anesthesia as they relate to dentistry.
17.0 Identify and perform dental and carpal radiographic procedures.
18.0 Identify properties and uses, and manipulate dental materials.
19.0 Perform chairside assisting for general dentistry and specialty procedures.
20.0 Describe principles and perform techniques of preventive dentistry.
21.0 Perform general dental business office procedures.
22.0 Demonstrate professionalism as a dental team member in the clinical setting.

**The following Standards are Specialty Options:**

23.0 Demonstrate skills for educational methodologies and strategies.
24.0 Demonstrate skills necessary for marketing, sales, and educational programs for dental products.
25.0 Demonstrate knowledge of dental practice set up and management procedures.

**Florida Department of Education**
**Student Performance Standards**

**Program Title:** **Dental Assisting Technology and Management**
**CIP Number:** **1351060104**
**Program Length:** **70 credit hours**
**SOC Code(s):** **31-9091**

| **Refer to Rule 6A-14.030 (4) F.A.C., for the minimum amount of general education coursework required in the Associate of Science (AS) degree. At the completion of this program, the student will be able to:** | |
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| 01.0 | Demonstrate knowledge of the dental health care delivery system and dental health occupations. – The student will be able to: |
| 01.01 | Identify the basic components of the dental health care delivery system including public, private, government and non-profit. |
| 01.02 | Describe the various types of dental health care providers and the range of services available. |
| 01.03 | Describe the composition and functions of a dental health care team. |
| 01.04 | Identify the general roles and responsibilities of the individual members of the dental health care team. |
| 01.05 | Identify the roles and responsibilities of the consumer within the dental healthcare system. |
| 01.06 | Explain the cause and effects of factors that influence the current delivery system of dental healthcare. |
| 01.07 | Explain the impact of emerging issues including technology, epidemiology, bioethics and socioeconomics on the dental healthcare delivery system. |
| 01.08 | Discuss the history of dentistry. |
| 02.0 | Use oral and written communication skills in creating, expressing and interpreting information and ideas. – The student will be able to: |
| 02.01 | Apply basic speaking and active listening skills including reflection, restatement, and clarification techniques. |
| 02.02 | Develop basic observational skills and related documentation strategies in written and oral form. |
| 02.03 | Identify characteristics of successful and unsuccessful communication including communication styles and barriers. |
| 02.04 | Compose written communication using correct spelling, grammar, formatting and confidentiality and specific formats of letter writing. |
| 02.05 | Recognize components of medical and dental terminology and abbreviations. |
| 02.06 | Recognize the importance of courtesy and respect for patients and other health care workers and maintain good interpersonal relationships. |

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| | 02.07 | Recognize the importance of patient education regarding dental and health care. |
| | 02.08 | Adapt communication skills to varied levels of understanding and cultural orientation including diverse age, cultural, economic, ethnic and religious groups. |
| | 02.09 | Identify psychological considerations influencing communication and behaviors. |
| 03.0 | Describe the legal and ethical responsibilities of the dental health care worker. – The student will be able to: | |
| | 03.01 | Identify areas of Florida Statute 466 and Rule 64B5-16 FAC and Rule 64B5-25 FAC applicable to practice by the dental health workers. |
| | 03.02 | Explain practices that could result in malpractice, liability, negligence, abandonment, false imprisonment. and fraud. |
| | 03.03 | Demonstrate procedures for accurate documentation and record keeping. |
| | 03.04 | Interpret healthcare facility policy and procedures. |
| | 03.05 | Explain the patients' "Bill of Rights”. |
| | 03.06 | Identify and implement standards of the Health Insurance Portability and Accountability Act (HIPAA). |
| | 03.07 | Distinguish between express, implied and informed consent. |
| | 03.08 | Explain the laws governing harassment, labor and employment. |
| | 03.09 | Differentiate between legal and ethical issues in dentistry. |
| | 03.10 | Describe a Code of Ethics consistent with the dental assisting profession. |
| | 03.11 | Identify and compare personal, professional and organizational ethics. |
| | 03.12 | Recognize the limits of authority and responsibility of dental health care workers including legislated scope of practice. |
| | 03.13 | Recognize and report illegal and/or unethical practices of dental health care workers. |
| | 03.14 | Recognize and report abuse including domestic violence and neglect. |
| | 03.15 | Identify resources to victims of domestic violence. |
| | 03.16 | Explain risk management. |
| 04.0 | Demonstrate an understanding of general anatomy and physiology and apply wellness and disease concepts. – The student will be able to: | |
| | 04.01 | Develop a basic understanding of the structure and function of the body systems. |
| | 04.02 | Identify common disorders related to each of the body systems. |

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| | 04.03 Explain basic concepts of positive self-image, wellness and stress. |
| | 04.04 Develop a wellness and stress control plan that can be used in personal and professional life. |
| 05.0 | Demonstrate the importance of health, safety, and environmental management systems in dental organizations and their importance to organizational performance and regulatory compliance. – The student will be able to: |
| | 05.01 Describe personal and jobsite safety rules and regulations that maintain safe and healthy work environments. |
| | 05.02 Identify and describe methods in medical error reduction and prevention in the dental healthcare setting. |
| | 05.03 Demonstrate an understanding of personal safety procedures based on Occupations Safety and Health Administration (OSHA) and Centers for Disease Control (CDC) regulations (including standard precautions). |
| | 05.04 Recognize Safety Data Sheets (SDS) and comply with safety signs, symbols and labels. |
| | 05.05 Demonstrate procedures for the safe transport and transfer of patients. |
| | 05.06 Describe fire safety, disaster and evacuation procedures. |
| | 05.07 Explain emergency procedures to follow in response to workplace accidents. |
| | 05.08 Demonstrate handwashing and the use of personal protective equipment used in dentistry. |
| 06.0 | Recognize and respond to emergency situations. – The student will be able to: |
| | 06.01 Take and record vital signs. |
| | 06.02 Describe legal parameters relating to the administration of emergency care. |
| | 06.03 Obtain and maintain training or certification in cardiopulmonary resuscitation (CPR), automated external defibrillator (AED), foreign body airway obstruction (FBAO), and first aid. |
| 07.0 | Use information technology tools. – The student will be able to: |
| | 07.01 Define terms and demonstrate basic computer skills. |
| | 07.01.01 Interpret information from electronic medical documents. |
| 08.0 | Explain the importance of employability skills. – The student will be able to: |
| | 08.01 Identify personal traits or attitudes desirable in a member of the healthcare team. |
| | 08.02 Exemplify basic professional standards of dental healthcare workers as they apply to hygiene, dress, language, confidentiality and behavior (i.e. telephone etiquette, courtesy and self-introductions). |
| | 08.03 Maintain a career portfolio to document knowledge, skills, and experience. |
| | 08.04 Write an appropriate resume. |

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| | 08.05 | Conduct a job search and complete a job application form correctly. |
| | 08.06 | Demonstrate competence in job interview techniques. |
| | 08.07 | Examine levels of education, credentialing requirements including licensure and certification, employment opportunities, workplace environments and career growth potential. |
| | 08.08 | Examine licensing, certification, and industry credentialing requirements. |
| 09.0 | Demonstrate knowledge of blood borne diseases, including HIV/AIDS. – The student will be able to: | |
| | 09.01 | Recognize emerging diseases and disorders. |
| | 09.02 | Distinguish between fact and fallacy about the transmission and treatment of diseases caused by blood borne pathogens including Hepatitis B. |
| | 09.03 | Identify "at risk" behaviors that promote the spread of diseases caused by blood borne pathogens and the public education necessary to combat the spread of these diseases. |
| | 09.04 | Identify community resources and services available to the individuals with diseases caused by blood borne pathogens. |
| | 09.05 | Apply infection control techniques designed to prevent the spread of diseases caused by blood borne pathogens to the care of all patients following Centers for Disease Control (CDC) guidelines. |
| | 09.06 | Demonstrate knowledge of the legal aspects of AIDS, including testing. |
| 10.0 | Demonstrate leadership and teamwork skills needed to accomplish team goals and objectives. – The students will be able to: | |
| | 10.01 | Analyze attributes and attitudes of an effective leader. |
| | 10.02 | Recognize factors and situations that may lead to conflict. |
| | 10.03 | Demonstrate effective techniques for managing team conflict. |
| **Students completing the following intended outcomes (11-22) meet the requirements of the Dental Assisting Technology and Manageme program 66002 (SOC Code 31-9091)** | | |
| 11.0 | Use dental terminology. -- The student will be able to: | |
| | 11.01 | Identify and define common dental terms. |
| | 11.02 | Demonstrate the use of proper dental terminology in the dental environment. |
| 12.0 | Identify structures and explain functions and pathologies of dental and general head and neck anatomy. -- The student will be able to: | |
| | 12.01 | Identify structures and functions of head and neck anatomy including bones, muscles, sinuses, salivary glands, lymph nodes, nerves, and blood vessels. |
| | 12.02 | Identify embryonic development of head, oral cavity, and teeth. |

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| | 12.03 Identify teeth and their landmarks, and the morphological characteristics of each individual tooth. |
| | 12.04 Describe the histological components of the head, oral cavity, and elements of the teeth and supporting structures. |
| | 12.05 Recognize and describe oral pathological conditions, related to the teeth and their supporting structures. |
| | 12.06 Recognize and describe developmental anomalies related to the teeth, face, and oral structures. |
| | 12.07 Describe and differentiate between normal and malocclusion. |
| | 12.08 Discuss the adverse effects of the use of alcohol, tobacco, and both legal and illegal drugs on the oral cavity. |
| 13.0 | Identify principles of microbiology and disease prevention and perform infection control procedures. -- The student will be able to: |
| | 13.01 Differentiate between pathogenic and non-pathogenic microorganisms. |
| | 13.02 Describe pathogens and modes of disease transmission. |
| | 13.03 Differentiate between aseptic and non-aseptic environments. |
| | 13.04 Describe and apply methods of cleaning, disinfection, and sterilization. |
| | 13.05 Identify chemicals and their uses for controlling the spread of disease in the dental environment. |
| | 13.06 Identify and practice the current CDC guidelines for infection control in dental healthcare settings. |
| | 13.07 Describe the duties of the dental office safety coordinator. |
| | 13.08 Demonstrate compliance with the OSHA Blood Borne Pathogens Standard (29CFR-1910.1030) applicable to the dental office environment. |
| | 13.09 Identify and manage hazardous chemicals and biomedical wastes in accordance with the OSHA Hazard Communications Standard (29CFR-1910.1200), 64E-16 F.A.C., and Environmental Protection Agency regulations. |
| | 13.10 Define principles of infection control including standard and transmission based precautions. |
| | 13.11 Demonstrate knowledge of dental asepsis. |
| | 13.12 Implement appropriate handwashing procedures and use of protective barriers. |
| | 13.13 Demonstrate knowledge of surgical asepsis and isolation. |
| 14.0 | Identify, describe, maintain and utilize dental instruments and equipment.--The student will be able to: |
| | 14.01 Identify various types, functions and operations of dental operatory and laboratory equipment. |
| | 14.02 Identify types and functions of operative, restorative, surgical, prosthodontic, orthodontic and endodontic dental instruments. |

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| | 14.03 Maintain dental operatory equipment and instruments. |
| | 14.04 Identify types and functions of specific dental hygiene instruments with emphasis on category rather than individual instruments. |
| | 14.05 Seat and dismiss patients. |
| | 14.06 Operate oral evacuation devices and air/water syringe. |
| | 14.07 Maintain a clear field of vision including isolation techniques. |
| | 14.08 Perform a variety of instrument transfers to include four-handed dentistry. |
| | 14.09 Utilize appropriate chairside assistant ergonomics. |
| 15.0 | Record patient assessment and treatment data. -- The student will be able to: |
| | 15.01 Take and record medical-dental histories. |
| | 15.02 Record assessment of existing oral conditions. |
| | 15.03 Record conditions diagnosed by the dentist. |
| | 15.04 Record treatment-related data on the patient's clinical record. |
| | 15.05 Record treatment plan and treatment in patient's chart. |
| | 15.06 Perform a visual assessment of existing oral conditions. |
| | 15.07 Distinguish between and report subjective and objective information. |
| | 15.08 Report relevant information in order of occurrence. |
| 16.0 | Identify the functions of pharmacology and anesthesia as they relate to dentistry. -- The student will be able to: |
| | 16.01 Identify drug requirements, agencies, and regulations. |
| | 16.02 Distinguish among the five schedules of controlled substances. |
| | 16.03 Record a drug prescription in a patient's chart. |
| | 16.04 Utilize ratios and proportional problems to calculate prescribed drug dosages. |
| | 16.05 Identify drug actions, side effects, indications and contraindications; verify with Physician's Desk Reference (PDR) or its equivalent. |
| | 16.06 Identify common drugs used in dentistry. |

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| | 16.07 Prepare and apply topical anesthetic agent. |
| | 16.08 Identify properties of anesthetics. |
| | 16.09 Prepare syringes for the administration of local anesthetics. |
| | 16.10 Monitor and identify precautions in the use of nitrous oxide-oxygen conscious sedation. |
| | 16.11 Calculate the percentage of nitrous oxide-oxygen delivered during a conscious sedation procedure. |
| | 16.12 Identify drugs and agents used for treating dental-related infection. |
| | 16.13 Identify and respond to dental office emergencies. |
| 17.0 | Identify and perform dental and carpal radiographic procedures -- The student will be able to: |
| | 17.01 Describe history, physics and biological effects of ionizing radiation. |
| | 17.02 Identify parts of the X-ray machine including accessories. |
| | 17.03 Demonstrate radiologic health protection techniques. |
| | 17.04 Describe dark room/processing procedures, mix solutions. |
| | 17.05 Describe the proper disposal of hazardous radiographic waste. |
| | 17.06 Place and expose dental radiographic films or phosphors and digital sensors. |
| | 17.07 Perform extraoral and carpal radiography as required for dental diagnostic procedures. |
| | 17.08 Identify radiographic anatomical landmarks and pathologies. |
| | 17.09 Mount radiographic surveys. |
| | 17.10 Describe how to maintain unexposed film inventory and storage. |
| | 17.11 Maintain digitally acquired radiographic images. |
| 18.0 | Identify properties and uses, and manipulate dental materials. -- The student will be able to: |
| | 18.01 Identify properties and uses and manipulate gypsum. |
| | 18.02 Identify properties and uses and manipulate restorative materials. |
| | 18.03 Identify properties and uses and manipulate dental cements. |

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| | 18.04 | Place and remove matrices as permitted by Florida Statute and Florida Board of Dentistry Rule. |
| | 18.05 | Place and remove temporary restorations as permitted by Florida Statute and Florida Board of Dentistry Rule. |
| | 18.06 | Identify properties and uses and manipulate impression materials. |
| | 18.07 | Make intraoral impressions as permitted by Florida Statute and Florida Board of Dentistry Rule. |
| | 18.08 | Identify properties and uses and manipulate acrylics and thermoplastics. |
| | 18.09 | Identify properties and uses and manipulate waxes. |
| | 18.10 | Perform dental laboratory procedures to include the fabrication of casts, custom trays, and temporary crowns and bridges. |
| | 18.11 | Identify and manage hazardous dental materials and wastes in accordance with the OSHA Hazard Communications Standard (29CFR-1910.1200) and Environmental Protection Agency regulations. |
| | 18.12 | Employ measurements of time, temperature, distance, capacity, and mass/weight during the manipulation of dental materials. |
| 19.0 | Perform chairside assisting for general dentistry and specialty procedures. -- The student will be able to: | |
| | 19.01 | Describe procedures, equipment, materials, and instrumentation used in the dental specialties to include but not limited to periodontics, endodontics, pedodontics, oral surgery, orthodontics, and prosthodontics. |
| | 19.02 | Assemble tray set-ups for general and specialty dental procedures. |
| | 19.03 | Assist in general and specialty dental procedures. |
| | 19.04 | Perform patient education to include pre- and post-operative instructions as prescribed by a dentist. |
| | 19.05 | Describe procedures, equipment, and materials utilized in digital dentistry to include CAD/CAM Technology. |
| 20.0 | Describe principles and perform techniques of preventive dentistry. -- The student will be able to: | |
| | 20.01 | Provide patient preventive education and oral hygiene instruction. |
| | 20.02 | Prepare and set up for various preventive procedures. |
| | 20.03 | Identify properties and uses of abrasive agents used to polish coronal surfaces and appliances. |
| | 20.04 | Perform coronal polish and apply anticariogenic and desensitizing treatments as permitted by Florida Statute and Florida Board of Dentistry Rule. |
| | 20.05 | Clean and polish removable dental appliances. |
| | 20.06 | Assist with and place dental dams as permitted by Florida Statute and Florida Board of Dentistry Rule. |
| | 20.07 | Apply dental sealants as permitted by Florida Statute and Florida Board of Dentistry Rule. |

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| | 20.08 | Identify the elements of nutrition, basic food groups, and acceptable diets as recommended by the U.S. Department of Agriculture. |
| | 20.09 | Identify dietary deficiencies and dietary practices that contribute to the manifestation of symptoms in the oral cavity. |
| | 20.10 | Identify community dental resources and services available. |
| 21.0 | Perform general dental business office procedures. -- The student will be able to: | |
| | 21.01 | Maintain appointment control. |
| | 21.02 | Maintain an active recall system. |
| | 21.03 | Prepare and maintain accurate patient records. |
| | 21.04 | Prepare and maintain patient financial records, collect fees. |
| | 21.05 | Prepare and maintain office financial records. |
| | 21.06 | Prepare and maintain dental office inventory control and purchasing. |
| | 21.07 | Demonstrate public relations responsibilities of the secretary/receptionist. |
| | 21.08 | Demonstrate skills on office equipment. |
| | 21.09 | Maintain the dental business office environment. |
| | 21.10 | Receive and dismiss patients and visitors. |
| | 21.11 | Demonstrate appropriate patient management/customer service skills. |
| | 21.12 | Describe the effect of money management on practice goals. |
| 22.0 | Demonstrate professionalism as a dental team member in the clinical setting. – The student will be able to: | |
| | 22.01.01 | Perform dental assisting duties, dental assisting expanded functions, and dental radiographic procedures in a clinical setting under the direct supervision of a licensed dentist. |
| | 22.01.02 | Interact with a professional dental team in the delivery of patient services. |
| | 22.01.03 | Utilize employability skills. |
| | **Specialty Option 1: Education** | |
| 23.0 | Demonstrate skills for educational methodologies and strategies. -- The student will be able to: | |
| | 23.01 | Develop and implement policies and operational procedures that meet the American Dental Association accreditation standards for Allied Dental Programs. |

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| | 23.02 Identify and describe educational theory and methodology as they relate to Allied Dental Education. |
| | 23.03 Establish liaison with appropriate accrediting organizations, community partners, and educational institutions. |
| | **Specialty Option 2: Product Marketing, Sales, and Educational Programs** |
| 24.0 | Demonstrate skills necessary for marketing, sales, and educational programs for dental products. -- The student will be able to: |
| | 24.01 Establish educational programs relating the value and effectiveness of various dental products. |
| | 24.02 Apply economic principles for product marketing, distribution and sales. |
| | 24.03 Demonstrate effective product evaluation and comparison. |
| | 24.04 Identify appropriate consumer populations. |
| | **Specialty Option 3: Dental Practice Management** |
| 25.0 | Demonstrate knowledge of dental practice set up and management procedures. -- The student will be able to: |
| | 25.01 Establish policies and procedures for dental practice operations. |
| | 25.02 Identify roles and responsibilities of all employees. |
| | 25.03 Implement policies and procedures for establishing effective management of a dental practice. |

## Additional Information

### Laboratory Activities

Laboratory investigations that include scientific inquiry, research, measurement, problem solving, emerging technologies, tools and equipment, as well as, experimental, quality, and safety procedures are an integral part of this career and technical program/course. Laboratory investigations benefit all students by developing an understanding of the complexity and ambiguity of empirical work, as well as the skills required to manage, operate, calibrate and troubleshoot equipment/tools used to make observations. Students understand measurement error; and have the skills to aggregate, interpret, and present the resulting data. Equipment and supplies should be provided to enhance hands-on experiences for students.

Field Internship Activities: Clinical experiences are integrated with the didactic portion of this program. Clinical experience assisting a dentist must be an integral part of the educational program designed to perfect students' competence in performing dental assisting functions, rather than to provide basic instruction. The major portion of the students' time in clinical assignments must be spent assisting with or participating in patient care. Prior to clinical assignments, students demonstrate minimum competence in performing the procedures which they will be expected to perform in their clinical experience.

### Special Notes

The following industry certifications have been approved by the Florida State Board of Education for statewide articulation credit into this degree program.

Certified Dental Assistant (DANBD001) – 5 credits

Dental assisting programs accredited by the American Dental Association Commission on Dental Accreditation are required to implement enrollment and admissions criteria that include the selection of adult students with a high school diploma, its equivalent, or an advanced degree.

This program focuses on broad, transferable skills and stresses understanding and demonstration of the following elements of the health care industry; planning, management, finance, technical and production skills, underlying principles of technology, labor issues, community issues and health, safety, and environmental issues.

This program meets the goals of TECH PREP and is based on the model developed by the Allied Health Articulation Task Force.

This program should meet the most current edition of the American Dental Association Accreditation Standards for Dental Assisting Education Programs. For further information, contact: Commission on Dental Accreditation, 211 East Chicago Avenue, Chicago, Illinois 60611.

For Florida information contact the Florida Agency for Health Care Administration (AHCA), Division of Health Quality Assurance, Board of Dentistry, 4052 Bald Cypress Way, Tallahassee, FL 32399, 850/245-4161.

This program meets the Department of Health's education requirements for HIV/AIDS, Domestic Violence and Prevention of Medical Errors. Although not a requirement for initial licensure, it is a requirement for renewal, therefore the instructor may provide a certificate for renewal purposes to the student verifying these requirements have been met.

If students in this program are seeking a licensure, certificate or registration through the Department of Health, please refer to 456.0635 F.S. for more information on disqualification for a license, certificate, or registration through the Department of Health.

Pursuant to 466.024 F.S., 64B5-16.002 F.A.C. and 64B5-9.011 F.A.C., completers of the dental assisting program may be awarded a certificate verifying formal training which is required for the performance of certain remediable tasks (also known as expanded functions.)

Students should be encouraged to become members and participate in the activities of the professional organization: The American Dental Assistants Association.

Completers of the dental assisting program should be encouraged to take the Dental Assisting National Board (DANB) Certified Dental Assistant (CDA) exam. DANB is recognized by the American Dental Association as the national certification board for dental assistants.

**Career and Technical Student Organization (CTSO)**

HOSA: Future Health Professionals is the intercurricular career and technical student organization providing leadership training and reinforcing specific career and technical skills. Career and Technical Student Organizations provide activities for students as an integral part of the instruction offered.

**Accommodations**

Federal and state legislation requires the provision of accommodations for students with disabilities to meet individual needs and ensure equal access. Postsecondary students with disabilities must self-identify, present documentation, request accommodations if needed, and develop a plan with their counselor and/or instructors. Accommodations received in postsecondary education may differ from those received in secondary education. Accommodations change the way the student is instructed. Students with disabilities may need accommodations in such areas as instructional methods and materials, assignments and assessments, time demands and schedules, learning environment, assistive technology and special communication systems. Documentation of the accommodations requested and provided should be maintained in a confidential file.

**Florida Department of Education**
**Curriculum Framework**

**Program Title:** **Dental Hygiene**
**Career Cluster:** **Health Science**

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| CIP Number | 1351060200 |
| Program Type | College Credit |
| Standard Length | 88 credit hours |
| CTSO | HOSA: Future Health Professionals |
| SOC Codes (all applicable) | 29-2021 Dental Hygienists |

## Purpose

This program offers a sequence of courses that provides coherent and rigorous content aligned with challenging academic standards and relevant technical knowledge and skills needed to prepare for further education and careers in the Health Science career cluster; provides technical skill proficiency, and includes competency-based applied learning that contributes to the academic knowledge, higher-order reasoning and problem-solving skills, work attitudes, general employability skills, technical skills, and occupation-specific skills, and knowledge of all aspects of Health Science career cluster.

This program is designed to prepare students for employment as dental hygienists SOC Code-29-2021 Dental Hygienist or to provide supplemental training for persons previously or currently employed in this occupation.

The content includes but is not limited to patient assessment, dental hygiene instrumentation and direct patient care services (scaling/root planing/curettage/radiographs/oral hygiene-instruction/expanded functions), community dental health, dental office emergencies, infection control, special needs dental care, office management, employability skills, ethics and jurisprudence.

**Additional Information** relevant to this Career and Technical Education (CTE) program is provided at the end of this document.

## Program Structure

This program is a planned sequence of instruction consisting of 88 credit hours.

**Regulated Programs**

Students are prepared to take the Dental Hygiene National Board and state licensure examinations. Dental Hygiene Programs accredited by the American Dental Association Commission on Dental Accreditation are required to implement clinical experiences outlined in these program standards.

**Standards**

After successfully completing this program, the student will be able to perform the following:

01.0 Demonstrate knowledge of the dental health care delivery system and dental health occupations.
02.0 Use oral and written communication skills in creating, expressing and interpreting information and ideas.
03.0 Describe the legal and ethical responsibilities of the dental health care worker.
04.0 Demonstrate an understanding of general anatomy and physiology and apply wellness and disease concepts.
05.0 Demonstrate the importance of health, safety, and environmental management systems in dental organizations and their importance to organizational performance and regulatory compliance.
06.0 Recognize and respond to emergency situations.
07.0 Use information technology tools.
08.0 Explain the importance of employability skills.
09.0 Demonstrate knowledge of blood borne diseases, including HIV/AIDS.
10.0 Demonstrate leadership and teamwork skills needed to accomplish team goals and objectives.
11.0 Perform expanded functions for the dental hygienist as permitted by Florida Statutes/Law.
12.0 Perform dental office procedures.
13.0 Identify, describe, maintain and utilize dental instruments and equipment.
14.0 Identify and perform dental and radiographic procedures.
15.0 Identify properties and uses, and manipulate dental materials.
16.0 Describe the legal and ethical responsibilities of the dental hygienist.
17.0 Identify and explain the formation and function of the head, neck, dental structures and tissues including pathological conditions of the human body in relation to the oral cavity.
18.0 Identify and explain principles of microbiology, disease transmission, disease prevention, and perform infection control procedures.
19.0 Identify and explain usage, administration, indications, contraindications, adverse reactions and precautions of pharmaceutical and anesthetic agents used in the treatment of dental disease.
20.0 Describe principles and perform techniques of preventive dentistry.
21.0 Perform patient assessment.
22.0 Perform direct patient services and competently provide dental hygiene process of care for the child, adolescent, adult and geriatric patient as well as the special needs patient.
23.0 Implement and evaluate community health interventions and research activities.

**Florida Department of Education**
**Student Performance Standards**

**Program Title:** **Dental Hygiene**
**CIP Number:** **1351060200**
**Program Length:** **88 credit hours**
**SOC Code(s):** **29-2021**

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| **Refer to Rule 6A-14.030 (4) F.A.C., for the minimum amount of general education coursework required in the Associate of Science (AS) degree. At the completion of this program, the student will be able to:**<br><br>Dental Hygiene Students completing the following intended outcomes (1- 23) have met the requirements of the Dental Hygiene Program and qualify to make application for the Dental Hygiene National Board and state licensure examinations. | |
| 01.0 | Demonstrate knowledge of the dental health care delivery system and dental health occupations. – The student will be able to: |
| 01.01 | Identify the basic components of the dental health care delivery system including public, private, government and non-profit. |
| 01.02 | Describe the various types of dental health care providers and the range of services available. |
| 01.03 | Describe the composition and functions of a dental health care team. |
| 01.04 | Identify the general roles and responsibilities of the individual members of the dental health care team. |
| 01.05 | Identify the roles and responsibilities of the consumer within the dental healthcare system. |
| 01.06 | Explain the cause and effects of factors that influence the current delivery system of dental healthcare. |
| 01.07 | Explain the impact of emerging issues including technology, epidemiology, bioethics and socioeconomics on the dental healthcare delivery system. |
| 01.08 | Discuss the history of dentistry and dental hygiene. |
| 02.0 | Use oral and written communication skills in creating, expressing and interpreting information and ideas. – The student will be able to: |
| 02.01 | Apply basic speaking and active listening skills including reflection, restatement, and clarification techniques. |
| 02.02 | Develop basic observational skills and related documentation strategies in written and oral form. |
| 02.03 | Identify characteristics of successful and unsuccessful communication including communication styles and barriers. |
| 02.04 | Compose written communication using correct spelling, grammar, formatting and confidentiality and specific formats of letter writing. |

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| | 02.05 | Recognize components of medical and dental terminology and abbreviations. |
| | 02.06 | Recognize the importance of courtesy and respect for patients and other health care workers and maintain good interpersonal relationships. |
| | 02.07 | Recognize the importance of patient education regarding dental and health care. |
| | 02.08 | Adapt communication skills to meet various levels of understanding and orientation of diversity including but not limited to sexual orientation, gender orientation, disability, age, culture, economics, ethnicity and religion. |
| | 02.09 | Identify psychological considerations influencing communication and behaviors. |
| 03.0 | Describe the legal and ethical responsibilities of the dental health care worker. – The student will be able to: | |
| | 03.01 | Identify areas of Florida Statute 466 and Rule 64B5-16 FAC and Rule 64B5-25 FAC applicable to practice by the dental health workers. |
| | 03.02 | Explain practices that could result in malpractice, liability, negligence, abandonment, false imprisonment and fraud. |
| | 03.03 | Demonstrate procedures for accurate documentation and record keeping. |
| | 03.04 | Interpret healthcare facility policy and procedures. |
| | 03.05 | Explain the patients' "Bill of Rights”. |
| | 03.06 | Identify and implement standards of the Health Insurance Portability and Accountability Act (HIPAA). |
| | 03.07 | Distinguish between express, implied and informed consent. |
| | 03.08 | Explain the laws governing harassment, labor and employment. |
| | 03.09 | Differentiate between legal and ethical issues in dentistry. |
| | 03.10 | Describe a Code of Ethics consistent with the dental hygiene profession. |
| | 03.11 | Identify and compare personal, professional and organizational ethics. |
| | 03.12 | Recognize the limits of authority and responsibility of dental health care workers including legislated scope of practice. |
| | 03.13 | Recognize and report illegal and/or unethical practices of dental health care workers. |
| | 03.14 | Recognize signs of abuse and neglect. |
| | 03.15 | Demonstrate an understanding of reporting requirements for all types of abuse including domestic violence and neglect for all ages. |
| | 03.16 | Identify resources for victims of domestic violence. |
| | 03.17 | Explain risk management. |

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| 04.0 | Demonstrate an understanding of general anatomy and physiology and apply wellness and disease concepts. – The student will be able to: |
| 04.01 | Develop a basic understanding of the structure and function of the body systems. |
| 04.02 | Identify common disorders related to each of the body systems. |
| 04.03 | Explain basic concepts of positive self-image, wellness, and stress. |
| 04.04 | Describe a wellness and stress control plan that can be used in personal and professional life. |
| 05.0 | Demonstrate the importance of health, safety, and environmental management systems in dental organizations and their importance to organizational performance and regulatory compliance. – The student will be able to: |
| 05.01 | Describe personal and jobsite safety rules and regulations that maintain safe and healthy work environments. |
| 05.02 | Identify and describe methods in medical error reduction and prevention in the dental healthcare setting. |
| 05.03 | Demonstrate an understanding of personal safety procedures based on Occupations Safety and Health Administration (OSHA) and Centers for Disease Control (CDC) regulations (including standard precautions). |
| 05.04 | Recognize Safety Data Sheets (SDS) and Globally Harmonized System (GHS) labels and comply with safety signs, symbols and labels. |
| 05.05 | Describe procedures for the safe transport and transfer of patients. |
| 05.06 | Describe fire safety, disaster and evacuation procedures. |
| 05.07 | Explain emergency procedures to follow in response to workplace accidents. |
| 05.08 | Demonstrate handwashing and the use of personal protective equipment used in dentistry. |
| 06.0 | Recognize and respond to emergency situations. – The student will be able to: |
| 06.01 | Take and record vital signs. |
| 06.02 | Describe legal parameters relating to the administration of emergency care. |
| 06.03 | Obtain and maintain training or certification in cardiopulmonary resuscitation (CPR), automated external defibrillator (AED), foreign body airway obstruction (FBAO), and first aid. |
| 07.0 | Use information technology tools. – The student will be able to: |
| 07.01 | Define terms and demonstrate basic computer skills. |
| 07.02 | Interpret information from electronic medical documents. |
| 08.0 | Explain the importance of employability skills. – The student will be able to: |
| 08.01 | Identify personal traits or attitudes desirable in a member of the healthcare team. |

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| | 08.02 | Exemplify basic professional standards of dental healthcare workers as they apply to hygiene, dress, language, confidentiality and behavior (i.e. telephone etiquette, courtesy and self-introductions). |
| | 08.03 | Maintain a career portfolio to document knowledge, skills, and experience. |
| | 08.04 | Develop a professional resume. |
| | 08.05 | Conduct a job search and complete a job application form correctly. |
| | 08.06 | Demonstrate effective job interview techniques. |
| | 08.07 | Examine levels of education, credentialing requirements including licensure and certification, employment opportunities, workplace environments, and career growth potential. |
| | 08.08 | Examine licensing, certification, and industry credentialing requirements. |
| 09.0 | Demonstrate knowledge of blood borne diseases, including HIV/AIDS. – The student will be able to: | |
| | 09.01 | Recognize emerging diseases and disorders. |
| | 09.02 | Demonstrate knowledge of transmission and treatment of diseases caused by blood borne pathogens including Hepatitis B. |
| | 09.03 | Identify "at risk" behaviors that promote the spread of diseases caused by blood borne pathogens and the public education necessary to combat the spread of these diseases. |
| | 09.04 | Identify community resources and services available to the individuals with diseases caused by blood borne pathogens. |
| | 09.05 | Apply infection control techniques designed to prevent the spread of diseases caused by blood borne pathogens to the care of all patients following Centers for Disease Control (CDC) guidelines. |
| | 09.06 | Demonstrate knowledge of the legal aspects of treating patients with HIV infection and AIDS, including testing. |
| 10.0 | Demonstrate leadership and teamwork skills needed to accomplish team goals and objectives. – The students will be able to: | |
| | 10.01 | Analyze attributes and attitudes of an effective leader. |
| | 10.02 | Recognize factors and situations that may lead to conflict. |
| | 10.03 | Demonstrate effective problem-solving techniques for managing team conflict. |
| 11.0 | Perform expanded functions for the dental hygienist as permitted by Florida Statutes/Law. -- The student will be able to: | |
| | 11.01 | Perform expanded functions as permitted by the Florida Statutes/Law pertaining to the practice of dental hygiene. |
| 12.0 | Perform dental office procedures. -- The student will be able to: | |
| | 12.01 | Maintain appointment control with effective time management skills. |
| | 12.02 | Assess, create, modify, and maintain an active recare system. |

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| | 12.03 Prepare and maintain accurate patient records. |
| | 12.04 Prepare and maintain dental office inventory control and purchasing. |
| | 12.05 Demonstrate skills on office equipment to include computers and dental office management systems. |
| | 12.06 Identify correct code on dental procedures and nomenclature (CDT Codes). |
| | 12.07 Maintain a positive office environment. |
| | 12.08 Receive and dismiss patients and visitors. |
| | 12.09 Demonstrate reporting and recording of adverse events. |
| 13.0 | Identify, describe, maintain and utilize dental instruments and equipment. -- The student will be able to: |
| | 13.01 Identify various types, functions and operations of dental operatory and laboratory equipment. |
| | 13.02 Maintain dental operatory equipment and instruments including proper sharpening techniques. |
| | 13.03 Identify types and functions of dental hygiene instruments. |
| 14.0 | Identify and perform dental and radiographic procedures. -- The student will be able to: |
| | 14.01 Describe history, physics and biological effects of ionizing radiation. |
| | 14.02 Identify parts of the imaging machine including accessories. |
| | 14.03 Demonstrate radiologic health protection techniques. |
| | 14.04 Perform processing procedures that include application and care. |
| | 14.05 Place image receptors and expose dental images that could include chemical emulsion, digital or phosphor plates, and understand the relevance of exposure settings, times and patient record keeping. |
| | 14.06 Identify radiographic anatomical landmarks. |
| | 14.07 Mount radiographic surveys and/or save and store digital files. |
| 15.0 | Identify properties and uses, and manipulate dental materials. -- The student will be able to: |
| | 15.01 Identify properties and uses and manipulation of gypsum. |
| | 15.02 Identify properties and uses and manipulation of restorative materials. |
| | 15.03 Identify properties and uses and manipulation of dental cements. |

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| | 15.04 Identify properties and uses and manipulation of impression materials. |
| | 15.05 Identify properties and uses and manipulation of acrylics and/or thermoplastics. |
| | 15.06 Identify dental laboratory procedures that may include the fabrication of casts, custom trays, temporary crowns and/or bridges. |
| | 15.07 Clean removable dental appliances. |
| 16.0 | Describe the legal and ethical responsibilities of the dental hygienist. -- The student will be able to: |
| | 16.01 Define commonly used legal vocabulary relating to dentistry. |
| | 16.02 Describe ethical considerations/obligations in the dental team-patient relationship. |
| | 16.03 Explain risk management and root cause analysis. |
| | 16.04 Identify areas of Florida Statute 466 and Rule chapter 64B5 applicable to dentistry and dental hygiene. |
| | 16.05 Apply self-assessment skills to prepare for life-long learning. |
| | 16.06 Apply ethical principles, legal and regulatory concepts to resolve ethical dilemmas. |
| 17.0 | Identify and explain the formation and function of the head, neck, dental structures and tissues including pathological conditions of the human body in relation to the oral cavity. -- The student will be able to: |
| | 17.01 Identify structures and functions of head and neck anatomy including bones, muscles, sinuses, salivary glands, lymph nodes, nerves, and blood vessels. |
| | 17.02 Identify embryonic development of head, oral cavity, and teeth. |
| | 17.03 Describe the histological components of the head, oral cavity, and elements of the teeth and supporting structures. |
| | 17.04 Describe and differentiate between normal and malocclusion. |
| | 17.05 Identify the elements of the chemical basis of life, cellular metabolism and the structure of the major tissue types of the human body. |
| | 17.06 Describe the metabolism of nutrient foods, vitamins and minerals by the human body and pathological conditions related to nutrient deficiencies. |
| | 17.07 Identify anatomical structures and physiological function of the principle systems of the human body including the skeletal, muscular, integumentary, circulatory, lymphatic, endocrine, digestive, reproductive, respiratory, urinary, and nervous systems. |
| | 17.08 Recognize and describe oral pathological conditions related to the teeth and their supporting structures. |
| | 17.09 Identify teeth and their landmarks, and the morphological characteristics of each individual tooth. |
| | 17.10 Recognize and describe developmental anomalies related to the teeth, face, and oral structures. |
| 18.0 | Identify and explain principles of microbiology, disease transmission, disease prevention, and perform infection control procedures. -- The |

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| | student will be able to: |
| | 18.01 Differentiate between pathogenic and non-pathogenic microorganisms. |
| | 18.02 Describe pathogens and modes of disease transmission. |
| | 18.03 Differentiate between aseptic and non-aseptic environments. |
| | 18.04 Perform aseptic handwashing technique including use of antiseptic gels. |
| | 18.05 Describe, apply and differentiate methods of cleaning, disinfection and sterilization. |
| | 18.06 Recognize the need for and proper precautions for the prevention of disease transmission during all dental related procedures. |
| | 18.07 Identify the role of prokaryotic cells, eukaryotic cells, viruses, and bacteria in the infections and mechanisms of diseases. |
| | 18.08 Identify the genetics of microbes including replication of DNA and protein synthesis, mutation and gene transfer. |
| 19.0 | Identify and explain usage, administration, indications, contraindications, adverse reactions and precautions of pharmaceutical and anesthetic agents used in the treatment of dental disease. -- The student will be able to: |
| | 19.01 Identify drug requirements, agencies, and regulations. |
| | 19.02 Record a drug prescription on a patient's chart. |
| | 19.03 Identify drug actions, side effects, indications and contraindications; verify with Physician's Desk Reference or its equivalent. |
| | 19.04 Describe the process of drug metabolism. |
| | 19.05 Identify common drugs used in dentistry. |
| | 19.06 Identify pharmaceuticals and medicaments used in the oral cavity. |
| | 19.07 Recognize specific conditions in the oral cavity caused by pharmaceutical agents. |
| | 19.08 Identify properties of anesthetics. |
| | 19.09 Identify the tissues innervated by each of the nerves associated with dental local and topical anesthesia. |
| | 19.10 Describe properties and mode of action of an effective local and topical anesthetic. |
| | 19.11 List systemic considerations in choosing a local and topical anesthetic. |
| | 19.12 Describe methods of administering local and applying topical anesthetics. |
| | 19.13 List potential local and systemic adverse reactions associated with local anesthetic administration. |

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| 19.14 | Prepare armamentarium for administering local anesthetics for recognized techniques. |
| 19.15 | Describe the monitoring process and identify precautions in the use of nitrous oxide-oxygen inhalation analgesia. |
| 20.0 | Describe principles and perform techniques of preventive dentistry. -- The student will be able to: |
| 20.01 | Identify, communicate, and instruct patients on applicable methods of preventive dentistry that utilize:<br>20.01.01 risk assessment<br>20.01.02 evidence based learning<br>20.01.03 individualized preventive care plans<br>20.01.04 counseling<br>20.01.05 training regarding health status and rationale for preventive care plan. |
| 20.02 | Identify properties and indications for use of anticariogenic treatments utilized in the community, home, and office. |
| 20.03 | Identify and demonstrate proper auxiliary aides based on individual patient needs. |
| 20.04 | Identify and describe deficiencies that manifest symptoms in the oral cavity and communicate applicable therapies. |
| 20.05 | Formulate and present diets to address specific dental needs and provide nutritional counseling. |
| 21.0 | Perform patient assessment. -- The student will be able to: |
| 21.01 | Take, record, and correlate medical/dental history with dental hygiene treatment plan and services to be performed. |
| 21.02 | Take, record, and correlate vital sign observations with dental hygiene treatment plan and services to be performed. |
| 21.03 | Assess vital signs in order to reduce incidence of patient complications and medical emergencies. |
| 21.04 | Perform record and correlate extraoral and intraoral examination findings with dental hygiene treatment plan and patient services to be performed. |
| 21.05 | Observe and record existing restorations as well as conditions and suspected pathologies of hard and soft tissues using the appropriate armamentarium. |
| 21.06 | Conduct comprehensive periodontal examination including pocket depth, attachment level, recession, mobility, furcations, radiographic findings, and tissue health. |
| 21.07 | Consult with dentist and physicians to verify dental and medical information and develop the treatment plan to be implemented. |
| 21.08 | Interpret and correlate dental radiographs and dental charting with dental hygiene treatment plan. |
| 21.09 | Perform soft tissue reassessment and evaluate the effects of initial dental hygiene therapy and make appropriate therapy modifications or referrals. |
| 21.10 | Recognize systemic diseases from oral manifestations. |
| 21.11 | Record diagnosis made by dentist. |

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| | 21.12 | Recognize and respond appropriately to contraindications for dental treatment found in medical and dental history. |
| | 21.13 | Identify and assess dental office emergencies and follow the appropriate protocol for treatment. |
| 22.0 | Perform direct patient services and competently provide dental hygiene process of care for the child, adolescent, adult and geriatric patient as well as the special needs patient. -- The student will be able to: | |
| | 22.01 | Detect calculus for removal and differentiate between deposits and other causes of tooth surface roughness. |
| | 22.02 | Perform non-surgical periodontal debridement (scaling and root planing) using appropriate armamentarium and instrumentation technique. |
| | 22.03 | Manipulate mechanical instruments for hard and soft deposit removal, i.e. ultrasonic, air-powder polishing system and/or slow-speed hand-piece. |
| | 22.04 | Perform oral prophylaxis. |
| | 22.05 | Demonstrate knowledge of soft tissue curettage. |
| | 22.06 | Apply desensitizing and/or chemotherapeutic agents where applicable. |
| | 22.07 | Communicate to patients' appropriate post-operative instructions and correctly select all necessary self-care therapies intended to restore and maintain the individual patient's soft tissue health for long term care. |
| | 22.08 | Provide and communicate dietary counseling for health maintenance and specific healing needs. |
| | 22.09 | Provide and communicate recommendations for patient use of caries prevention agents. |
| | 22.10 | Provide a comprehensive collection of patient data to identify the physical and oral health status as well as risk factors that could affect patient care and healing. |
| | 22.11 | Provide analysis of assessment findings and use of critical thinking in order to address the patient's dental hygiene treatment needs. |
| | 22.12 | Establish a dental hygiene care plan that reflects the expected outcomes and treatment interventions to facilitate optimal oral health. |
| | 22.13 | Present proposed treatment and procedures to the patient and obtain appropriate informed consent signatures prior to rendering patient care services. |
| | 22.14 | Provide patient-centered treatment and evidence-based care in a manner minimizing risk and optimizing oral health. |
| | 22.15 | Measure the extent to which expected outcomes identified in the dental hygiene care plan are achieved. |
| | 22.16 | Complete an accurate recording of all documentation relevant to patient care. |
| 23.0 | Implement and evaluate community health interventions and research activities. -- The student will be able to: | |
| | 23.01 | Demonstrate competence in assessment, planning, implementation, and evaluation of community health interventions. |
| | 23.02 | Formulate and analyze research methodologies for community health interventions. |

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| 23.03 | Perform a literature search and interpret research findings in scientific literature. |
| 23.04 | Apply research findings to dental hygiene care delivery. |
| 23.05 | Apply statistical analysis and evidence based research to health trends and community interventions. |
| 23.06 | Collaborate and perform a needs assessment with community partners. |
| 23.07 | Differentiate scientific value of literature found in both electronic and traditional mediums. |

## Additional Information

### Laboratory Activities

Laboratory investigations that include scientific inquiry, research, measurement, problem solving, emerging technologies, tools and equipment, as well as, experimental, quality, and safety procedures are an integral part of this career and technical program/course. Laboratory investigations benefit all students by developing an understanding of the complexity and ambiguity of empirical work, as well as the skills required to manage, operate, calibrate and troubleshoot equipment/tools used to make observations. Students understand measurement error; and have the skills to aggregate, interpret, and present the resulting data. Equipment and supplies should be provided to enhance hands-on experiences for students.

Equipment and supplies should be provided to enhance hands-on experiences for students. In depth clinical information and requirements can be found in the Commission on Dental Accreditation Dental Hygiene Standards.

### Special Notes

General education content must include oral and written communications, Psychology and Sociology.

Biomedical science content must include content in anatomy, physiology, chemistry, biochemistry, microbiology, immunology, general pathology and/or pathophysiology, nutrition and pharmacology.

Dental sciences content must include tooth morphology, head, neck and oral anatomy, oral embryology and histology, oral pathology, radiography, periodontology, pain management, and dental materials.

Graduates must be competent in providing the dental hygiene process of care which includes: Assessment, Planning, Implementation, and Evaluation.

This program meets the Department of Health's education requirements for HIV/AIDS, Domestic Violence and Prevention of Medical Errors. Although not a requirement for initial licensure, it is a requirement for renewal, therefore the instructor may provide a certificate for renewal purposes to the student verifying these requirements have been met.

If students in this program are seeking a licensure, certificate or registration through the Department of Health, please refer to 456.0635 F.S. for more information on disqualification for a license, certificate, or registration through the Department of Health.

Outcomes 01-11 are referred to as the Health Careers Core and do not have to be completed if the student has previously completed the Core in another health science program. The Core should be taken first or concurrently with the first course in the program. Following the successful completion of the core, the student is eligible to take the National Health Care Foundation Skill Standards Assessment with instructor approval and the completion of a portfolio.

## Career and Technical Student Organization (CTSO)

HOSA: Future Health Professionals is the intercurricular career and technical student organization providing leadership training and reinforcing specific career and technical skills. Career and Technical Student Organizations provide activities for students as an integral part of the instruction offered.

## Accommodations

Federal and state legislation requires the provision of accommodations for students with disabilities to meet individual needs and ensure equal access. Postsecondary students with disabilities must self-identify, present documentation, request accommodations if needed, and develop a plan with their counselor and/or instructors. Accommodations received in postsecondary education may differ from those received in secondary education. Accommodations change the way the student is instructed. Students with disabilities may need accommodations in such areas as instructional methods and materials, assignments and assessments, time demands and schedules, learning environment, assistive technology and special communication systems. Documentation of the accommodations requested and provided should be maintained in a confidential file.

**Florida Department of Education**
**Curriculum Framework**

**Program Title:** **Health Services Management**
**Career Cluster:** **Health Science**

| AS | |
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| CIP Number | 1351070101 |
| Program Type | College Credit |
| Standard Length | 60 credit hours |
| CTSO | HOSA: Future Health Professionals |
| SOC Codes (all applicable) | 11-9111 Medical and Health Services Managers |

## Purpose

This program offers a sequence of courses that provides coherent and rigorous content aligned with challenging academic standards and relevant technical knowledge and skills needed to prepare for further education and careers in the Health Science career cluster; provides technical skill proficiency, and includes competency-based applied learning that contributes to the academic knowledge, higher-order reasoning and problem-solving skills, work attitudes, general employability skills, technical skills, and occupation-specific skills, and knowledge of all aspects of Health Science career cluster.

The purpose of this program is to prepare students for employment as health services managers. SOC Code 11-9111 (Medical and Health Services Managers) or health service administrators or to provide supplemental training for persons previously or currently employed in these occupations.

The content includes but is not limited to communication skills, leadership skills, human relations and employability skills, principles of management, introduction to computer literacy, health care organization, medical ethics, legal aspects, and advanced technical skills in a chosen health-related profession, health and safety, and CPR.

**Additional Information** relevant to this Career and Technical Education (CTE) program is provided at the end of this document.

## Program Structure

This program is a planned sequence of instruction consisting of 60 credit hours.

**Standards**

After successfully completing this program, the student will be able to perform the following:

01.0 Demonstrate knowledge of the health care delivery system and health occupations.
02.0 Demonstrate the ability to communicate and use interpersonal skills effectively.
03.0 Demonstrate legal and ethical responsibilities.
04.0 Recognize and practice safety and security procedures.
05.0 Demonstrate an understanding of information technology applications in healthcare.
06.0 Demonstrate employability skills.
07.0 Demonstrate basic knowledge of medical language, anatomy and physiology, and disease processes.
08.0 Demonstrate knowledge of materials and supplies needed to care in healthcare and how to obtain them in various healthcare settings.
09.0 Demonstrate leadership and administrative skills basic to management in any health care facility.
10.0 Interpret federal, state and local laws as they apply to health care facilities.
11.0 Demonstrate knowledge of operational and organizational structures of health care facilities.
12.0 Demonstrate knowledge of appropriate human resource management in healthcare.
13.0 Identify and apply basic knowledge of departmental capital and operational budgets.
14.0 Demonstrate knowledge of volume and growth, reimbursement systems and methodologies.

**Florida Department of Education**
**Student Performance Standards**

**Program Title:** **Health Services Management**
**CIP Number:** **1351070101**
**Program Length:** **60 credit hours**
**SOC Code(s):** **11-9111**

| **Refer to Rule 6A-14.030 (4) F.A.C., for the minimum amount of general education coursework required in the Associate of Science (AS) degree. At the completion of this program, the student will be able to:** | |
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| **Health Care Management Foundations (1-8)** | |
| 01.0 | Demonstrate knowledge of the health care delivery system and health occupations. – The student will be able to: |
| 01.01 | Identify the basic components of the health care delivery system including public, private, government and non-profit. |
| 01.02 | Identify types of healthcare settings. |
| 01.03 | Identify the perspective of the health care consumer regarding healthcare. |
| 01.04 | Describe the composition and functions of a systemic healthcare team including those not based in the health care facility (e.g. medical device rep. and insurance claims adjuster). |
| 01.05 | Identify characteristics of effective teams. |
| 01.06 | Recognize methods for building positive team relationships. |
| 01.07 | Analyze attributes and attitudes of an effective leader. |
| 01.08 | Recognize factors and situations that may lead to conflict. |
| 01.09 | Demonstrate effective techniques for managing team conflict. |
| 01.10 | Explain both the positive and negative impacts of emerging issues including technology, epidemiology, bioethics and socioeconomics on healthcare delivery systems. |
| 02.0 | Demonstrate the ability to communicate and use interpersonal skills effectively. – The student will be able to: |
| 02.01 | Develop fundamental speaking and active listening skills. |
| 02.02 | Develop essential observational skills. |
| 02.03 | Distinguish the differences between effective and ineffective communication practices. |

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| | 02.04 | Recognize communication styles and barriers in both yourself and others and adjust accordingly for optimum application. |
| | 02.05 | Use factual data to produce and deliver credible and understandable reports. |
| | 02.06 | Compose written communication for various purposes using correct spelling, grammar, formatting and confidentiality. |
| | 02.07 | Demonstrate an understanding of appropriate situational communication by considering diverse cultures and lifestyles, medical conditions and generations. |
| 03.0 | Demonstrate legal and ethical responsibilities. – The student will be able to: | |
| | 03.01 | Discuss practices that could result in malpractice, liability, negligence, abandonment, false imprisonment and fraud. |
| | 03.02 | Identify the roles and responsibilities of the consumer within the healthcare delivery system. |
| | 03.03 | Explain the “Patient’s Bill of Rights”. |
| | 03.04 | Identify the intent, application and violations of the Health insurance Portability and Accountability Act (HIPAA). |
| | 03.05 | Describe legal documents that allow patients and their guardians to document end-of-life care decisions ahead of time. |
| | 03.06 | Describe informed consent including scenarios when it is not possible or granted. |
| | 03.07 | Differentiate between legal and ethical issues in healthcare. |
| | 03.08 | Describe key components of personal, professional, and organizational ethics. |
| | 03.09 | Recognize the limits of authority and responsibility of health care workers including legislated scope of practice. |
| | 03.10 | Discuss what constitutes illegal and/or unethical practices of healthcare workers and the protocols for reporting. |
| 04.0 | Recognize and practice safety and security procedures. – The student will be able to: | |
| | 04.01 | Recognize safe and unsafe working conditions and the necessary protocol to report safety hazards. |
| | 04.02 | Explain how medical errors might occur and describe ways to prevent or mitigate such errors. |
| | 04.03 | Describe national personal safety standards advocated by leading healthcare agencies. |
| | 04.04 | Discuss appropriate regulatory and accrediting agency patient safety guidelines. |
| | 04.05 | Demonstrate an understanding of roles and responsibilities during manmade and natural disasters. |
| | 04.06 | Understand benefits and correct method to put on and disrobe from personal protective equipment (PPE). |
| | 04.07 | Identify risk management activities. |

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| 05.0 | Demonstrate an understanding of information technology applications in healthcare. – The student will be able to: |
| 05.01 | Demonstrate the ability to use a computer to perform business practices such as word processing, spreadsheets, presentations, and database management. |
| 05.02 | Recognize current and changing technology applications in healthcare. |
| 05.03 | Discuss methods of communication to access and distribute data including patient portal, electronic messaging, Continuity of Care Documents (CCD) and Health Information Exchanges (HIE). |
| 05.04 | Interpret technological capabilities and challenges of Electronic Health Records (EHR) and applications in healthcare. |
| 05.05 | Demonstrate how health information is used for institutional and patient strategic planning and outcome assessment and governed quality measures. |
| 05.06 | Identify protected Patient Health Information (PHI). |
| 05.07 | Identify methods for preventing PHI breaches and technology security. |
| 05.08 | Explain Meaningful Use as it relates to privacy, security, and access of patients' records. |
| 06.0 | Demonstrate employability skills. – The student will be able to: |
| 06.01 | Identify personal traits or attitudes desirable in a member of the healthcare team. |
| 06.02 | Exemplify basic professional standards of healthcare workers as they apply to hygiene, dress, language, and behavior (i.e. telephone & email etiquette, social media, courtesy, and self-introductions). |
| 06.03 | Identify necessary documents to compete a job application. |
| 06.04 | Write an effective resume. |
| 06.05 | Conduct a job search including levels of education, credentialing requirements employment opportunities, workplace environments, and career growth potential. |
| 06.06 | Identify skills for completing and conducting an interview. |
| 07.0 | Demonstrate basic knowledge of medical language, anatomy and physiology, and disease processes. – The student will be able to: |
| 07.01 | Use appropriate medical terminology and abbreviations. |
| 07.02 | Demonstrate knowledge of clinical terminology as relates to healthcare management. |
| 07.03 | Describe the structure and function of different body systems. |
| 07.04 | Demonstrate an understanding of the fundamentals of disease process in relationship to the human body. |
| 07.05 | Demonstrate an understanding of basic discharge and transfer procedures. |
| 08.0 | Demonstrate knowledge of materials and supplies needed in healthcare and how to obtain them in various healthcare settings. – |

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| | The student will be able to: |
| | 08.01 Prepare purchase orders, being mindful of current financial status of institution. |
| | 08.02 Shop for quality, price, and quantity. |
| | 08.03 Demonstrate a working knowledge of an effective inventory management system. |
| | 08.04 Identify accounts payable practices. |
| | 08.05 Identify steps to investigate needed supplies for adding a healthcare service and determining impacts to profit and loss. |
| **Health Services Management (9-14)** | |
| 09.0 | Demonstrate leadership and administrative skills basic to management in any health care facility. – The student will be able to: |
| | 09.01 Identify current trends and perspectives related to the management of health care organizations and the means by which the application of sound management principles and behavior can facilitate change. |
| | 09.02 Interpret managerial principles, practices and processes to the delivery of health care. |
| | 09.03 Identify the role, responsibilities and parameters for the various levels of management within the health care organizations. |
| | 09.04 State the control processes and techniques used to ensure that the objectives, strategies and policies of health care delivery are achieved effectively and efficiently. |
| | 09.05 Relate the various aspects of organizational dynamics (decision making, motivation, leadership, and communication) to the needs and problems of health care organizations. |
| | 09.06 Relate personnel administration practices to the total scope of labor relations, including manpower acquisition, maintenance, and utilization. |
| | 09.07 Conduct needs analysis to identify and prioritize workflow requirements. |
| | 09.08 Identify methods to monitor internal and external customer satisfaction and implement improvements. |
| 10.0 | Interpret federal, state and local laws as they apply to health care facilities. – The student will be able to: |
| | 10.01 Cite federal, state and local institutional requirements. |
| | 10.02 List required standards and procedures for facility and staff. |
| | 10.03 Identify mandatory requirements regarding environmental health and safety standards. |
| | 10.04 Discuss the impact of legislative changes on health care facilities. |
| | 10.05 Identify the Florida Statutes as applied to health care facilities. |
| 11.0 | Demonstrate knowledge of operational and organizational structures of health care facilities. – The student will be able to: |

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| 11.01 | Describe the functions and standards of departments in health care facilities. |
| 11.02 | Distinguish similarities and differences between administrative roles and responsibilities in different types of health care agencies. |
| 11.03 | Describe principles and philosophies of health care agencies delivering long-term, acute and other types of health care services and their individual role in the overall healthcare delivery system. |
| 11.04 | Identify ancillary services that support health care agencies. |
| 11.05 | Compare and contrast different healthcare setting operation structures. |
| 12.0 | Demonstrate knowledge of appropriate human resource management in healthcare. – The student will be able to: |
| 12.01 | Prepare job descriptions. |
| 12.02 | Explain the laws governing harassment, labor and employment. |
| 12.03 | Illustrate employee satisfaction measurement and improvement techniques. |
| 12.04 | Demonstrate the understanding of the legal aspects of human resource management. |
| 12.05 | Prepare policy and procedure manuals. |
| 12.06 | Explain the components of an effective staff meeting. |
| 12.07 | Identify recruitment and retention strategies. |
| 12.08 | Demonstrate key components of a performance evaluation. |
| 12.09 | Identify methods to assess and develop orientation and training programs for personnel. |
| 12.10 | Identify methods to enhance teamwork, collaboration and personnel empowerment. |
| 13.0 | Identify and apply basic knowledge of departmental capital and operational budgets. – The student will be able to: |
| 13.01 | Describe the budget process and operational budget format. |
| 13.02 | Explain a capital budget justification format. |
| 13.03 | Delegate capital budget preparation to key managers. |
| 13.04 | Analyze and approve appropriate capital budget items. |
| 13.05 | Analyze and approve appropriate financial levels in each operational budget. |
| 14.0 | Demonstrate knowledge of volume and growth, reimbursement systems and methodologies. – The student will be able to: |

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| 14.01 | Identify common methods, benefits and challenges of payment for healthcare services. |
| 14.02 | Demonstrate knowledge of a patient classification system within a health care facility. |
| 14.03 | Identify billing and insurance terminology. |
| 14.04 | Demonstrate understanding of the process of utilization review. |
| 14.05 | Demonstrate knowledge of accounts receivable system that monitors and optimizes reimbursement. |
| 14.06 | Demonstrate knowledge of third party reimbursements including Center for Medicare/Medicaid Services (CMS) rulings and precedence to other payers. |
| 14.07 | Demonstrate basic knowledge of the procedures and purposes of medical documentation, medical billing and coding. |
| 14.08 | Demonstrate knowledge of the revenue cycle. |
| 14.09 | Explain government impacts to reimbursement (i.e. value-based payment models, government incentive programs, self-pay models, and HCAPS scores). |
| 14.10 | Identify volume and growth strategies for healthcare agencies. |

## Additional Information

### Laboratory Activities

Laboratory investigations that include scientific inquiry, research, measurement, problem solving, emerging technologies, tools and equipment, as well as, experimental, quality, and safety procedures are an integral part of this career and technical program/course. Laboratory investigations benefit all students by developing an understanding of the complexity and ambiguity of empirical work, as well as the skills required to manage, operate, calibrate and troubleshoot equipment/tools used to make observations. Students understand measurement error; and have the skills to aggregate, interpret, and present the resulting data. Equipment and supplies should be provided to enhance hands-on experiences for students.

It is strongly recommended that hands-on practical experience be an integral part of the program.

### Special Notes

This program meets the Department of Health's education requirements for HIV/AIDS, Domestic Violence and Prevention of Medical Errors. Although not a requirement for initial licensure, it is a requirement for renewal, therefore the instructor may provide a certificate for renewal purposes to the student verifying these requirements have been met.

If students in this program are seeking a licensure, certificate or registration through the Department of Health, please refer to 456.0635 F.S. for more information on disqualification for a license, certificate, or registration through the Department of Health.

The curriculum content must include: courses in management, accounting and bookkeeping, personnel relations and management, governmental standards and regulation of health care administration in diverse health care settings (including nursing administration and patient care).

The theory base is built upon supportive courses available to students in the community college setting. Such courses shall include, but not be limited to, business communication, social science, business, mathematics, and computer application.

Graduates may be eligible to apply to take the National Administrators Board examination and the State Board licensing examination for licensure as a nursing home administrator in the State of Florida if they hold an advanced 4-year degree or meet the requirements of a Baccalaureate degree at an institution of higher learning.

### Career and Technical Student Organization (CTSO)

HOSA: Future Health Professionals is the intercurricular career and technical student organization providing leadership training and reinforcing specific career and technical skills. Career and Technical Student Organizations provide activities for students as an integral part of the instruction offered.

### Accommodations

Federal and state legislation requires the provision of accommodations for students with disabilities to meet individual needs and ensure equal access. Postsecondary students with disabilities must self-identify, present documentation, request accommodations if needed, and develop a plan

with their counselor and/or instructors. Accommodations received in postsecondary education may differ from those received in secondary education. Accommodations change the way the student is instructed. Students with disabilities may need accommodations in such areas as instructional methods and materials, assignments and assessments, time demands and schedules, learning environment, assistive technology and special communication systems. Documentation of the accommodations requested and provided should be maintained in a confidential file.

**Certificate Programs**

A College Credit Certificate consists of a program of instruction of less than sixty (60) credits of college-level courses, which is part of an AS or AAS degree program and prepares students for entry into employment (Rule 6A-14.030, F.A.C.). This AS degree program includes the following College Credit Certificates:

Health Care Services (0351070201) – 32 credit hours

Standards for the above certificate programs are contained in separate curriculum frameworks.

**Florida Department of Education**
**Curriculum Framework**

**Program Title:** **Health Information Technology**
**Career Cluster:** **Health Science**

| AS | |
|---|---|
| CIP Number | 1351070700 |
| Program Type | College Credit |
| Standard Length | 70 credit hours |
| CTSO | HOSA: Future Health Professionals |
| SOC Codes (all applicable) | 29-2071 Medical Records and Health Information Technicians |

## Purpose

This program offers a sequence of courses that provides coherent and rigorous content aligned with challenging academic standards and relevant technical knowledge and skills needed to prepare for further education and careers in the Health Science career cluster; provides technical skill proficiency, and includes competency-based applied learning that contributes to the academic knowledge, higher-order reasoning and problem-solving skills, work attitudes, general employability skills, technical skills, and occupation-specific skills, and knowledge of all aspects of Health Science career cluster.

This program is designed to prepare students for employment as Health Information Technicians, Medical Record Technicians SOC Code 29-2071 (Medical Records and Health Information Technicians), or to provide supplemental training for persons previously or currently employed in these occupations.

The content includes but is not limited to health information management, ethical and medico-legal aspects, computer information technology for health records, biomedical sciences, including anatomy and physiology, medical terminology, pharmacology and pathophysiology, health record science, computer applications, word processing, data base management, and spreadsheet, health data content, analysis and structure, statistics and data literacy, coding, clinical classification systems, reimbursement methodologies, quality assessment and performance improvement, health care delivery systems, indexing, organization and supervision, professional practice experience, and employability skills.

**Additional Information** relevant to this Career and Technical Education (CTE) program is provided at the end of this document.

## Program Structure

This program is a planned sequence of instruction consisting of 70 credit hours.

**Standards**

After successfully completing this program, the student will be able to perform the following:

Standards 1-12 comprise the HIT Core:

01.0 Demonstrate an understanding of healthcare organizations and health occupations.
02.0 Demonstrate the ability to communicate and use interpersonal skills effectively.
03.0 Explore health informatics as an allied health profession.
04.0 Demonstrate an understanding of health data concepts.
05.0 Identify the functions of a health record.
06.0 Demonstrate an understanding of Health Information Technology.
07.0 Discuss classification systems, clinical vocabularies and terminologies.
08.0 Evaluate ethical issues in Health Information Professions.
09.0 Demonstrate compliance with laws, regulations, and standards that impact healthcare.
10.0 Apply policies, regulations, and standards to the management of information associated with treatment, payment, and operations (TPO).
11.0 Demonstrate computer knowledge and skills.
12.0 Demonstrate employability skills.

**In addition, students will complete the objectives in one of the following specialization tracks:**

Standards 13-20 must be completed by students specializing in the Medical Information Coder/Biller CCC or Medical Coder/Biller CCC or ATD Track:

13.0 Describe the anatomy and physiology of the human body.
14.0 Demonstrate proficiency in the application of medical terminology.
15.0 Demonstrate an understanding of the fundamentals of disease process in relationship to the human body, including pharmacology.
16.0 Demonstrate proficiency in the use of ICD and HCPCS/CPT coding systems, both manual and automated.
17.0 Perform coding complexities proficiently.
18.0 Explain the significance of health information services as it relates to the medical coder/biller.
19.0 Demonstrate professional and ethical behavior of a medical coder/biller.
20.0 Perform healthcare revenue cycle management processes.

Standards 21-29 must be completed by students specializing in the HealthCare Informatics Specialist CCC Track:

21.0 Examine the various informatics related disciplines.
22.0 Demonstrate ethical and legal principles with regard to the role of the informatics specialist.
23.0 Apply appropriate resources in healthcare informatics to retrieve and analyze relevant information.
24.0 Manage health data processes and systems.
25.0 Analyze healthcare statistics, including research and performance improvement.
26.0 Perform appropriate information technology and systems functions.
27.0 Perform project management principles and best practices.

28.0 Collaborate in the planning, design, selection, implementation, integration, testing, and support for health information systems.
29.0 Perform proficiently in the application and integration of healthcare informatics concepts and skills through practical lab experiences.

Standards 30-36 must be completed by students specializing in the Medical Record Transcribing/Healthcare Documentation - ATD Track:

30.0 Utilize appropriate medical and scientific terminology.
31.0 Apply concepts of disease, diagnosis, and treatment of the human body.
32.0 Apply rules of English grammar and punctuation.
33.0 Utilize medical references.
34.0 Apply healthcare documentation technology.
35.0 Perform functions specific to the medical transcription/healthcare documentation specialist.
36.0 Perform proficiently in the application of healthcare documentation/transcribing concepts and skills through practical lab experiences.

Students must complete at least one of the specialization tracks above and standards 37-38 to obtain the Health Information Technology A.S. degree.

37.0 Collaborate in the planning, design, selection, implementation, integration, testing, and support for health information systems.
38.0 Utilize organizational resources.

**Florida Department of Education**
**Student Performance Standards**

**Program Title:** **Health Information Technology**
**CIP Number:** **1351070700**
**Program Length:** **70 credits**
**SOC Code(s):** **29-2071**

| **Refer to Rule 6A-14.030 (4) F.A.C., for the minimum amount of general education coursework required in the Associate of Science (AS) degree. At the completion of this program, the student will be able to:** | |
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| 01.0 | Demonstrate an understanding of healthcare organizations and health occupations. – The student will be able to: |
| 01.01 | Discuss the evolution of healthcare. |
| 01.02 | Demonstrate an understanding of the infrastructure of healthcare in the United States. |
| 01.03 | Discuss healthcare regulatory agencies and organizations. |
| 01.04 | Recognize levels of education, credentialing requirements, employment opportunities, workplace environments, and career growth potential. |
| 01.05 | Differentiate the roles of various providers and disciplines throughout the continuum of healthcare and respond to their information needs. |
| 02.0 | Demonstrate the ability to communicate and use interpersonal skills effectively. – The student will be able to: |
| 02.01 | Develop basic speaking and active listening skills with meaningful feedback. |
| 02.02 | Develop basic observational skills and related documentation strategies in written and oral form. |
| 02.03 | Identify characteristics of successful and unsuccessful communication including barriers. |
| 02.04 | Respond to verbal and non-verbal cues. |
| 02.05 | Compose written communication including emails using correct spelling, grammar, formatting and confidentiality. |
| 02.06 | Demonstrate ability to create professional correspondence using appropriate email practices and etiquette. |
| 02.07 | Use appropriate medical terminology and abbreviations. |
| 02.08 | Model the importance of courtesy and respect for patients and other healthcare workers and maintain good interpersonal relationships. |
| 02.09 | Provide health information education to internal/external stakeholders. |

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| | 02.10 Adapt communication skills to varied levels of understanding and cultural orientation including diverse age, cultural, economic, ethnic, and religious groups. |
| | 02.11 Distinguish between and identify subjective and objective information. |
| 03.0 | Explore health information as an allied health profession. – The student will be able to: |
| | 03.01 Discuss the history of health information management. |
| | 03.02 Discuss the professional opportunities within the health information professions. |
| | 03.03 Demonstrate knowledge of professional associations applicable to the field of health information. |
| 04.0 | Demonstrate an understanding of health data concepts. – The student will be able to: |
| | 04.01 Describe the various uses of primary and secondary health data and data sets. |
| | 04.02 Identify various characteristics of health data quality and standards. |
| 05.0 | Identify the functions of a health record. – The student will be able to: |
| | 05.01 Demonstrate an understanding of the various formats of the health record. |
| | 05.02 Explain the various uses of a health information as it relates to treatment, payment, and operations (TPO). |
| 06.0 | Demonstrate an understanding of Health Information Technology. – The student will be able to: |
| | 06.01 Discuss how changing regulations and technology impact the health information field. |
| | 06.02 Interpret information from health information systems and applications in healthcare. |
| | 06.03 Demonstrate an understanding of creation, use, storage, retrieval, and exchange of health data. |
| 07.0 | Discuss classification systems, clinical vocabularies and terminologies. – The student will be able to: |
| | 07.01 Explain the use of classification systems, clinical vocabularies, and terminologies as they relate to Health Information Management and nomenclatures. |
| 08.0 | Evaluate ethical issues in Health Information Professions. – The student will be able to: |
| | 08.01 Describe the code of ethics consistent with healthcare occupations. |
| | 08.02 Analyze ethical issues related to health information. |
| | 08.03 Manage ethical issues related to coding and billing/ healthcare documentation. |
| 09.0 | Demonstrate compliance with laws, regulations, and standards that impact healthcare. – The student will be able to: |

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| | 09.01 Promote the importance of maintaining ethical and legal standards in compilation and usage of health information. |
| | 09.02 Identify all laws and standards that impact health information including the Health Insurance Portability and Accountability Act (HIPAA). |
| | 09.03 Explain the composition of the legal health record. |
| | 09.04 Apply health information policies and procedures for privacy, confidentiality, and security. |
| | 09.05 Articulate legal terms and processes that impact healthcare. |
| 10.0 | Apply policies, regulations, and standards to the management of information associated with treatment, payment, and operations (TPO). – The student will be able to: |
| | 10.01 Describe how to adapt workflow necessitated by regulatory change. |
| | 10.02 Demonstrate knowledge of policies and procedures for access and disclosure of protected health information to authorized users. |
| | 10.03 Adhere to appropriate and applicable accrediting agency guidelines. |
| 11.0 | Demonstrate computer knowledge and skills. – The student will be able to: |
| | 11.01 Demonstrate the ability to create, manage, organize, attach, and retrieve files. |
| | 11.02 Demonstrate ability to connect to and perform research on the internet by identifying reliable reputable websites. |
| | 11.03 Demonstrate proficiency in word processing, spreadsheets, and presentation software. |
| | 11.04 Demonstrate the ability to install software programs. |
| | 11.05 Demonstrate knowledge of safe computer practices and security procedures including but not limited to encryption, passwords and biometrics. |
| 12.0 | Demonstrate employability skills. – The student will be able to: |
| | 12.01 Identify and exemplify personal traits or attitudes desirable in a member of the healthcare team. |
| | 12.02 Model professional standards of healthcare workers as they apply to hygiene, dress, language, confidentiality and behavior (i.e. courtesy and self-introductions). |
| | 12.03 Identify documents that may be required when applying for a job. |
| | 12.04 Perform the process to obtain employment: job search, cover letter, resume, application, and thank you letter. |
| | **Standards 13-20 must be completed by students specializing in the Medical Information Coder/Biller CCC or Medical Coder/Biller ATD Track:** |
| 13.0 | Describe the anatomy and physiology of the human body. – The student will be able to: |
| | 13.01 Describe the structure and function of the respiratory system. |

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| | 13.02 Describe the structure and function of the circulatory system. |
| | 13.03 Describe the structure and function of the musculoskeletal & connective tissue system. |
| | 13.04 Describe the structure and function of nervous and sensory systems. |
| | 13.05 Describe the structure and function of the reproductive system. |
| | 13.06 Describe the structure and function of the urinary system. |
| | 13.07 Describe the structure and function of the digestive system. |
| | 13.08 Describe the structure and function of the endocrine system. |
| | 13.09 Describe the structure and function of the integumentary system. |
| | 13.10 Describe major psychiatric disorders. |
| 14.0 | Demonstrate proficiency in the application of medical terminology. – The student will be able to: |
| | 14.01 Identify word parts of medical terminology in daily use. |
| | 14.02 Build, spell and pronounce correctly, appropriate terms from word parts learned and be able to give the meaning of the word. |
| | 14.03 Identify word parts and be able to build, spell and understand new words with those parts. |
| | 14.04 Spell and use medical abbreviations. |
| | 14.05 Identify terminology specific to healthcare settings including surgical, medical, and therapeutic. |
| | 14.06 Apply medical reference sources. |
| 15.0 | Demonstrate an understanding of the fundamentals of disease process in relationship to the human body, including pharmacology. – The student will be able to: |
| | 15.01 Demonstrate an understanding of the predisposing factors and direct causes of disease as they relate to the human body. |
| | 15.02 Demonstrate an understanding of the general pathogenesis and morphology of disease and its role in the disease process. |
| | 15.03 Demonstrate an understanding of pharmacological agents, uses, treatments, and utilizing drug reference sources. |
| | 15.04 Identify and use diagnostic test terminology. |
| 16.0 | Demonstrate proficiency in use of ICD and HCPCS/CPT coding systems, both manual and automated. – The student will be able to: |
| | 16.01 Apply conventions and guidelines used in coding. |

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| | 16.02 | Describe the process to update coding resources. |
| | 16.03 | Assign and/or verify diagnosis, procedure, HCPCS level II codes, and applicable modifiers and groupings in accordance with official guidelines. |
| | 16.04 | Utilize ICD-CM, ICD-PCS, CPT (all sections), and HCPSC Level II code sets to assign diagnosis and procedure codes to intermediate and advanced case studies and authentic health records/abstracts. |
| | 16.05 | Describe components of revenue cycle management and clinical documentation improvement including quality indicators as it relates to coding. |
| | 16.06 | Identify any discrepancies, incomplete information, and/or poor documentation practices in relation to coding while following appropriate departmental policies for correcting errors or improving documentation practices. |
| 17.0 | Perform coding complexities proficiently. – The student will be able to: | |
| | 17.01 | Apply advanced coding concepts to complex authentic health records/abstracts and/or case studies across the continuum of care. |
| | 17.02 | Analyze case-mix, severity of illness systems, and coding quality monitors and reporting. |
| | 17.03 | Utilize a variety of simulated patient records from across the continuum of care, interpret data, and assign and/or verify codes. |
| | 17.04 | Analyze the various classification systems. |
| 18.0 | Explain the significance of health information services as it relates to the medical coder/biller. – The student will be able to: | |
| | 18.01 | Describe the functions of a health information management department and how this department interacts with the medical coder/biller. |
| | 18.02 | Describe the development of the health record to include all types used in the current industry. |
| | 18.03 | Explain the importance of the health record in relation to state and federal agencies, including compliance area. |
| 19.0 | Demonstrate professional and ethical behavior of a medical coder/biller. – The student will be able to: | |
| | 19.01 | Explain the scope of work of the Medical Coder/Biller. |
| | 19.02 | Demonstrate ethical coding practices as outlined by professional associations. |
| 20.0 | Perform healthcare revenue cycle management processes. – The student will be able to: | |
| | 20.01 | Prepare and submit applicable payer claims. |
| | 20.02 | Analyze various payer types. |
| | 20.03 | Perform patient accounting functions including claims, denials, rejections, appeals, collections, and payment resubmission using applicable software. |
| | 20.04 | Describe characteristics of reimbursement methodology systems across the continuum of care. |

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| 20.05 | Analyze charge master and superbill maintenance. |
| 20.06 | Understand compliance strategies and reporting as well as regulatory guidelines. |
| **Standards 21-29 must be completed by students specializing in the HealthCare Informatics Specialist CCC Track:** | |
| 21.0 | Examine the various informatics related disciplines. – The student will be able to: |
| 21.01 | Identify the development of the informatics discipline, including the present industry environment and future trends. |
| 21.02 | Demonstrate comprehensive knowledge of health data standards for implementation of health information systems. |
| 22.0 | Demonstrate ethical and legal principles with regard to the role of the informatics specialist. – The student will be able to: |
| 22.01 | Apply the Code of Ethics to informatics as it relates to professional organizations. |
| 22.02 | Explain the scope of work of the healthcare informatics specialist. |
| 23.0 | Apply appropriate resources in healthcare informatics to retrieve and analyze relevant information. – The student will be able to: |
| 23.01 | Demonstrate the ability to identify credible informatics resources relevant to the content, applications, and assignments. |
| 23.02 | Utilize case studies and best practices in informatics projects and course work. |
| 24.0 | Manage health data processes and systems. – The student will be able to: |
| 24.01 | Oversee the collection and maintenance of health data, data sets, quality indicators, and databases. |
| 24.02 | Apply policies and procedures to health informatics processes. |
| 24.03 | Maintain and verify data quality, standards, and data sources for all health information systems across the continuum of care. |
| 25.0 | Analyze healthcare statistics, including research and performance improvement. – The student will be able to: |
| 25.01 | Abstract and maintain data for clinical indices/databases/registries. |
| 25.02 | Model data as representative visual information to achieve desired outcomes. |
| 25.03 | Calculate basic descriptive, institutional, and healthcare statistics. |
| 25.04 | Identify common research methods in accordance with Institutional Review Board (IRB) processes and policies. |
| 25.05 | Utilize technologies for trend analysis, end user support, decision making, and strategic planning. |
| 25.06 | Report data for facility wide quality management and performance improvement programs. |

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| 26.0 | Perform appropriate information technology and systems functions. – The student will be able to: |
| 26.01 | Demonstrate advanced proficiency in using such as spreadsheets and databases in the execution of projects and presentations. |
| 26.02 | Utilize specialized software in processes affiliated with treatment, payment, and operations (TPO). |
| 26.03 | Apply policies and procedures to facilitate the use of electronic health record (EHR), personal health record (PHR), public health, and other applications and networks. |
| 26.04 | Apply knowledge of data base modeling to meet departmental needs. |
| 26.05 | Utilize and maintain appropriate electronic or imaging technology for data/record storage. |
| 26.06 | Perform queries and generate reports to facilitate decision making. |
| 26.07 | Utilize tools and techniques for retention, archiving, and destruction of information in accordance with current requirements and standards in multiple formats. |
| 26.08 | Protect data integrity and validity using software and hardware technology. |
| 27.0 | Perform project management principles and best practices. – The student will be able to: |
| 27.01 | Demonstrate an understanding of the general principles and tools of informatics project management. |
| 27.02 | Demonstrate abilities related to team work, project resource allocation, and problem resolution associated in a healthcare informatics project. |
| 28.0 | Collaborate in the planning, design, selection, implementation, integration, testing, and support for health information systems. – The student will be able to: |
| 28.01 | Apply standard selection processes for health information systems using best practices. |
| 28.02 | Implement information technologies across the healthcare continuum of care. |
| 28.03 | Identify technological and changing management issues and problem resolution associated with health information systems. |
| 28.04 | Benchmark S.M.A.R.T. goals for projects. |
| 28.05 | Map workflow and process assessment as it pertains to information technology. |
| 28.06 | Summarize information systems theory. |
| 28.07 | Describe strategic planning for implementation of health information systems. |
| 28.08 | Identify security risks including physical, virtual, and network areas. |
| 28.09 | Take part in end-user training sessions, including planning training sessions and development of training material. |
| 28.10 | Examine the influence and scope of health information system practices on a national and international scale. |

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| | 28.11 Oversee user access logs/audit trails to track history of access to and disclosure of identifiable patient data. |
| 29.0 | Perform proficiently in the application and integration of healthcare informatics concepts and skills through practical lab experiences. – The student will be able to: |
| | 29.01 Model the role and responsibilities of the health informatics specialist as team leader and/or project manager. |
| | 29.02 Apply knowledge and skills related to the health information systems, personnel, equipment, and resources. |
| | 29.03 Perform real-world applications of healthcare informatics principles and best practices. |
| **Standards 30-36 must be completed by students specializing in the Medical Record Transcribing/Healthcare Documentation ATD Track** | |
| 30.0 | Utilize appropriate medical and scientific terminology. – The student will be able to: |
| | 30.01 Spell, define and pronounce medical words and their components. |
| | 30.02 Define and use medical abbreviations, brief forms, acronyms, eponyms, and foreign words and phrases commonly used in healthcare practice. |
| | 30.03 Identify and use the medical terminology related to the structure and function of the human body. |
| | 30.04 Identify, pronounce, spell, and define pharmacological terminology. |
| | 30.05 Distinguish between or among medical homophones (sound-alikes), commonly confused medical terms, and synonyms. |
| 31.0 | Apply concepts of disease, diagnosis, and treatment of the human body. - The student will be able to: |
| | 31.01 Identify and explain structure and function of the human body in health and in disease. |
| | 31.02 Identify disorders and treatments of the human body. |
| | 31.03 Identify and explain procedures and technologies, imaging, laboratory, pathology, and their application to diseases and disorders. |
| | 31.04 Demonstrate knowledge of pharmacology to include indications and contraindications, dosage, methods of administration, interactions and side effects. |
| | 31.05 Organize surgical procedures and other interventional diagnostic and treatment modalities by specialty, indications or related diagnoses, technique, and typical findings. |
| 32.0 | Apply rules of English grammar and punctuation. – The student will be able to: |
| | 32.01 Recognize and use the principal parts of speech. |
| | 32.02 Recognize and use punctuation marks. |
| | 32.03 Apply rules of numerical expression. |
| | 32.04 Apply rules of capitalization. |

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| | 32.05 Define and use abbreviations. |
| | 32.06 Demonstrate ability to spell words in common usage. |
| | 32.07 Evaluate and use reliable resources for research and practice. |
| | 32.08 Apply correct medical style as defined by authorities (i.e. AHDI Book of style, AMA Manual of Style). |
| | 32.09 Edit and proofread healthcare documentation. |
| | 32.10 Recognize and use report formats. |
| 33.0 | Utilize medical references. – The student will be able to: |
| | 33.01 Utilize medical dictionaries and specialty word books. |
| | 33.02 Utilize trade, generic and chemical drug names utilizing reference sources. |
| | 33.03 Utilize diagnostic test terminology. |
| | 33.04 Utilize appropriate resources located on the internet. |
| 34.0 | Apply healthcare documentation technology. – The student will be able to: |
| | 34.01 Demonstrate keyboarding skills with an awareness of productivity and accuracy standards and definitions. |
| | 34.02 Demonstrate use of transcription, dictation, and speech recognition technology. |
| | 34.03 Accurately transcribe and/or edit a required minimum number of reports to include history and physical, consultations, discharge summaries, operative reports and special reports, applying competencies specified in the areas of English Language, Medical Knowledge, Technology, Healthcare Documentation, and Professional Practice. |
| | 34.04 Demonstrate the ability to proofread and correct transcribed healthcare documents, including using critical thinking and editing skills. |
| | 34.05 Identify inconsistencies, discrepancies, and inaccuracies in healthcare dictation while transcribing/editing, without altering the meaning of the content. |
| | 34.06 Demonstrate advanced use of word processing programs, including commands for editing, file organization, and retrieval. |
| | 34.07 Demonstrate knowledge of abbreviation expanders and other productivity-enhancing software. |
| | 34.08 Demonstrate a general knowledge of health information systems including the functions related to dictation/transcription integration, editing, and common terminology. |
| 35.0 | Perform functions specific to the medical transcriptionist/ healthcare documentation specialist. – The student will be able to: |
| | 35.01 Promote common health information policies and procedures for security specific to the role of the medical transcriptionist/ healthcare documentation specialist. |

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| 35.02 | Demonstrate workstation ergonomics specific to the medical transcriptionist/ healthcare documentation specialist |
| 35.03 | Demonstrate an awareness of the opportunities in medical transcription/healthcare documentation and related careers and the importance of professional development. |
| 35.04 | Explain the importance of maintaining workstation security and safeguarding protected health information (PHI). |
| 35.05 | Explain the scope of work of the medical transcriptionist/healthcare documentation specialist. |
| 35.06 | Discuss the code of ethics of the Association for Healthcare Documentation Integrity (AHDI). |
| 36.0 | Perform proficiently in the application of healthcare documentation/transcribing concepts and skills through practical lab experiences. – The student will: |
| | 36.01 Model the role and responsibilities of the healthcare documentation transcription specialists. |
| | 36.02 Apply knowledge and skills related to speech recognition, dictation, documentation standards, technology, and transcription. |
| | 36.03 Perform real-world applications of healthcare documentation/transcription principles and best practices. |
| | 36.04 Analyze errors and devise corrective strategies. |
| | 36.05 Transcribe and/or edit a minimum 2100 minutes of authentic clinician-generated documentation. |
| **Students must complete at least one of the specialization tracks above and standards 37-38 to obtain the Health Information Technology A.S. degree.** | |
| 37.0 | Collaborate in the planning, design, selection, implementation, integration, testing, and support for health information systems. – The student will be able to: |
| | 37.01 Apply standard selection processes for health information systems using best practices. |
| | 37.02 Implement information technologies across the continuum of care. |
| | 37.03 Identify technological and change management issues and problem resolution associated with health information systems. |
| | 37.04 Benchmark S.M.A.R.T. goals for projects. |
| | 37.05 Map workflow and process assessment as it pertains to information technology. |
| | 37.06 Summarize information systems theory. |
| | 37.07 Describe strategic planning for implementation of health information systems. |
| | 37.08 Provide information for strategic planning. |
| | 37.09 Identify security risks including physical, virtual, and network areas. |
| | 37.10 Examine the influence and scope of health information system practices on a national and international scale. |

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| | 37.11 Oversee user access logs/audit trails to track history of access to and disclosure of identifiable patient data. |
| 38.0 | Utilize organizational resources. – The student will be able to: |
| | 38.01 Demonstrate fundamental leadership skills. |
| | 38.02 Identify the impact of change on processes, people, and systems. |
| | 38.03 Identify human resources and productivity standards for organizational best practices. |
| | 38.04 Utilize data-drives performance improvement techniques to achieve desired outcomes. |
| | 38.05 Utilize financial management tools and processes to meet organizational goals. |
| | 38.06 Identify policies and strategies that address information governance to include the creation, use, storage, and exchange of data. |
| | 38.07 Apply strategies that support a culture of diversity and inclusion. |
| | 38.08 Implement legal and regulatory requirements related to the health information infrastructure. |
| | 38.09 Take part in privacy, security, and confidentiality training programs. |
| | 38.10 Identify and recommend solutions to potential compensable events. |

Additional Information

## Laboratory Activities

Laboratory investigations that include scientific inquiry, research, measurement, problem solving, emerging technologies, tools and equipment, as well as, experimental, quality, and safety procedures are an integral part of this career and technical program/course. Laboratory investigations benefit all students by developing an understanding of the complexity and ambiguity of empirical work, as well as the skills required to manage, operate, calibrate and troubleshoot equipment/tools used to make observations. Students understand measurement error; and have the skills to aggregate, interpret, and present the resulting data. Equipment and supplies should be provided to enhance hands-on experiences for students.

## Special Notes

The following ATD programs have been approved by the Florida State Board of Education for statewide articulation credit into this degree program.

Medical Coder/Biller -- ATD (0351070705/0351070703) – 26 credits
Medical Record Transcribing/HealthCare Documentation -- ATD (0351070706/0351070704) – 15 credits

The following industry certifications have been approved by the Florida State Board of Education for statewide articulation credit into this degree program.

Certified Medical Transcriptionist (AFHDI001) – 3 credits

The program should meet the program standards and guidelines of the Commission on Accreditation for Health Informatics and Information Management Education (CAHIIM). The program should encompass the AHIMA established knowledge clusters and entry-level competencies for Registered Health Information Technicians (RHIT's). It prepares the student to take the AHIMA national certification examination for Registered Health Information Technicians (RHIT).

This program should be taught in accordance with the accreditation standards of: the Commission on Accreditation for Health Informatics and Information Management Education (CAHIIM), 233 North Michigan Ave., 21st Floor, Chicago, IL 60601-5800 (312/233-1100)

Students should be encouraged to join the (AHIMA) American Health Information Management Association and/or (AAPC) American Academy of Professional Coders and participate in the state/local association.

Outcomes 01-11 are referred to as the Health Information Technology core and do not have to be completed if the students has previously completed the core in another program at any level. The Core should be taken first or concurrently with the first course in the program.

## Career and Technical Student Organization (CTSO)

HOSA: Future Health Professionals is the intercurricular career and technical student organization providing leadership training and reinforcing specific career and technical skills. Career and Technical Student Organizations provide activities for students as an integral part of the instruction offered.

## Accommodations

Federal and state legislation requires the provision of accommodations for students with disabilities to meet individual needs and ensure equal access. Postsecondary students with disabilities must self-identify, present documentation, request accommodations if needed, and develop a plan with their counselor and/or instructors. Accommodations received in postsecondary education may differ from those received in secondary education. Accommodations change the way the student is instructed. Students with disabilities may need accommodations in such areas as instructional methods and materials, assignments and assessments, time demands and schedules, learning environment, assistive technology and special communication systems. Documentation of the accommodations requested and provided should be maintained in a confidential file.

## Certificate Programs

A College Credit Certificate consists of a program of instruction of less than sixty (60) credits of college-level courses, which is part of an AS or AAS degree program and prepares students for entry into employment (Rule 6A-14.030, F.A.C.). This AS degree program includes the following College Credit Certificates:

Healthcare Informatics Specialist (0351070711) – 18 credit hours
Medical Information Coder/Biller (0351070707) – 34 credit hours

Standards for the above certificate programs are contained in separate curriculum frameworks.

**Florida Department of Education**
**Curriculum Framework**

**Program Title:** **Clinical Research Professional**
**Career Cluster:** **Health Science**

| AS | |
|---|---|
| CIP Number | 1351071902 |
| Program Type | College Credit |
| Standard Length | 60 credit hours |
| CTSO | HOSA |
| SOC Codes (all applicable) | 11-9121 Natural Science Manager<br>11-9111 Medical and Health Services Manager<br>11-9199 Manager All Other<br>30-9099 Healthcare Support Workers, All Other |

## Purpose

This program offers a sequence of courses that provides coherent and rigorous content aligned with challenging academic standards and relevant technical knowledge and skills needed to prepare for further education and careers in the Health Science career cluster; provides technical skill proficiency, and includes competency-based applied learning that contributes to the academic knowledge, higher-order reasoning and problem-solving skills, work attitudes, general employability skills, technical skills, and occupation-specific skills, and knowledge of all aspects of Health Science career cluster.

The purpose of this program is to prepare students for employment as clinical research coordinators. SOC Code 11-9121 (Natural Science Manager), 11-9111 (Medical and Health Services Manager), 11-9199 (Manager All Other), or 31-9099 (Healthcare Support Workers, All Other) or to provide supplemental training for persons previously or currently employed in these occupations.

The content includes but is not limited to communication skills, leadership skills, human relations and employability skills, principles of management, introduction to computer literacy, health care organization, medical ethics, legal aspects, and advanced technical skills in a chosen health-related profession, health and safety, and CPR.

**Additional Information** relevant to this Career and Technical Education (CTE) program is provided at the end of this document.

## Program Structure

This program is a planned sequence of instruction consisting of 60 credit hours.

**Standards**

After successfully completing this program, the student will be able to perform the following:

01.0 Demonstrate basic knowledge of medical language, anatomy and physiology.
02.0 Identify and apply basic knowledge of different aspects of wellness.
03.0 Demonstrate knowledge of funding and site sponsorship related to clinical research including: public/private grants and contract and lifecycles of clinical trials.
04.0 Demonstrate knowledge of the guidelines and regulations governing clinical trials.
05.0 Demonstrate ability to work as a clinical research professional.
06.0 Demonstrate knowledge of the compliance and monitoring issues in clinical research.
07.0 Demonstrate knowledge of the research process including: consent, screening, phases of clinical trials, product development and adverse events and safety.
08.0 Demonstrate knowledge of current events in the field of public health.
09.0 Demonstrate the ability to identify U.S. health care delivery funding sources.
10.0 Demonstrate knowledge of the principles and language of pharmacology, including drugs and drug classes, diagnostic tests, indications, techniques.

**Florida Department of Education**
**Student Performance Standards**

**Program Title:** **Clinical Research Professional**
**CIP Number:** **1351071902**
**Program Length:** **60 credit hours**
**SOC Code(s):** **11-9121, 11-9111, 11-9199, 31-9099**

| **Refer to Rule 6A-14.030 (4) F.A.C., for the minimum amount of general education coursework required in the Associate of Science (AS) degree. At the completion of this program, the student will be able to:** | |
|---|---|
| 01.0 | Demonstrate basic knowledge of medical language, anatomy and physiology. – The student will be able to: |
| 01.01 | Define, describe and discuss anatomic descriptive terms of the body. |
| 01.02 | Demonstrate an understanding of basic patient discharge and transfer procedures. |
| 01.03 | Describe common abbreviations and commonly used medical terms and their proper usage. |
| 01.04 | Define and describe anatomic names of bones and organs of the body. |
| 02.0 | Identify and apply basic knowledge of different aspects of wellness. – The student will be able to: |
| 02.01 | Discuss integrating health living into one's lifestyle. |
| 02.02 | Define: physical fitness, mental health, nutrition, tobacco usage, alcohol consumption, illicit drug use, family living and how these factors connect with the concepts of wellness on a personal level. |
| 02.03 | Identify the risk factors for cardiovascular disease. |
| 02.04 | Describe the effects of tobacco and smoking on the human body. |
| 02.05 | Describe the various fitness methods to improve health. |
| 02.06 | Discuss the effects of nutrition on health and wellness. |
| 02.07 | Explain body composition and achieving a healthy weight. |
| 02.08 | Describe stress management strategies. |
| 02.09 | Discuss the use and abuse of illicit drugs in society. |
| 02.10 | Describe the effects of chronic disease on the human body. |

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| 03.0 | Demonstrate knowledge of funding and site sponsorship related to clinical research including: public/private grants and contracts and lifecycles of clinical trials. – The student will be able to: |
| 03.01 | Describe key concepts and skills used in the site-sponsor relationship. |
| 03.02 | Classify clinical research funding sources and the protocols used to secure funding. |
| 03.03 | Discuss basic constructs related to grants & contracts management in clinical research. |
| 03.04 | Provide examples of the types of lifecycles of clinical trials. |
| 03.05 | Define the terms and language used in startup & closing Items on clinical research. |
| 03.06 | Determine communication methods to be used in the startup and closing of items in clinical research. |
| 04.0 | Demonstrate knowledge of the guidelines and regulations governing clinical trials. – The student will be able to: |
| 04.01 | Understand the array of guidelines & regulations governing clinical trials. |
| 04.02 | Describe the various HIPPAA Privacy & clinical research privacy issues. |
| 04.03 | Identify the major GCP/ICH guidelines related to working with human subjects in research. |
| 04.04 | Discuss the various sources and uses of essential documents generated from clinical studies. |
| 04.05 | Explain the role of compliance in maintaining fidelity to a study protocol. |
| 04.06 | Provide examples of a standard response to a request for documentation of meeting award conditions. |
| 04.07 | Understand the array of analysis techniques used in interpreting research findings. |
| 05.0 | Demonstrate ability to work as a clinical research professional. – The student will be able to: |
| 05.01 | Identify clinical and behavioral research settings where Clinical Research Professionals are employed. |
| 05.02 | Demonstrate an understanding of the essential duties of a Clinical Research Professional. |
| 05.03 | Describe procedures and processes used to protect research participants at placement site. |
| 05.04 | Discuss the core research activities of placement site. |
| 05.05 | Demonstrate an understanding of how placement site works with: local, county, state and federal agencies to carry out their research activities. |
| 05.06 | Evaluate the role of Clinical Research Professionals in research settings. |
| 05.07 | Demonstrate the skills necessary to be a productive member of a research team including; working on a multidisciplinary research team and demonstrating an ability to work with confidential research participant information. |

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| 06.0 | Demonstrate knowledge of the compliance and monitoring issues in clinical research. – The student will be able to: |
| 06.01 | Describe the role of compliance in clinical research. |
| 06.02 | Identify issues related to compliance in human subject's research. |
| 06.03 | Explain activities associated with monitoring within the scope of clinical research. |
| 06.04 | Discuss processes used to resolve issues that may arise from monitoring as part of a clinical trial. |
| 06.05 | Provide examples of quality assurance audits used in clinical research and discuss their value in relation to performing research with human subjects. |
| 06.06 | Define the types of inspections clinical research facilities are subject to. |
| 07.0 | Demonstrate knowledge of the research process including: consent, screening, phases of clinical trials, product development and adverse events and safety. – The student will be able to: |
| 07.01 | Accurately describe the processes involved in clinical research. |
| 07.02 | Define and describe issues associated with participant consent. |
| 07.03 | Explain the goals, limitations and basic rules for screening participants. |
| 07.04 | Discuss market and social aspects of product development (drugs & devices). |
| 07.05 | Discuss impacts of clinical trial stakeholders. |
| 07.06 | Accurately describe how epidemiology is used in clinical research. |
| 07.07 | Explain the relationship between essential processes related to adverse events & safety. |
| 08.0 | Demonstrate knowledge of current events in the field of public health. – The student will be able to: |
| 08.01 | Identify outlets (news, media, governmental) used to communicate public health events to the general public. |
| 08.02 | Describe the implications of current events on public health. |
| 08.03 | Discuss concerns related to how public health information is relayed to the public. |
| 08.04 | Recognize how reporting of global events (e.g. epidemics, regime change, and weather events) has the potential to impact other areas. |
| 08.05 | Locate emerging public health trends. |
| 08.06 | Explain etiology of emerging public health trends discussed throughout semester. |
| 08.07 | Discuss legislation designed to protect the public's right to information during major health events (epidemics, terrorism, natural disasters). |

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| 09.0 | Demonstrate the ability to identify U.S. health care delivery funding sources. – The student will be able to: |
| | 09.01 Demonstrate an understanding of the evolutionary perspective of health services and its relevance with the existing healthcare system, facilities and services. |
| | 09.02 Explain the social, political, and public policy implications of health-related issues, such as availability, cost, delivery, and financing. |
| | 09.03 Describe the various health care organizations and service delivery options. |
| | 09.04 Identify the major health professions and explain the role of each and their licensing/educational requirements. |
| | 09.05 Compare and contrast the health care delivery systems of the U.S. with other major industrialized nations. |
| | 09.06 Understand the array of career choices in the health care sector of the economy. |
| 10.0 | Demonstrate knowledge of the principles and language of pharmacology, including drugs and drug classes, diagnostic tests, indications, and techniques. --The student will be able to: |
| | 10.01 Describe pharmacological principles. |
| | 10.02 Classify routes of administration. |
| | 10.03 Describe the relationships of drug classes with disease processes and medical specialties. |
| | 10.04 Recognize commonly prescribed medications. |
| | 10.05 Use appropriate pharmacological and laboratory references. |
| | 10.06 Describe indications, actions, dosages, and routes of administration. |

## Additional Information

### Laboratory Activities

Laboratory investigations that include scientific inquiry, research, measurement, problem solving, emerging technologies, tools and equipment, as well as, experimental, quality, and safety procedures are an integral part of this career and technical program/course. Laboratory investigations benefit all students by developing an understanding of the complexity and ambiguity of empirical work, as well as the skills required to manage, operate, calibrate and troubleshoot equipment/tools used to make observations. Students understand measurement error; and have the skills to aggregate, interpret, and present the resulting data. Equipment and supplies should be provided to enhance hands-on experiences for students.

### Career and Technical Student Organization (CTSO)

HOSA is the intercurricular career and technical student organization(s) providing leadership training and reinforcing specific career and technical skills. Career and Technical Student Organizations provide activities for students as an integral part of the instruction offered.

### Accommodations

Federal and state legislation requires the provision of accommodations for students with disabilities to meet individual needs and ensure equal access. Postsecondary students with disabilities must self-identify, present documentation, request accommodations if needed, and develop a plan with their counselor and/or instructors. Accommodations received in postsecondary education may differ from those received in secondary education. Accommodations change the way the student is instructed. Students with disabilities may need accommodations in such areas as instructional methods and materials, assignments and assessments, time demands and schedules, learning environment, assistive technology and special communication systems. Documentation of the accommodations requested and provided should be maintained in a confidential file.

### Certificate Programs

A College Credit Certificate consists of a program of instruction of less than sixty (60) credits of college-level courses, which is part of an AS or AAS degree program and prepares students for entry into employment (Rule 6A-14.030, F.A.C.). This AS degree program includes the following College Credit Certificates:

Clinical Research Coordinator (0351071901) – 30 credit hours

Standards for the above certificate programs are contained in separate curriculum frameworks.

**Florida Department of Education**
**Curriculum Framework**

**Program Title:** **Medical Assisting Advanced**
**Career Cluster:** **Health Science**

| AS | |
|---|---|
| CIP Number | 1351080103 |
| Program Type | College Credit |
| Standard Length | 65 credit hours |
| CTSO | HOSA |
| SOC Codes (all applicable) | 31-9092 Medical Assistants<br>31-9099 Healthcare Support Workers, All Other<br>43-4171 Receptionists and Information Clerks<br>31-9097 Phlebotomists |

## Purpose

This program offers a sequence of courses that provides coherent and rigorous content aligned with challenging academic standards and relevant technical knowledge and skills needed to prepare for further education and careers in the Health Science career cluster; provides technical skill proficiency, and includes competency-based applied learning that contributes to the academic knowledge, higher-order reasoning and problem-solving skills, work attitudes, general employability skills, technical skills, and occupation-specific skills, and knowledge of all aspects of the Health Science career cluster.

This program is designed to prepare students for employment as medical assistants SOC 31-9092.

The content includes but is not limited to communication, transcultural communication in healthcare, interpersonal skills, legal and ethical responsibilities, health-illness concepts, administrative and clinical duties, emergency procedures including CPR and first aid, emergency preparedness, safety and security procedures, medical terminology, anatomy and physiology, and employability skills.

**Additional Information** relevant to this Career and Technical Education (CTE) program is provided at the end of this document.

## Program Structure

This program is a planned sequence of instruction consisting of 65 credit hours.

**Standards**

After successfully completing this program, the student will be able to perform the following:

01.0 Demonstrate knowledge of the healthcare delivery system and health occupations.
02.0 Demonstrate the ability to communicate and use interpersonal skills effectively.
03.0 Demonstrate legal and ethical responsibilities.
04.0 Demonstrate an understanding of and apply wellness and disease concepts.
05.0 Recognize and practice safety and security procedures.
06.0 Recognize and respond to emergency situations.
07.0 Recognize and practice infection control procedures.
08.0 Demonstrate an understanding of information technology applications in healthcare.
09.0 Demonstrate employability skills.
10.0 Demonstrate knowledge of blood borne diseases, including HIV/AIDS.
11.0 Apply basic math and science skills.
12.0 Demonstrate proper use of medical terminology.
13.0 Demonstrate knowledge of legal and ethical responsibilities for medical assistants.
14.0 Demonstrate an understanding of anatomy and physiology concepts in both illness and wellness states.
15.0 Demonstrate basic clerical/medical office duties.
16.0 Demonstrate accepted professional, communication, and interpersonal skills as related to phlebotomy.
17.0 Discuss phlebotomy in relation to the health care setting.
18.0 Identify the anatomic structure and function of body systems in relation to services performed by a phlebotomist.
19.0 Recognize and identify collection reagents supplies, equipment and interfering chemical substances.
20.0 Demonstrate skills and knowledge necessary to perform phlebotomy.
21.0 Practice infection control following standard precautions.
22.0 Practice accepted procedures of transporting, accessioning and processing specimens.
23.0 Practice quality assurance and safety.
24.0 Describe the role of a medical assistant with intravenous therapy in oncology and dialysis.
25.0 Describe the cardiovascular system.
26.0 Identify legal and ethical responsibilities of an EKG aide.
27.0 Perform patient care techniques in the health care facility.
28.0 Demonstrate knowledge of, apply and use medical instrumentation modalities.
29.0 Demonstrate basic office examination procedures.
30.0 Demonstrate knowledge of the fundamentals of microbial control and use aseptic techniques.
31.0 Demonstrate minor treatments.
32.0 Demonstrate knowledge of basic diagnostic medical assisting procedures.
33.0 Demonstrate basic radiologic procedures.
34.0 Demonstrate knowledge of pharmaceutical principles and administer medications.
35.0 Perform CLIA-waived diagnostic clinical laboratory procedures.
36.0 Demonstrate knowledge of emergency preparedness and protective practices.
37.0 Perform administrative office duties.

38.0 Perform administrative and general skills.
39.0 Perform clinical and general skills.
40.0 Display professional work habits integral to medical assisting.
41.0 Demonstrate knowledge regarding health information technology.
42.0 Identify the processes of leadership by influencing human behavior to accomplish predetermined goals.

**Florida Department of Education**
**Student Performance Standards**

**Program Title:** **Medical Assisting Advanced**
**CIP Number:** **1351080103**
**Program Length:** **65 credit hours**
**SOC Code(s):** **31-9092, 31-9099, 43-4171, 31-9097**

Standards 1-11 are referred to as the **Health Science Core** and are required standards in this program. Secondary and Postsecondary students completing the health science core will not have to repeat the core in any other health science program in which it is a part. When the recommended sequence is followed, the structure allows students to complete at specified points for employment or remain for advanced training or cross-training.

To ensure consistency whenever these courses are offered, the health science core standards (1-11) have been placed in a separate document.

| **Refer to Rule 6A-14.030 (4) F.A.C., for the minimum amount of general education coursework required in the Associate of Science (AS) degree. At the completion of this program, the student will be able to:** | |
|---|---|
| 12.0 | Demonstrate proper use of medical terminology. – The student will be able to: |
| 12.01 | Use medical terminology as appropriate for a medical assistant. |
| 12.02 | Identify medical terms labeling the word parts. |
| 12.03 | Define medical terms and abbreviations related to all body systems. |
| 13.0 | Demonstrate knowledge of legal and ethical responsibilities for medical assistants. – The student will be able to: |
| 13.01 | Describe the role of the medical assistant. |
| 13.02 | Understand the importance of order entry as it relates to certification of the medical assistant. |
| 13.03 | Provide health care as set forth in Florida Statute 458.3485 for the medical assistant. |
| 13.04 | Distinguish between the liability of the physicians and staff members in the medical office. |
| 13.05 | Explain the principles for preventing medical liability. |
| 13.06 | List the principles in the Codes of Ethics for Medical Assistants as stated by the American Association of Medical Assistants. |
| 14.0 | Demonstrate an understanding of anatomy and physiology concepts in both illness and wellness states. – The student will be able to: |

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| 14.01 | Define the terms Anatomy and Physiology. |
| 14.02 | Define both medical terms and abbreviations related to all body systems. |
| 14.03 | Define the principle directional terms, planes, quadrants and cavities used in describing the body and the association of body parts to one another. |
| 14.04 | Define the levels of organization of the body inclusive of, but not limited to, cells, organs and body systems. |
| 14.05 | Describe the function of the 11 major organ systems of the body (1) Integumentary, (2) skeletal, (3) muscular, (4) nervous, (5) endocrine, (6) circulatory (cardiovascular) (7) lymphatic, (8) respiratory, (9) digestive, (10) urinary, and (11) reproductive. |
| 14.06 | Describe symptoms and common disease pathology related to each body system and the relationship of the disease process to other body systems. |
| 14.07 | Discuss diagnostic options to identify common disease pathology and corresponding basic treatment. |
| 14.08 | Compare structure and function of the body across the life span. |
| 15.0 | Demonstrate basic clerical/medical office duties. – The student will be able to: |
| 15.01 | Perform effective communication skills essential to the medical office. |
| 15.02 | Maintain filing systems. |
| 15.03 | Operate office equipment and perform clerical office procedures. |
| 15.04 | Discuss principles of using electronic health record (EHR). |
| 15.05 | Prepare and maintain medical records both manually and within the electronic health record (EHR). |
| 15.06 | Screen and process mail. |
| 15.07 | Schedule routine appointments and patient admissions and/or procedures both manually and within the electronic health record (EHR). |
| 15.08 | Adhere to current government regulations, risk management and compliance within the scope of practice of a medical assistant practicing in the State of Florida. |
| 15.09 | Maintain office inventory. |
| 15.10 | Inform patients of office policies both verbally and written. |
| 15.11 | Perform general housekeeping duties. |
| 15.12 | Perform daily office activities both manually and within the electronic health record (EHR). |
| 15.13 | Receive patients and visitors. |
| 15.14 | Identify and maintain office security policies/procedures. |

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| 16.0 | Demonstrate accepted professional, communication, and interpersonal skills as related to phlebotomy. – The student will be able to: |
| 16.01 | Demonstrate the appropriate professional behavior of a phlebotomist. |
| 16.02 | Explain to the patient the procedure to be used in specimen collection. |
| 16.03 | Explain in detail the importance of identifying patients correctly when drawing blood. |
| 16.04 | Describe the scope of practice for a phlebotomist. |
| 16.05 | List and describe professional organizations that provide accreditation, certification, and licensure to phlebotomists and phlebotomy programs. |
| 16.06 | Explain the importance of continuing education in relation to certification to maintain competency and skills. |
| 17.0 | Discuss phlebotomy in relation to the health care setting. – The student will be able to: |
| 17.01 | List, classify and discuss various departments and services within the health care setting with which the phlebotomist must interact to obtain laboratory specimens from patients. |
| 17.02 | Identify the major departments/sections within the clinical laboratory, the major types of procedures run in each department/section, and their specimen requirements. |
| 17.03 | Describe roles of the major classifications of clinical laboratory personnel (i.e., pathologist, chief/administrative technologist, CLS, MLS, MLT, MT, phlebotomist, lab assistant, etc.). |
| 18.0 | Identify the anatomic structure and function of body systems in relation to services performed by a phlebotomist. – The student will be able to: |
| 18.01 | Describe and define major body systems with emphasis on the circulatory system. |
| 18.02 | List and describe the main superficial veins used in performing venipuncture. |
| 18.03 | Locate the most appropriate site(s) for both capillary and venipuncture. |
| 18.04 | Describe the function of the following blood components: erythrocytes, thrombocytes, leukocytes, and plasma. |
| 18.05 | Compare and contrast between serum and plasma as it relates to blood collection. |
| 18.06 | Discuss hemostasis as it relates to blood collection. |
| 19.0 | Recognize and identify collection reagents supplies, equipment and interfering chemical substances. – The student will be able to: |
| 19.01 | Identify and discuss proper use of appropriate types of equipment needed to collect various clinical laboratory blood specimens by venipuncture. |
| 19.02 | Explain the special precautions and types of equipment needed to collect blood from a pediatric patient. |
| 19.03 | Identify and discuss proper use of supplies used in collecting short-draw specimens or difficult draws. |

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| | 19.04 | Identify and discuss the proper use of the various types of anticoagulants, preservatives and gels used in blood collection and the vacuum tube color-codes for these additives. |
| | 19.05 | Describe the types of specimens that are analyzed in the clinical laboratory and the phlebotomist's role in collecting and/or transporting these specimens to the laboratory. |
| | 19.06 | Describe substances potentially encountered during phlebotomy which can interfere in analysis of blood constituents. |
| | 19.07 | Define and utilize correct medical terminology and metric measurement needed for specimen collection. |
| 20.0 | Demonstrate skills and knowledge necessary to perform phlebotomy. – The student will be able to: | |
| | 20.01 | Follow approved procedure for completing a laboratory requisition form. |
| | 20.02 | Recognize a properly completed requisition. |
| | 20.03 | Demonstrate knowledge of established protocol for patient and specimen identification. |
| | 20.04 | Discuss appropriate methods for facilitating and preparing the patient for capillary and venipuncture collection. |
| | 20.05 | List appropriate antiseptic agents useful in preparing sites for capillary and venipuncture. |
| | 20.06 | Perform venipuncture by evacuated tube, butterfly, and syringe systems, demonstrating appropriate use of supplies, proper handling of equipment, and specimens, and appropriate patient care. |
| | 20.07 | Describe the correct order of draw. |
| | 20.08 | Describe the use of barcoding systems used for specimen collection. |
| | 20.09 | Perform a capillary puncture using appropriate supplies and techniques for both adults and pediatric patients. |
| | 20.10 | Describe the most common complications associated with capillary and venipuncture, their causes, prevention and treatment. |
| | 20.11 | Recognize and respond to possible adverse patient reactions such as allergies, convulsions, syncope, light headedness, vomiting, and nerve involvement. |
| | 20.12 | Perform appropriate procedures for disposing of used or contaminated capillary and venipuncture supplies. |
| | 20.13 | Perform appropriate techniques for making a peripheral blood smear for hematologic evaluation. |
| | 20.14 | Demonstrate the proper procedure for collecting blood cultures. |
| | 20.15 | Discuss the effects of hemolysis and methods of prevention. |
| | 20.16 | Demonstrate a working understanding of how age and weight of patients impacts the maximum amount of blood that can be safely drawn. |
| 21.0 | Practice infection control following standard precautions. – The student will be able to: | |
| | 21.01 | Define the term hospital acquired infection. |

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| | 21.02 Describe and practice procedures for infection prevention including hand washing skills. |
| | 21.03 Discuss transmission based precautions. |
| | 21.04 Identify potential routes of infection and their complications. |
| 22.0 | Practice accepted procedures of transporting, accessioning and processing specimens. – The student will be able to: |
| | 22.01 Demonstrate good laboratory practice for preparation and processing (e.g. - centrifugation, separation, aliquoting, labeling, and storage) of serum, plasma, urine, sputum, stool, and wound culture specimens. |
| | 22.02 Demonstrate knowledge of accessioning procedures. |
| | 22.03 Describe the significance of time constraints for specimen collection and delivery. |
| | 22.04 Describe routine procedures for transporting and processing specimens including DOT packaging requirements. |
| | 22.05 Follow protocol for accepting verbal test orders and explain procedure for obtaining signature or other form of authentication of verbal orders. |
| 23.0 | Practice quality assurance and safety. – The student will be able to: |
| | 23.01 Distinguish and perform procedures which ensure reliability of test results when collecting blood specimens. |
| | 23.02 Practice appropriate patient safety. |
| | 23.03 Practice safety in accordance with OSHA (State & Federal guidelines) for chemical, biological, and PPE established procedures including proper disposal of sharps and biohazardous materials. |
| | 23.04 Follow documentation procedures for work related accidents. |
| | 23.05 Implement appropriate Joint Commission patient safety goals and other accrediting/regulatory agency guidelines. |
| 24.0 | Describe the role of a medical assistant with intravenous therapy in oncology and dialysis. – The student will be able to: |
| | 24.01 Outline the principles of intravenous therapy. |
| | 24.02 Understand intravenous terminology, practices, and equipment. |
| | 24.03 Describe the dangers of intravenous treatment. |
| | 24.04 Describe the role of the medical assistant in assisting with intravenous therapy. |
| 25.0 | Describe the cardiovascular system. – The student will be able to: |
| | 25.01 Locate the heart and surrounding structures. |
| | 25.02 Diagram and label the parts of the heart and list the functions of each labeled part. |

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| | 25.03 Trace the flow of blood through the cardiopulmonary system. |
| 26.0 | Identify legal and ethical responsibilities of an EKG aide. – The student will be able to: |
| | 26.01 Recognize and practice legal and ethical responsibilities as they relate to an EKG aide. |
| | 26.02 Maintain a safe and efficient work environment. |
| | 26.03 Maintain EKG equipment so it will be safe and accurate. |
| 27.0 | Perform patient care techniques in the health care facility. – The student will be able to: |
| | 27.01 Describe the physical preparation of the patient for EKG testing. |
| | 27.02 Identify patient and verify the requisition order. |
| | 27.03 Prepare patient for EKG testing. |
| | 27.04 State precautions required when performing an EKG. |
| 28.0 | Demonstrate knowledge of, apply and use medical instrumentation modalities. – The student will be able to: |
| | 28.01 Calibrate and maintain EKG equipment in the work environment. |
| | 28.02 Identify three types of lead systems (standard/limb, augmented, and precordial/chest). |
| | 28.03 State Einthoven's triangle. |
| | 28.04 Demonstrate proper lead placement including lead placement for patients with special needs |
| | 28.05 Demonstrate knowledge of the application of a Holter Monitor and provide patient education of its use. |
| | 28.06 Identify artifacts and mechanical problems. |
| | 28.07 Perform a 12 lead EKG. |
| | 28.08 Perform a rhythm strip. |
| | 28.09 Recognize normal sinus rhythm. |
| | 28.10 Report dysrhythmias that are not normal sinus rhythm. |
| | 28.11 Recognize a cardiac emergency as seen on the EKG. |
| | 28.12 Use documentation skills to identify electrocardiographs. |

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| 29.0 | Demonstrate basic office examination procedures. – The student will be able to: |
| 29.01 | Prepare patients for and assist the physician with physical examinations including, but not limited to, pre and post-natal, male and female reproductive, rectal, and pediatric. |
| 29.02 | Measure and record vital signs, recognizing abnormalities and danger signs. |
| 29.03 | Measure and record a pulse pressure. |
| 29.04 | Measure and record an apical pulse. |
| 29.05 | Measure and record an orthostatic blood pressure. |
| 29.06 | Record patient data. |
| 29.07 | Instruct patient on breast and testicular self-examinations. |
| 29.08 | Assist with pediatric procedures, including, but not limited to, weighing, measuring, and collecting specimens. |
| 29.09 | Instruct patients regarding health care and wellness practices including but not limited to dietary guidelines necessary for common diseases. |
| 29.10 | Create a patient teaching plan which addresses dietary guidelines and special needs. |
| 29.11 | Explore and utilize the U.S. Department of Agricultures “My Plate” Food Guide. |
| 29.12 | Prepare patients for diagnostic procedures. |
| 30.0 | Demonstrate knowledge of the fundamentals of microbial control and use aseptic techniques. – The student will be able to: |
| 30.01 | Demonstrate competence in sanitation, disinfection and sterilization. |
| 30.02 | Identify common instruments. |
| 30.03 | Sterilize and maintain instruments and supplies. |
| 30.04 | Sanitize instruments. |
| 30.05 | Wrap articles for autoclave. |
| 30.06 | Sterilize articles in autoclave. |
| 30.07 | Chemically disinfect articles. |
| 30.08 | Practice infection control and contamination prevention. |
| 30.09 | Safely handle contaminated equipment and supplies. |

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| | 30.10 Create and maintain sterile fields for dressings and minor surgery. |
| | 30.11 Prepare for minor surgical procedures including surgical hand wash and applying sterile gloves. |
| | 30.12 Remove sutures and staples. |
| | 30.13 Correctly dispose of contaminated materials. |
| 31.0 | Demonstrate minor treatments. – The student will be able to: |
| | 31.01 Perform minor treatments as directed by the physician including hot and cold therapy, (which includes, but is not limited to the following: hot water bag, heating pad, hot soaks and compresses, ice bag, cold compresses and packs). |
| | 31.02 Assist the physician with examination, treatment, and/or minor surgery. |
| | 31.03 Organize examination and treatment areas before, during, and after patient care. |
| | 31.04 Perform orthopedic procedures, including but not limited to the following: crutch measurements and instruction in use of canes, crutches, walkers, and wheelchairs. |
| | 31.05 Demonstrate the knowledge of casting procedures and supplies. |
| | 31.06 Apply all types of roller bandages using turns as appropriate. |
| | 31.07 Perform eye irrigations and instillations. |
| | 31.08 Perform ear irrigations and instillations. |
| 32.0 | Demonstrate knowledge of basic diagnostic medical assisting procedures. – The student will be able to: |
| | 32.01 Perform visual and auditory screening. |
| | 32.02 Perform spirometry. |
| | 32.03 Perform oximetry. |
| | 32.04 Assist in the performance of a pap and pelvic exam. |
| 33.0 | Demonstrate basic radiologic procedures. – The student will be able to: |
| | 33.01 Describe the basic operation of radiologic equipment and accessories. |
| | 33.02 Describe how to maintain x-ray film files. |
| | 33.03 Describe computed and digital radiography systems. |
| | 33.04 Educate patients in preparation for radiological exams. |

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| | 33.05 | Demonstrate knowledge of ultrasound treatment. |
| 34.0 | Demonstrate knowledge of pharmaceutical principles and administer medications. – The student will be able to: | |
| | 34.01 | Identify commonly administered drugs, their uses and effects. |
| | 34.02 | Identify the major classifications of medications for each body system including, indications for use, side effects, and adverse reactions. |
| | 34.03 | Use correct pharmaceutical abbreviations and terminology. |
| | 34.04 | Identify various methods and routes of drug administration. |
| | 34.05 | Instruct patients regarding self-administration of medications. |
| | 34.06 | Calculate dosage and administer pharmaceuticals to correct anatomical sites, to correct patient, by correct route of administration, at the correct time and document correctly. |
| | 34.07 | Demonstrate knowledge of the legal and ethical standards related to the administration and the dispensing of drugs in the office setting under the doctor's supervision. |
| | 34.08 | Demonstrate knowledge of emergency medications for first aid. |
| | 34.09 | Identify the dangers and complications associated with drug administration |
| | 34.10 | Recognize and report medication errors. |
| | 34.11 | Demonstrate appropriate techniques to: |
| | | 34.11.01 Prepare and administer non-parenteral medications (solid, liquids, and inhalers). |
| | | 34.11.02 Prepare and administer parenteral medications. |
| | | 34.11.03 Reconstitute powdered drugs. |
| | | 34.11.04 Prepare injections from ampules and vials. |
| | | 34.11.05 Apply the Seven Rights of Drug Administration |
| 35.0 | Perform CLIA-waived diagnostic clinical laboratory procedures. -- The students will be able to: | |
| | 35.01 | Comply with safety signs, symbols, and labels. |
| | 35.02 | Recognize signs and symptoms that may indicate to the physician a need for laboratory testing. |
| | 35.03 | Describe the criteria used by Food and Drug Administration (FDA) to classify a test as “CLIA waived” and the regulatory constraints on test performance. |
| | 35.04 | Explain the methods of quality control for CLIA-waived testing, identify acceptable and unacceptable control results, and describe specific corrective action required when results are unacceptable. |

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| | 35.05 | Demonstrate proper technique for the collection of urine, capillary whole blood (finger/heel stick), culture material (throat/nasal swab) and other specimen types required for CLIA-waived tests. |
| | 35.06 | Instruct patients in the proper collection of urine (clean catch, mid-stream), sputum, and stool specimens. |
| | 35.07 | Perform CLIA-waived occult blood tests. |
| | 35.08 | Perform CLIA-waived urinalysis testing including color and turbidity assessment and reagent test strips. |
| | 35.09 | Perform CLIA-waived hematology tests (e.g. - hemoglobin, hematocrit). |
| | 35.10 | Perform CLIA-waived chemistry tests (e.g. - glucose, cholesterol) |
| | 35.11 | Perform CLIA-waived pregnancy tests. |
| | 35.12 | Perform CLIA-waived infectious disease testing (e.g. – strep screen, mono test, influenza A/B). |
| 36.0 | Demonstrate knowledge of emergency preparedness and protective practices. -- The student will be able to: | |
| | 36.01 | Maintain and operate emergency equipment and supplies. |
| | 36.02 | Participate in a mock environmental exposure event and document steps taken. |
| | 36.03 | Explain an evacuation plan for a physician's office. |
| | 36.04 | Maintain a current list of community resources for emergency preparedness. |
| 37.0 | Perform administrative office duties. – The student will be able to: | |
| | 37.01 | Execute data management using Electronic Health Record (EHR) including, but not limited to, patient registration, appointment scheduling, charting, billing and insurance processing, procedure and diagnostic coding, ordering and monitoring patient testing, medication and prescription orders, keyboarding and correspondence, and performing an office inventory. |
| | 37.02 | Execute non EHR data management including, but not limited to, selecting appropriate procedure and diagnostic codes, process insurance data and claims, develop and maintain billing and collection systems. |
| | 37.03 | Perform various financial procedures, including, but not limited to, billing and collection procedures, payroll procedures, and checkbook procedures. |
| | 37.04 | Demonstrate knowledge of management in a medical office including but not limited to personnel records, interviewing, various management styles, risk management, and conflict resolution. |
| 38.0 | Perform administrative and general skills. – The student will be able to: | |
| | 38.01 | Understand proper and professional telephone technique. |
| | 38.02 | Recognize and respond to verbal communication. |
| | 38.03 | Recognize and respond to non-verbal communication. |

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| | 38.04 Maintain confidentiality and adhere to HIPAA regulations. |
| | 38.05 Understand how to document manually and electronically appropriately. |
| | 38.06 Understand how to schedule appointments manually and electronically accurately. |
| | 38.07 Understand how to schedule inpatient and/or outpatient procedures accurately. |
| | 38.08 Greet patients courteously and professionally. |
| | 38.09 Demonstrate safety and quality assurance in the workplace. |
| 39.0 | Perform clinical and general skills. – the student will be able to: |
| | 39.01 Demonstrate aseptic hand washing technique. |
| | 39.02 Dispose of bio-hazardous waste in appropriate containers. |
| | 39.03 Adhere to sterilization techniques according to standards. |
| | 39.04 Practice standard precautions. |
| | 39.05 Stage patients and obtain vital signs. |
| | 39.06 Obtain patient histories. |
| | 39.07 Prepare and maintain examination and treatment area(s). |
| | 39.08 Prepare patient for examinations and/or minor office procedures. |
| | 39.09 Assist with examinations and/or minor office procedures. |
| | 39.10 Provide and document patient education. |
| | 39.11 Accurately record and report laboratory tests. |
| 40.0 | Display professional work habits integral to medical assisting. – The student will be able to: |
| | 40.01 Communicate appropriately in healthcare settings by listening, writing, speaking, and presenting with professional demeanor. |
| | 40.02 Collaborate, communicate and interact professionally with other healthcare professionals utilizing technology. |
| | 40.03 Contribute to team efforts by fulfilling responsibilities and valuing diversity. |
| | 40.04 Exercise proper judgment and critical thinking skills in decision making. |

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| 40.05 | Adapt to changing organizational environments with flexibility. |
| 40.06 | Report as expected, on time, appropriately dressed and groomed and ready to work. |
| 40.07 | Model acceptable work habits as defined by company policy. |
| 40.08 | Complete and follow through on tasks using time management skills and take initiative as warranted. |
| 40.09 | Respond appropriately and quickly to patient's needs and concerns. |
| 40.10 | Practice etiquette and social sensitivity in face to face interaction, on the telephone and the internet. |
| 40.11 | Actively adhere to policies and procedures that protect the patient's confidentiality and privacy. |
| 40.12 | Understand resources related to patients' healthcare needs. |
| **In addition, Standards 41-42 must be completed to receive the Medical Assisting Advanced A.S. Degree.** | |
| 41.0 | Demonstrate knowledge regarding health information technology. – The student will be able to: |
| 41.01 | Explain the heal care delivery fundamentals and settings in the United States. |
| 41.02 | Summarize the history of health information management (HIM) and organizations. |
| 41.03 | Interpret the legal aspects of health information management (HIM). |
| 41.04 | Explain the fundamentals of information systems. |
| 41.05 | Summarize the types of patient records including the documentation issues associated with each. |
| 41.06 | Explain patient record numbering, filing systems, storage, and circulation methods. |
| 41.07 | Summarize the evolution of the electronic health record (EHR) and its functional benefits. |
| 41.08 | Explain additional health information systems used in the hospital setting. |
| 41.09 | Summarize the requirements of healthcare coding and reimbursement. |
| 41.10 | Explain the different concepts of healthcare transactions and billing. |
| 41.11 | Explain the use of indexes, registries, and health data collection. |
| 41.12 | Summarize the different management and decision support systems used in healthcare. |
| 41.13 | Differentiate the roles of various providers and disciplines throughout the continuum of healthcare and respond to their information needs. |

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| | 41.14 | Demonstrate knowledge of current laws, accreditation, licensure, and certification standards related to health information initiatives from the national, state, local, and facility levels. |
| | 41.15 | Apply policies and procedures to comply with the changing regulations among various payment systems for healthcare services such as Medicare, Medicaid, managed care, etc. |
| | 41.16 | Identify HIPAA compliance guidelines and regulations for electronic health information. |
| 42.0 | Identify the processes of leadership by influencing human behavior to accomplish predetermined goals. -- The student will be able to: | |
| | 42.01 | Formulate a philosophy for leadership. |
| | 42.02 | Explain methods that leaders can use in initiating or adjusting to change. |
| | 42.03 | Evaluate the role of a leader in conflict management. |
| | 42.04 | Develop a plan for setting effective goals. |
| | 42.05 | Integrate different genres in development of a leadership philosophy. |
| | 42.06 | Model an effective team. |
| | 42.07 | Explore the complexities inherent in an ethical and effective leader. |
| | 42.08 | Communicate effectively with all members of the health care team when delegating responsibility and monitoring progress. |
| | 42.09 | Coordinate the decision making process with the client, significant support person(s), and other members of the health care team. |
| | 42.10 | Describe how a leader utilizes research for evidence-based practice effecting positive client outcomes. |
| | 42.11 | Employ effective conflict resolution strategies that promote a healthy work environment. |

## Additional Information

### Laboratory Activities

Laboratory investigations that include scientific inquiry, research, measurement, problem solving, emerging technologies, tools and equipment, as well as, experimental, quality, and safety procedures are an integral part of this career and technical program/course. Laboratory investigations benefit all students by developing an understanding of the complexity and ambiguity of empirical work, as well as the skills required to manage, operate, calibrate and troubleshoot equipment/tools used to make observations. Students understand measurement error; and have the skills to aggregate, interpret, and present the resulting data. Equipment and supplies should be provided to enhance hands-on experiences for students.

### Special Notes

Although it is not required, it is strongly recommended that the programs meet the Standards and Guidelines of an Accredited Educational Program for the Medical Assistant adopted by the American Association of Medical Assistants and the Commission on Accreditation of Allied Health Education Programs (CAAHEP) or the American Medical Technologist and the Accrediting Bureau of Health Education Schools (ABHES).

For further information contact:

**Commission on Accreditation of Allied Health Education Programs (CAAHEP)**
1361 Park Street
Clearwater, FL 33756
Phone: 727-210-2350
Fax: 727-210-2354

Accrediting Bureau of Health Education Schools (ABHES)
777 Leesburg Pike, Suite 312
N. Falls, VA 22043
(703) 917-9503

This Program Will Also Be In Accordance With Florida Statute for Medical Assistants, 458.3485 F.S.

This program meets the Department of Health's education requirements for HIV/AIDS, Domestic Violence and Prevention of Medical Errors. Although not a requirement for initial licensure, it is a requirement for renewal, therefore the instructor may provide a certificate for renewal purposes to the student verifying these requirements have been met.

If students in this program are seeking a licensure, certificate or registration through the Department of Health, please refer to 456.0635 F.S. for more information on disqualification for a license, certificate, or registration through the Department of Health.

Program completers of a CAAHEP or ABHES accredited program are eligible to take the American Association of Medical Assistants' Certification Examination (CMA) or the American Medical Technologists' Certification Examination (RMA). For further information contact:

American Association of Medical Assistants (AAMA)
20 North Wacker Drive, Suite 1575
Chicago, Illinois 60606 (312/899-1500)
Or
American Medical Technologist (AMT)
10700 West Higgins Road, Suite 150
Rosemont, Illinois 60018 (800 275-1268)

Outcomes 01-11 are referred to as the Health Science Core and do not have to be completed if the student has previously completed the Core in another health occupations program at any level. The Core should be taken first or concurrently with the first course in the program. Following the successful completion of the core, the student is eligible to take the National Health Care Foundation Skill Standards Assessment with instructor approval and the completion of a portfolio.

**Career and Technical Student Organization (CTSO)**

HOSA: Future Health Professionals is the intercurricular career and technical student organization(s) providing leadership training and reinforcing specific career and technical skills. Career and Technical Student Organizations provide activities for students as an integral part of the instruction offered.

**Accommodations**

Federal and state legislation requires the provision of accommodations for students with disabilities to meet individual needs and ensure equal access. Postsecondary students with disabilities must self-identify, present documentation, request accommodations if needed, and develop a plan with their counselor and/or instructors. Accommodations received in postsecondary education may differ from those received in secondary education. Accommodations change the way the student is instructed. Students with disabilities may need accommodations in such areas as instructional methods and materials, assignments and assessments, time demands and schedules, learning environment, assistive technology and special communication systems. Documentation of the accommodations requested and provided should be maintained in a confidential file.

**Certificate Programs**

A College Credit Certificate consists of a program of instruction of less than sixty (60) credits of college-level courses, which is part of an AS or AAS degree program and prepares students for entry into employment (Rule 6A-14.030, F.A.C.). This AS degree program includes the following College Credit Certificates:

Medical Assisting Specialist (0351080104) – 44 credit hours

Standards for the above certificate programs are contained in separate curriculum frameworks.

**Florida Department of Education**
**Curriculum Framework**

**Program Title:** **Occupational Therapy Assistant**
**Career Cluster:** **Health Science**

| AS | |
|---|---|
| CIP Number | 1351080303 |
| Program Type | College Credit |
| Standard Length | 74 credit hours |
| CTSO | HOSA: Future Health Professionals |
| SOC Codes (all applicable) | 31-2011 Occupational Therapy Assistants |

## Purpose

This program offers a sequence of courses that provides coherent and rigorous content aligned with challenging academic standards and relevant technical knowledge and skills needed to prepare for further education and careers in the Health Science career cluster; provides technical skill proficiency, and includes competency-based applied learning that contributes to the academic knowledge, higher-order reasoning and problem-solving skills, work attitudes, general employability skills, technical skills, and occupation-specific skills, and knowledge of all aspects of Health Science career cluster.

The purpose of this program is to prepare students for employment as occupational therapy assistants SOC Code 31-2011 (Occupational Therapist Assistants), or to provide supplemental training for persons previously or currently employed in this occupation. The program has been developed to prepare graduates as entry-level generalists and to offer a broad exposure to delivery model systems through academic and fieldwork education including preparation to assist an occupational therapist in implementing the plan of therapy for a patient prescribed by a physician.

The content includes but is not limited to communication and interpersonal skills, health-illness-health concepts, specific life tasks and skills, the study and application of occupational therapy principles, cultural competencies, professional behaviors, and employability skills, health and safety including CPR, anatomy and physiology, kinesiology, psychology, sociology, and gerontology.

**Additional Information** relevant to this Career and Technical Education (CTE) program is provided at the end of this document.

## Program Structure

This program is a planned sequence of instruction consisting of 74 credit hours.

**Regulated Programs**

The program should meet the guidelines of the Accreditation Council for Occupational Therapy Education (ACOTE), 4720 Montgomery Lane Suite 200, Bethesda, MD 20814-3449, (301) 352-2682, of the American Occupational Therapy Association so that students who complete the program will be eligible to take the national certification examination administered by the National Board for Certification in Occupational Therapy (NBCOT). . Florida requires licensing of graduates by the Florida Department of Health through the Florida Board of Occupational Therapy Practice for persons completing programs approved by the American Occupational Therapy Association. This program must be in accordance with the Florida Department of Health's Occupational Therapy Board, Chapter 468, Part III, F.S. and Rule Chapter 64B11, F.A.C.

This program meets the Department of Health's education requirements for HIV/AIDS, Domestic Violence and Prevention of Medical Errors. Although not a requirement for initial licensure, it is a requirement for renewal, therefore the instructor may provide a certificate for renewal purposes to the student verifying these requirements have been met.

If students in this program are seeking a licensure, certificate or registration through the Department of Health, please refer to 456.0635 F.S. for more information on disqualification for a license, certificate, or registration through the Department of Health.

**Standards**

After successfully completing this program, the student will be able to perform the following:

01.0 Demonstrate knowledge of the healthcare delivery system and health occupations.
02.0 Demonstrate the ability to communicate and use interpersonal skills effectively.
03.0 Demonstrate legal and ethical responsibilities.
04.0 Demonstrate an understanding of and apply wellness and disease concepts.
05.0 Recognize and practice safety and security procedures.
06.0 Recognize and respond to emergency situations.
07.0 Recognize and practice infection control procedures.
08.0 Demonstrate an understanding of information technology applications in healthcare.
09.0 Demonstrate employability skills.
10.0 Demonstrate knowledge of blood borne diseases, including HIV/AIDS.
11.0 Apply basic math and science skills.
12.0 Demonstrate ability to communicate and use interpersonal skills effectively for the occupation.
13.0 Demonstrate an understanding of and apply health-illness-health concepts.
14.0 Analyze and apply learned skills in occupations and activities.
15.0 Apply occupational therapy assistant role in the OT service delivery process.
16.0 Demonstrate knowledge of ethics and safety related to occupational therapy assistants.
17.0 Demonstrate knowledge of client mobility.
18.0 Demonstrate an understanding of stress/ stressors and stress reactions as well as mediating factors and its influence on health and human functioning.
19.0 Explain the role of the OTA in the management of occupational therapy services.
20.0 Provide client, family & caregiver education and training.

**Florida Department of Education**
**Student Performance Standards**

**Program Title:** **Occupational Therapy Assistant**
**CIP Number:** **1351080303**
**Program Length:** **74 credit hours**
**SOC Code(s):** **31-2011**

Standards 1-11 are referred to as the **Health Science Core** and are required standards in this program. Secondary and Postsecondary students completing the health science core will not have to repeat the core in any other health science program in which it is a part. When the recommended sequence is followed, the structure allows students to complete at specified points for employment or remain for advanced training or cross-training.

To ensure consistency whenever these courses are offered, the health science core standards (1-11) have been placed in a separate document.

| **Refer to Rule 6A-14.030 (4) F.A.C., for the minimum amount of general education coursework required in the Associate of Science (AS) degree. At the completion of this program, the student will be able to:** | |
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| Occupational Therapy Assistant: The completion of intended outcomes 12-20 lead to the eligibility of certification as an Occupational Therapy Assistant. | |
| 12.0 | Demonstrate ability to communicate and use interpersonal skills effectively for the occupation. – The student will be able to: |
| 12.01 | Demonstrate understanding of "therapeutic use of self" in relationship to working with the client and other allied health professionals. |
| 12.02 | Develop and conduct didactic and group discussions. |
| 12.03 | Record/report observations. |
| 12.04 | Demonstrate the ability to participate in group meetings to deliver and receive information and respond to questions from a variety of sources. |
| 12.05 | Accurately document the provision of OT services in accordance with third party payer requirements. |
| 12.06 | Articulate the importance of statistics, tests and measurements for the purpose of delivering evidence-based practice. |
| 12.07 | Effectively interact through written, oral and nonverbal communication with the client, family, significant others and other health providers in a professionally acceptable manner. |
| 13.0 | Demonstrate an understanding of and apply health-illness-health concepts. – The student will be able to: |
| 13.01 | Explain occupation as a health determinant. |

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| | 13.02 | Describe the basic function of the human body with particular emphasis on the neurological, sensory, musculoskeletal and cardiopulmonary systems. |
| | 13.03 | Describe the basic development of personality and learning. |
| | 13.04 | Describe human occupation across the lifespan as related to the developmental process from birth to death. |
| | 13.05 | Identify and describe disabling conditions commonly referred to occupational therapy. |
| | 13.06 | Explain the role of occupational therapy as a profession. |
| | 13.07 | Explain the role of the occupational therapist and occupational therapy assistant in the assessment and intervention process identifying the collaborative roles and rationale for supervision. |
| | 13.08 | Explain the relationship of occupational therapy to other health care workers. |
| | 13.09 | Analyze how theory, political climate, history, culture, socioeconomics and demographics influence practice and engagement in activities across the lifespan. |
| 14.0 | Analyze and apply learned skills in occupations and activities. – The student will be able to: | |
| | 14.01 | Demonstrate skill in analyzing, developing and implementing intervention strategies utilizing occupations and activities. |
| | 14.02 | Demonstrate skill in instructing and adapting occupations and activities. |
| | 14.03 | Demonstrate the ability to analyze occupations and activities to implement the intervention plan. |
| | 14.04 | Grade activities and occupations to promote independent performance. |
| | 14.05 | Demonstrate proper care and maintenance of equipment and supplies used in occupational therapy. |
| | 14.06 | Demonstrate an understanding of the use of technology and adaptive equipment to support performance, participation, health and well-being. |
| | 14.07 | Demonstrate understanding and apply principles of environmental adaptations addressing ergonomics in school, home and work environments. |
| 15.0 | Apply occupational therapy assistant role in the OT service delivery process. – The student will be able to: | |
| | 15.01 | Contribute to initial screening to determine need for OT services, including data collection for clients' occupational profiles. |
| | 15.02 | Contribute to evaluation of occupations, client factors, performance skills, performance patterns, contexts/environments and activity demands, and implement assessments delegated by OT. |
| | 15.03 | Contribute to development of occupation-based intervention plans and strategies based on client needs and priorities and occupational therapy goals, in collaboration with OT and client. |
| | 15.04 | Implement occupational therapy interventions selected to promote, establish, restore, maintain, modify, or prevent deterioration in occupational performance. |
| | 15.05 | Contribute to implementation of occupational therapy intervention for development, remediation and restoration of client factors and performance skills (physical, cognitive, perceptual, neuromuscular, behavioral skills and sensory functions). |

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| | 15.06 | Implement occupational therapy intervention through the use of therapeutic occupations and activities, preparatory methods and tasks, education and training, advocacy, and group interventions. |
| | 15.07 | Contribute to the ongoing review and modification of occupational therapy interventions, and compare progress toward established outcomes. |
| | 15.08 | Implement outcome measurements and provide needed client discharge resources. |
| | 15.09 | Complete documentation along each step of the service delivery process which communicates the need and rationale for occupational therapy services and meets standards for accountability and reimbursement. |
| | 15.10 | Implement patient safety goals according to appropriate accrediting and regulatory agency guidelines. |
| 16.0 | Demonstrate knowledge of ethics and safety related to occupational therapy assistants. – The student will be able to: | |
| | 16.01 | Describe the relationship of the occupational therapy assistant to: |
| | | 16.01.01 the physician |
| | | 16.01.02 the occupational therapist |
| | | 16.01.03 the employer |
| | | 16.01.04 other allied health personnel |
| | 16.02 | Explain the term "risk management". |
| | 16.03 | Describe to client current treatment objectives and techniques prior to initiation of treatment or service. |
| | 16.04 | Describe the principles of ethics as outlined in the AOTA Code of Ethics. |
| | 16.05 | Adhere to safety regulations throughout the occupational therapy process as appropriate to the setting and scope of practice. |
| | 16.06 | Explain the process of applying and maintaining a Florida license and national certification. |
| | 16.07 | Identify requirements to obtain and maintain the Florida license including disqualifying felonies. |
| | 16.08 | Explain the continuing education requirements necessary to maintain licensure and national certification. |
| 17.0 | Demonstrate knowledge of client mobility. – The student will be able to: | |
| | 17.01 | Transfer client safely and correctly using proper body mechanics from any surface to another such as (i.e. bedside commode, wheelchair, toilet, chair or car). |
| | 17.02 | Identify wheelchair parts and demonstrate proper wheelchair management in various environments. |
| | 17.03 | Provide information to client as needed. |
| | 17.04 | Demonstrate the understanding of the use of other assistive devices utilized for mobility of clients, i.e. walker, cane, crutches, gait belt, mechanical lifts. |

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| 18.0 | Demonstrate an understanding of stress/ stressors and stress reactions as well as mediating factors and its influence on health and human functioning. – The student will be able to: |
| 18.01 | Evaluate psychological stressors and their positive and negative effect on physical and mental health. |
| 18.02 | Understand the relationship between stress and psychological disorders. |
| 18.03 | Understand stress mediators including perception of stressors, predictability and control of stress, physical and psychological effects and coping resources and methods. |
| 18.04 | Promote health of the client by utilizing health belief models, self-efficacy and coping strategies. |
| 19.0 | Explain the role of the OTA in the management of occupational therapy services. – The student will be able to: |
| 19.01 | Perform program administration and support responsibilities. |
| 19.02 | Function in the role of supervisee and assist with supervision of aides and volunteers and fieldwork students. |
| 19.03 | Describe the impact of federal and state legislation and practice acts on the practice of occupational therapy. |
| 19.04 | Demonstrate knowledge of various reimbursement systems and documentation requirements. |
| 19.05 | Describe the ongoing professional responsibility for providing fieldwork education and the criteria for becoming a fieldwork educator. |
| 19.06 | Demonstrate the ability to participate in the development, marketing and management of service delivery options. |
| 19.07 | Cooperate, collaborate and communicate to integrate care and ensure care is continuous and reliable as part of an interdisciplinary team. |
| 19.08 | Employ evidenced based practice: integrate research, clinical expertise and patient values for optimal care. |
| 19.09 | Participate in learning and research activities. |
| 20.0 | Provide client, family & caregiver education and training. – The student will be able to: |
| 20.01 | Identify resources necessary for clients, family and caregivers for the discharge planning process. |
| 20.02 | Educate the client, family and caregivers on the community resources available and their importance. |
| 20.03 | Educate the client, family and caregiver on the referral process. |
| 20.04 | Provide client, family and caregivers with comprehensive discharge resources. |
| 20.05 | Educate client, family and caregivers on home program. |
| 20.06 | Provide training in Activities of Daily Living (ADL) in and out of the home utilizing adapted methods and teaching strategies. |
| 20.07 | Provide training in Instrumental Activities of Daily Living (I-ADL) in and out of the home utilizing adapted methods and teaching strategies. |

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| 20.08 | Provide training for safe bed positioning and functional transfers in the living environment according to the diagnosis of the client and their limitations. |
| 20.09 | Utilize the concept of health literacy while educating clients in order to facilitate skills in areas of occupation as well as prevention, health maintenance, health promotion and safety. |

## Additional Information

### Laboratory Activities

Laboratory investigations that include scientific inquiry, research, measurement, problem solving, emerging technologies, tools and equipment, as well as, experimental, quality, and safety procedures are an integral part of this career and technical program/course. Laboratory investigations benefit all students by developing an understanding of the complexity and ambiguity of empirical work, as well as the skills required to manage, operate, calibrate and troubleshoot equipment/tools used to make observations. Students understand measurement error; and have the skills to aggregate, interpret, and present the resulting data. Equipment and supplies should be provided to enhance hands-on experiences for students.

### Special Notes

This program focuses on broad, transferable skills and stresses understanding and demonstration of the following elements of the health care industry; planning, management, finance, technical and production skills, underlying principles of technology, labor issues, community issues and health, safety, and environmental issues.

Cooperative training - OJT is appropriate for this program. Whenever cooperative training is offered, the following are required for each student: a training plan, signed by the student, teacher, and the employer, which includes instructional objectives and a list of on-the-job and in-school learning experiences; a workstation which reflects equipment, skills and tasks which are relevant to the occupation which the student has chosen as a career goal. The student must receive compensation for work performed.

Outcomes 01-11 are referred to as the Health Careers Core and do not have to be completed if the student has previously completed the Core in another health science program. The CORE should be taken first or concurrently with the first course in the program. Following the successful completion of the core, the student is eligible to take the National Health Care Foundation Skill Standards Assessment with instructor approval and the completion of a portfolio.

### Career and Technical Student Organization (CTSO)

HOSA: Future Health Professionals is the intercurricular career and technical student organization providing leadership training and reinforcing specific career and technical skills. Career and Technical Student Organizations provide activities for students as an integral part of the instruction offered.

### Accommodations

Federal and state legislation requires the provision of accommodations for students with disabilities to meet individual needs and ensure equal access. Postsecondary students with disabilities must self-identify, present documentation, request accommodations if needed, and develop a plan with their counselor and/or instructors. Accommodations received in postsecondary education may differ from those received in secondary education. Accommodations change the way the student is instructed. Students with disabilities may need accommodations in such areas as instructional methods and materials, assignments and assessments, time demands and schedules, learning environment, assistive technology and special communication systems. Documentation of the accommodations requested and provided should be maintained in a confidential file.

**Florida Department of Education**
**Curriculum Framework**

**Program Title:** **Pharmacy Management**
**Career Cluster:** **Health Science**

| AS | |
|---|---|
| CIP Number | 1351080502 |
| Program Type | College Credit |
| Standard Length | 70 credit hours |
| CTSO | HOSA: Future Health Professionals; Skills USA |
| SOC Codes (all applicable) | 41-1011 First-Line Supervisors of Retail Sales Workers |

## Purpose

This program offers a sequence of courses that provides coherent and rigorous content aligned with challenging academic standards and relevant technical knowledge and skills needed to prepare for further education and careers in the Health Science career cluster; provides technical skill proficiency, and includes competency-based applied learning that contributes to the academic knowledge, higher-order reasoning and problem-solving skills, work attitudes, general employability skills, technical skills, and occupation-specific skills, and knowledge of all aspects of Health Science career cluster.

The program is designed to prepare students for employment as a Senior/Lead Pharmacy Technician, Pharmacy Technician Coordinator, Pharmacy Manager/Supervisor trainee, drugstore/pharmacy managers, purchasing managers or SOC 41-1011 (First line supervisors/Manager of Retail sales worker), or to provide supplemental training for persons previously or currently employed in these occupations.

This program focuses on broad, transferable skills and stresses understanding and demonstration of the following elements of the health care industry; planning, management, finance, technical and production skills, underlying principles of technology, labor issues, community issues and health, safety, and environmental issues.

The content includes but is not limited to metric system, medical terminology, medicinal drugs, pharmaceutical compounding, USP 795 standards, sterile techniques, USP 797 and USP 800 standards, maintenance of inventory, IV preparation, receiving and handling of hazardous materials, preparing purchase orders, receiving and checking supplies purchased, printing labels, typing prescription labels, delivering medications, pricing prescription drug orders and supplies, prepackaging unit dose packages, patient record systems, control records, data processing automation in pharmacy, computer application, employability skills, leadership and human relations skills, health and safety, including CPR.

**Additional Information** relevant to this Career and Technical Education (CTE) program is provided at the end of this document

## Program Structure

This program is a planned sequence of instruction consisting of 70 credit hours.

## Regulated Programs

**This program is regulated by the Department of Health; Florida Board of Pharmacy.**

This program must be approved by the Florida Board of Pharmacy. Program completers who wish to work as Pharmacy Technicians in the State of Florida must register with the Board of Pharmacy (465.014 F.S.).

**Standards**

After successfully completing this program, the student will be able to perform the following:

01.0 Demonstrate knowledge of the healthcare delivery system and health occupations.
02.0 Demonstrate the ability to communicate and use interpersonal skills effectively.
03.0 Demonstrate legal and ethical responsibilities.
04.0 Demonstrate an understanding of and apply wellness and disease concepts.
05.0 Recognize and practice safety and security procedures.
06.0 Recognize and respond to emergency situations.
07.0 Recognize and practice infection control procedures.
08.0 Demonstrate an understanding of information technology applications in healthcare.
09.0 Demonstrate employability skills.
10.0 Demonstrate knowledge of blood borne diseases, including HIV/AIDS.
11.0 Apply basic math and science skills.
12.0 Practice human relations.
13.0 Identify pharmaceutical abbreviations and terminology as related to Community Pharmacy Practice.
14.0 Identify medical and legal considerations in various pharmacy settings.
15.0 Perform clerical duties as related to pharmacy practice.
16.0 Demonstrate knowledge of basic pharmaceutical chemistry and drug classification.
17.0 Demonstrate knowledge of inventory management.
18.0 Initiate measurement and calculating techniques as it relates to United States Pharmacopeia (USP) 795 (non-sterile) compounding in pharmacy practice.
19.0 Demonstrate a basic knowledge of pharmaceutical chemistry as it relates to human physiology.
20.0 Prepare and deliver medications.
21.0 Repackage unit dose medications.
22.0 Prepare United States Pharmacopeia (USP) 797 and USP 800 sterile products.
23.0 Recognize consumer economic activities.
24.0 Perform decision making activities.
25.0 Demonstrate leadership skills.
26.0 Identify, classify, and demonstrate management activities.

**Florida Department of Education**
**Student Performance Standards**

**Program Title:** **Pharmacy Management**
**CIP Number:** **1351080502**
**Program Length:** **70 credit hours**
**SOC Code(s):** **41-1011**

Standards 1-11 are referred to as the **Health Science Core** and are required standards in this program. Secondary and Postsecondary students completing the health science core will not have to repeat the core in any other health science program in which it is a part. When the recommended sequence is followed, the structure allows students to complete at specified points for employment or remain for advanced training or cross-training.

To ensure consistency whenever these courses are offered, the health science core standards (1-11) have been placed in a separate document.

| **Refer to Rule 6A-14.030 (4) F.A.C., for the minimum amount of general education coursework required in the Associate of Science (AS) degree. At the completion of this program, the student will be able to:** |
|---|
| **Pharmacy Technician (12-22)** |
| 12.0 Practice human relation skills. - The student will be able to: |
| 12.01 Explore the meaning and duties of a pharmacy technician. |
| 12.02 Explore the organizational flow of responsibilities within a pharmacy setting. |
| 12.03 Understand the importance of developing and maintaining a professional rapport with co-workers. |
| 12.04 Identify pharmacy organizations and their role in the profession to include student membership opportunities. |
| 12.05 Identify the current trends and perspectives in the pharmacy practice. |
| 12.06 Identify how team building can facilitate change within the pharmacy working environment. |
| 12.07 Understand the importance of good interpersonal skills/soft skills in various pharmacy settings. |
| 12.08 Demonstrate ethical conduct in job-related activities. |
| 12.09 Identify State of Florida requirements for obtaining and maintaining pharmacy technician registration as well as continuing education requirements for renewal. |
| 12.10 Explore the importance of national certification and the continuing education requirements for renewal. |

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| 13.0 | Identify pharmaceutical abbreviations and terminology as related to pharmacy practice. - The student will be able to: |
| 13.01 | Utilize pharmaceutical medical terminology. |
| 13.02 | Analyze the major symbols and abbreviations used on prescriptions and state the meaning. |
| 13.03 | Identify safety strategies used to prevent medication errors due to pharmaceutical abbreviations and terminology. |
| 14.0 | Identify medical and legal considerations in various pharmacy settings. - The student will be able to: |
| 14.01 | Articulate the significance of current national and Florida law and administrative rules as they relate to the scope of practice for the pharmacy technician. |
| 14.02 | Convey an understanding of patient counseling requirements pertaining to OBRA-90 versus MTM (Medication Therapy Management). |
| 14.03 | Convey an understanding of medical legal concepts as they relate to the scope of practice for the pharmacy technician. |
| 14.04 | Explain the legal requirements for accurate pharmacy documentation and recordkeeping. |
| 14.05 | Demonstrate an understanding of HIPAA in pharmacy practice pertaining to the ethical and legal considerations. |
| 14.06 | Convey an understanding of the patient's Bill of Rights as it relates to pharmacy practice. |
| 14.07 | Convey an understanding of pertinent laws governing pharmacy practice such as false prescriptions and drug diversion. |
| 14.08 | Differentiate between controlled substance schedules (CI-CV) and their applicable regulations. |
| 14.09 | Convey an understanding of the Florida Right to Know Act with respect to hazardous materials, the utilization of safety data sheets, and hazardous communication symbols. |
| 14.10 | Implement appropriate patient safety goals by applicable accrediting and regulatory organizations. |
| 14.11 | Understand and explain the legal requirements for final check by the pharmacist. |
| 14.12 | Classify activities that may be performed by pharmacy technicians and those that must be performed by licensed pharmacists. |
| 14.13 | Explain the importance of information technology (IT) and its current use in various pharmacy settings. |
| 15.0 | Perform clerical duties as related to pharmacy practice. - The student will be able to: |
| 15.01 | Demonstrate retail pharmacy dispensing processes. |
| 15.02 | Identify potential errors that may result in Quality Related Events. |
| 15.03 | Utilize pharmacy software in processing pharmacy prescription data. |
| 15.04 | Identify and discuss applications of E-Prescribing and facsimile. |

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| | 15.05 | Utilize and apply interactive communication skills while gathering accurate information from patients and from other healthcare professionals. |
| | 15.06 | Identify communication modalities that can result in the transmission of inaccurate information, and explain specific ways to make improvements. |
| | 15.07 | Create, complete and maintain patient profiles including third party billing information. |
| | 15.08 | Understand the processes of third party billing, resolving rejections, and obtaining authorizations. |
| | 15.09 | Demonstrate professional telephone communication skills within the scope of practice for the pharmacy technician. |
| | 15.10 | Demonstrate the knowledge of systems used in maintaining pharmacy records. |
| | 15.11 | Summarize, evaluate, and describe the role of the technician in quality assurance activities as related to various pharmacy practices. |
| 16.0 | Demonstrate knowledge of basic pharmaceutical chemistry and drug classification. - The student will be able to: | |
| | 16.01 | Define the major classifications of pharmaceuticals. |
| | 16.02 | Categorize at least one official compendia of standards for quality and purity of drugs and authoritative information on dosage, administration, and therapeutic equivalents. |
| | 16.03 | Utilize pharmacy reference manuals and web sites. |
| | 16.04 | Apply knowledge of trade names, and generic name equivalents. |
| 17.0 | Demonstrate knowledge of inventory management. - The student will be able to: | |
| | 17.01 | Convey an understanding of industry standards in purchasing pharmaceutical supplies, including the Florida Pedigree Law. |
| | 17.02 | Maintain controlled substance inventory. |
| | 17.03 | Apply knowledge of pharmacy business math to prescription pricing systems. |
| | 17.04 | Maintain stock inventory, communicate shortages, and seek solutions to maintain continuity of patient care. |
| | 17.05 | Create electronic purchase orders. |
| | 17.06 | Accurately perform the process of purchasing, receiving, storing, distributing and disposing of pharmaceutical supplies. |
| | 17.07 | Convey an understanding of Investigational Drugs, Risk Evaluation and Mitigation Strategies (REMS), off label indications, and emerging drug therapy. |
| | 17.08 | Convey an understanding of the inventory control process implemented by Title II of the Drug Quality and Security Act. |
| 18.0 | Initiate measurement and calculating techniques as it relates to United States Pharmacopeia (USP) 795 (non-sterile) compounding in pharmacy practice. - The student will be able to: | |

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| | 18.01 Convey an understanding of United States Pharmacopeia (USP) 795 standards. |
| | 18.02 Convert measurements within the apothecary, avoirdupois, household and metric systems. |
| | 18.03 Perform common pharmaceutical calculations. |
| | 18.04 Identify common pharmaceutical weighing equipment. |
| | 18.05 Identify common pharmaceutical volume measurement equipment. |
| | 18.06 Demonstrate the technique of preparing common pharmaceutical compounds. |
| | 18.07 Summarize, evaluate and describe the role of the technician in quality assurance activities as related to the preparation of non-sterile products. |
| 19.0 | Demonstrate a basic knowledge of pharmaceutical chemistry as it relates to human physiology. - The student will be able to: |
| | 19.01 Describe electrolyte balances and imbalances. |
| | 19.02 Relate the general sources, classes, indications, mechanisms of actions, routes of administration, side effects, and various types of drug interactions. |
| | 19.03 Demonstrate an understanding of common adult doses of medications, duration of common drug therapies, and respective contraindications including the BEERS Criteria. |
| | 19.04 Identify potential interactions that require a pharmacist's intervention pertaining to food/alcohol, herbal, OTC, and/or prescription medications. |
| 20.0 | Prepare and deliver medications. - The student will be able to: |
| | 20.01 Read and prepare medication orders correctly. |
| | 20.02 Demonstrate institutional pharmacy dispensing processes. |
| | 20.03 Compare all new orders with medications listed on profiles while noting any changes. |
| | 20.04 Utilize special precautions in the preparation of medications for pediatric patients. |
| | 20.05 Transport medications safely being aware of hazards: theft, legal implications of accidental loss, and other consequences. |
| | 20.06 Understand how to correctly fill and deliver medication cassettes. |
| | 20.07 Collect data from medication administration record. |
| | 20.08 Demonstrate use of automated medication dispensing equipment. |
| 21.0 | Repackage unit dose medications. - The student will be able to: |
| | 21.01 Locate correct stock container. |

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| | 21.02 | Operate unit dose packaging equipment. |
| | 21.03 | Measure, count, and place individual dose in appropriate containers. |
| | 21.04 | Understand precautions used when packaging unit dose hazardous drugs. |
| | 21.05 | Record repackaged medication data correctly. |
| | 21.06 | Summarize, evaluate, and describe the role of the technician in quality assurance activities as related to repackaging unit dose medication. |
| 22.0 | Prepare United States Pharmacopeia (USP) 797 and USP 800 sterile products. - The student will be able to: | |
| | 22.01 | Convey an understanding of United States Pharmacopeia (USP) 797 regulations. |
| | 22.02 | Convey an understanding of United States Pharmacopeia (USP) 800 regulations. |
| | 22.03 | Compare medication order with label on vial and check expiration date of product. |
| | 22.04 | Calculate drug dosage for parenteral use. |
| | 22.05 | Understand common institutional drug names, dosages, and incompatibilities. |
| | 22.06 | Reconstitute parenteral medications. |
| | 22.07 | Demonstrate aseptic technique to withdraw medication from stock vial, measure correct quantity as instructed, select and insert it into IV solution without error. |
| | 22.08 | Demonstrate aseptic technique to withdraw medication from an ampule using filter needle/straw. |
| | 22.09 | Prepare parenteral solutions using proper aseptic technique. |
| | 22.10 | Understand the preparation of Total Parenteral Nutrition (TPN) solutions. |
| | 22.11 | Understand the preparation of chemotherapeutic agents using proper safety techniques. |
| | 22.12 | Understand the appropriate technique while using specialized equipment such as: laminar flow hoods, filters, pumps, automated compounders, and barrier isolator. |
| | 22.13 | Place label on IV solution container and record appropriately. |
| | 22.14 | Perform quality control check of completed product. |
| | 22.15 | Convey an understanding of the proper storage and disposal requirements of reconstituted and non-reconstituted IV solutions. |
| | 22.16 | Convey an understanding of the proper storage and disposal of hazardous drugs. |
| | 22.17 | Summarize, evaluate and describe the role of the technician in quality assurance activities as related to the preparation of sterile products. |

| **Pharmacy Management (23-26)** | |
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| 23.0 | Recognize consumer economic activities. – The student will be able to: |
| | 23.01 Identify basic concepts of the American economic system. |
| | 23.02 Identify basic types and sources of consumer credit. |
| 24.0 | Perform decision making activities. – The student will be able to: |
| | 24.01 Demonstrate the ability to determine the roper priority of work. |
| | 24.02 Prepare a day's schedule for the employer. |
| | 24.03 Choose appropriate action in situations requiring application of business ethics. |
| | 24.04 Choose appropriate action in situations requiring following a chain of command. |
| | 24.05 Choose appropriate action in situations requiring effective time management. |
| 25.0 | Demonstrate leadership skills. – The student will be able to: |
| | 25.01 Prepare an agenda. |
| | 25.02 Demonstrate the ability to conduct an orderly meeting. |
| | 25.03 Greet and introduce individuals. |
| | 25.04 Demonstrate ability to give clear directions, fair assignments & constructive criticism. |
| | 25.05 Demonstrate ability to manage a team. |
| 26.0 | Identify, classify, and demonstrate management activities. – The student will be able to: |
| | 26.01 Define management. |
| | 26.02 Identify various management positions. |
| | 26.03 Identify various management styles. |
| | 26.04 Identify the major functions of management. |
| | 26.05 Classify activities as part of the planning function of management. |
| | 26.06 Classify activities as part of the organizing function of management. |

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| 26.07 | Classify activities as part of the staffing function of management. |
| 26.08 | Classify activities as part of the directing function of management. |
| 26.09 | Classify activities as part of the controlling function of management. |
| 26.10 | Demonstrate the ability to perform planning, organizing, staffing, directing, and controlling activities of management. |
| 26.11 | Demonstrate knowledge of the relationship between authority and responsibility to task accomplishment. |
| 26.12 | Select the most effective communication systems. |
| 26.13 | Identify problems and make appropriate decisions. |

## Additional Information

### Laboratory Activities

Laboratory investigations that include scientific inquiry, research, measurement, problem solving, emerging technologies, tools and equipment, as well as, experimental, quality, and safety procedures are an integral part of this career and technical program/course. Laboratory investigations benefit all students by developing an understanding of the complexity and ambiguity of empirical work, as well as the skills required to manage, operate, calibrate and troubleshoot equipment/tools used to make observations. Students understand measurement error; and have the skills to aggregate, interpret, and present the resulting data. Equipment and supplies should be provided to enhance hands-on experiences for students.

Clinical practicum experiences are an integral part of this program.

### Special Notes

The following ATD programs have been approved by the Florida State Board of Education for statewide articulation credit into this degree program

Pharmacy Technician-ATD (0351080507/0351080503) – 40 credit hours

The following industry certifications have been approved by the Florida State Board of Education for statewide articulation credit into this degree program.

Certified Pharmacy Technician (PTCBD001) – 9 credits

This program must be approved by the Board of Pharmacy. Program completers who wish to work as Pharmacy Technicians in the State of Florida must register with the Board of Pharmacy (465.014 F.S.).

Due to the clinical experiences students are engaged in through the program and to ensure the safety of both the students and the patients the recommended student to instructor ratio in the classroom is 20:1 and in the lab is 4:1.

This program meets the Department of Health's education requirements for HIV/AIDS, Domestic Violence and Prevention of Medical Errors. Although not a requirement for initial licensure, it is a requirement for renewal, therefore the instructor may provide a certificate for renewal purposes to the student verifying these requirements have been met.

If students in this program are seeking a licensure, certificate or registration through the Department of Health, please refer to 456.0635 F.S. for more information on disqualification for a license, certificate, or registration through the Department of Health.

It is recommended that program completers take national pharmacy technician certification exam offered by the Pharmacy Technician Certification Board, 2215 Constitution Ave, Washington, DC 20037-2985, (202) 429-7576. This certification is offered three times annually.

Cooperative training - OJT is appropriate for this program. When cooperative training is offered, the following is required for each student: a training plan, signed by the student, instructor and employer which includes instructional objectives and a list of on-the-job and in-school learning

experiences; a workstation which reflects equipment, skills and tasks which are relevant to the occupations which the student has chosen as a career goal. Students must receive compensation for work performed.

Outcomes 01-11 are referred to as the Health Careers Core and do not have to be completed if the student has previously completed the Core in another health science program. The CORE should be taken first or concurrently with the first course in the program. Following the successful completion of the core, the student is eligible to take the National Health Care Foundation Skill Standards Assessment with instructor approval and the completion of a portfolio.

**Career and Technical Student Organization (CTSO)**

HOSA: Future Health Professionals is the intercurricular career and technical student organization providing leadership training and reinforcing specific career and technical skills. Career and Technical Student Organizations provide activities for students as an integral part of the instruction offered.

**Accommodations**

Federal and state legislation requires the provision of accommodations for students with disabilities to meet individual needs and ensure equal access. Postsecondary students with disabilities must self-identify, present documentation, request accommodations if needed, and develop a plan with their counselor and/or instructors. Accommodations received in postsecondary education may differ from those received in secondary education. Accommodations change the way the student is instructed. Students with disabilities may need accommodations in such areas as instructional methods and materials, assignments and assessments, time demands and schedules, learning environment, assistive technology and special communication systems. Documentation of the accommodations requested and provided should be maintained in a confidential file.

**Florida Department of Education**
**Curriculum Framework**

**Program Title:** **Physical Therapist Assistant**
**Career Cluster:** **Health Science**

| AS | |
|---|---|
| CIP Number | 1351080601 |
| Program Type | College Credit |
| Standard Length | 74 credit hours |
| CTSO | HOSA: Future Health Professionals; APTA |
| SOC Codes (all applicable) | 31-2021 Physical Therapist Assistants |

## Purpose

This program offers a sequence of courses that provides coherent and rigorous content aligned with challenging academic standards and relevant technical knowledge and skills needed to prepare for further education and careers in the Health Science career cluster; provides technical skill proficiency, and includes competency-based applied learning that contributes to the academic knowledge, higher-order reasoning and problem-solving skills, work attitudes, general employability skills, technical skills, and occupation-specific skills, and knowledge of all aspects of Health Science career cluster.

The purpose of this program is to prepare students for employment as physical therapist assistants SOC Code 31-2021 (Physical Therapist Assistants).

The content includes but is not limited to the requirements of the Commission on Accreditation in Physical Therapy Education/American Physical Therapy Association, 1111 North Fairfax Street, Alexandria, VA 22314, (703) 684-2782.

**Additional Information** relevant to this Career and Technical Education (CTE) program is provided at the end of this document.

## Program Structure

This program is a planned sequence of instruction consisting of 74 credit hours.

## Regulated Programs

The graduate of this program is prepared to make an application to the Florida Physical Therapist Assistant licensing examination which is given by the Florida Department of Health, Board of Physical Therapy Practice.

## Standards

After successfully completing this program, the student will be able to perform the following:

01.0 Demonstrate knowledge of the healthcare delivery system and health occupations.
02.0 Demonstrate the ability to communicate and use interpersonal skills effectively.
03.0 Demonstrate legal and ethical responsibilities.
04.0 Demonstrate an understanding of and apply wellness and disease concepts.
05.0 Recognize and practice safety and security procedures.
06.0 Recognize and respond to emergency situations.
07.0 Recognize and practice infection control procedures.
08.0 Demonstrate an understanding of information technology applications in healthcare.
09.0 Demonstrate employability skills.
10.0 Demonstrate knowledge of blood borne diseases, including HIV/AIDS.
11.0 Apply basic math and science skills.
12.0 Describe anatomical structure, function and dysfunction of the human body related to the practice of physical therapy.
13.0 Demonstrate ethical and legal practice as a physical therapist assistant.
14.0 Demonstrate the knowledge and skills necessary to provide comprehensive patient/client management and implement a comprehensive plan of care as established by a physical therapist.
15.0 Demonstrate competence in implementing selected components of interventions identified in the plan of care established by a physical therapist.
16.0 Demonstrate competence in performing components of data collection skills essential for carrying out the plan of care by administering appropriate tests and measures (before, during and after interventions).
17.0 Participate in the health care environment as a member of a patient/client -centered interprofessional collaborative team.

**Florida Department of Education**
**Student Performance Standards**

**Program Title:** **Physical Therapist Assistant**
**CIP Number:** **1351080601**
**Program Length:** **74 credit hours**
**SOC Code(s):** **31-2021**

Standards 1-11 are referred to as the **Health Science Core** and are required standards in this program. Secondary and Postsecondary students completing the health science core will not have to repeat the core in any other health science program in which it is a part. When the recommended sequence is followed, the structure allows students to complete at specified points for employment or remain for advanced training or cross-training.

To ensure consistency whenever these courses are offered, the health science core standards (1-11) have been placed in a separate document.

| **Refer to Rule 6A-14.030 (4) F.A.C., for the minimum amount of general education coursework required in the Associate of Science (AS) degree. At the completion of this program, the student will be able to:** |
|---|
| **Physical Therapist Assistant: Intended outcomes (12-17) lead to the occupational completion point of Physical Therapist Assistant.** |
| 12.0 Describe anatomical structure, function and dysfunction of the human body related to the practice of physical therapy. – The student will be able to: |
| 12.01 Label the following topographic terms:<br>12.01.01 Medial<br>12.01.02 lateral<br>12.01.03 proximal<br>12.01.04 distal<br>12.01.05 superior<br>12.01.06 inferior<br>12.01.07 anterior<br>12.01.08 posterior<br>12.01.09 midline<br>12.01.10 right and left<br>12.01.11 bilateral |
| 12.02 Chart the life support chain, aerobic metabolism and anaerobic metabolism. |
| 12.03 Define anatomy, physiology, pathophysiology, and homeostasis. |
| 12.04 Identify and describe the anatomical structures and functions of the following:<br>12.04.01 Circulatory/ Cardiovascular system<br>12.04.02 Endocrine and metabolic system |

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| | 12.04.03 | Gastrointestinal/Digestive system<br>12.04.04 Genital and Reproductive system<br>12.04.05 Hematologic system<br>12.04.06 Hepatic and Biliary system<br>12.04.07 Immune System<br>12.04.08 Integumentary system<br>12.04.09 Lymphatic System<br>12.04.10 Musculoskeletal System<br>12.04.11 Nervous System<br>12.04.12 Respiratory System<br>12.04.13 Renal and Urologic systems |
| | 12.05 | Describe medical/surgical conditions and related treatment across the lifespan. |
| 13.0 | Demonstrate ethical and legal practice as a physical therapist assistant. – The student will be able to: | |
| | 13.01 | Act in a manner that is consistent with the American Physical Therapy Association's Standards of Ethical Conduct for the Physical Therapist Assistant. |
| | 13.02 | Demonstrate an understanding of the laws and regulations governing the profession of physical therapy. |
| | 13.03 | Practice under the direction and supervision of a physical therapist (PT). |
| | 13.04 | Demonstrate behaviors consistent with the American Physical Therapy Association's Value Based Behaviors for the Physical Therapist Assistant. |
| | 13.05 | Demonstrate awareness of the patient/client's need for dignity and independence. |
| | 13.06 | Recognize patient/client expressions of discomfort, spoken or unspoken (body language). |
| | 13.07 | Demonstrate sensitivity to the patient/client's emotional response. |
| | 13.08 | Recognize own reaction to the patient/client's illness or disability. |
| | 13.09 | Recognize patient/client's and family's reactions to illness and disability. |
| | 13.10 | Respect individual, cultural, religious and socio-economic differences in people. |
| | 13.11 | Utilize appropriate communication channels. |
| | 13.12 | Identify scope of responsibility of the physical therapist assistant as it relates to patient/client care, departmental function, the physical therapist, and the physical therapy aide. |
| | 13.13 | Determine tasks and duties that are beyond the scope of practice for the physical therapist assistant. |
| | 13.14 | Communicate information to the appropriate individual, with an understanding / recognition of the proper chain of command. |
| | 13.15 | Utilize resources efficiently and effectively in the delivery of healthcare. |

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| | 13.16 | Manage time effectively. |
| | 13.17 | Adhere to legal practice standards, including all federal, state, and institutional regulations related to patient/client care and fiscal management. |
| | 13.18 | Report to appropriate authorities suspected cases of abuse of vulnerable populations. |
| | 13.19 | Report to appropriate authorities suspected cases of fraud and abuse related to the utilization of and payment for physical therapy and other health care services. |
| | 13.20 | Implement, in response to an ethical situation, a plan of action that demonstrates sound moral reasoning congruent with core professional ethics and values. |
| | 13.21 | Apply current knowledge, theory, and clinical judgment while considering the patient/client perspective and the environment, based on the plan of care established by the physical therapist. |
| | 13.22 | Identify basic concepts in professional literature including, but not limited to, validity, reliability and level of statistical significance. |
| | 13.23 | Identify and integrate appropriate evidence based resources to support clinical decision making for progression of the patient/client within the plan of care established by the physical therapist. |
| | 13.24 | Participate in professional and community organizations that provide opportunities for volunteerism, advocacy and leadership. |
| | 13.25 | Identify career development and lifelong learning opportunities, including the role of the physical therapist assistant in the clinical education of physical therapist assistant students. |
| 14.0 | Demonstrate the knowledge and skills necessary to provide comprehensive patient/client management and implement a comprehensive plan of care as established by a physical therapist. – The student will be able to: | |
| | 14.01 | Participate in discharge planning and follow up care. |
| | 14.02 | Review patient/client medical record and identify pertinent information related to the patient/clients' diagnosis. |
| | 14.03 | Interview patient/clients, caregivers, and family to obtain current information and report relevant information to the supervising PT. |
| | 14.04 | Identify indications and contradictions for each treatment/procedure and apply appropriate interventions. |
| | 14.05 | Report any changes in patient/client status or progress to the supervising physical therapist. |
| | 14.06 | Communicate an understanding of the plan of care developed by the physical therapist to achieve short and long term goals and intended outcomes. |
| | 14.07 | Determine a baseline physiological state. |
| | 14.08 | Recognize changes in a baseline physiological state. |
| | 14.09 | Determine significance of change in physiological state. |
| | 14.10 | Use the International Classification of Functioning, Disability and Health (ICF) to describe a patient's/client's impairments, activity and participation limitations. |
| | 14.11 | Monitor and adjust interventions in the plan of care in response to patient/client status and clinical indications. |

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| 15.0 | Demonstrate competence in implementing selected components of interventions identified in the plan of care established by a physical therapist. – The student will be able to: |
| 15.01 | Administer activities of daily living and functional training to patients/clients. |
| 15.02 | Perform gait training and postural training techniques. |
| 15.03 | Perform manual therapy techniques. |
| 15.04 | Perform balance and coordination activities. |
| 15.05 | Perform developmental activities. |
| 15.06 | Implement therapeutic exercise programs. |
| 15.07 | Apply external bandages, dressings and support devices. |
| 15.08 | Perform wound management. |
| 15.09 | Measure and properly fit assistive devices. |
| 15.10 | Perform gait training/locomotion training in household and community environments with appropriate assistive device(s) or wheelchair. |
| 15.11 | State the therapeutic benefits of exercise. |
| 15.12 | Define orthotics and prosthetic devices and state the importance of proper fit. |
| 15.13 | Describe upper and lower extremity prosthetics in terms of types of amputations. |
| 15.14 | Identify common problems in orthotic and prosthetic management and apply decision making skills in dealing effectively with them. |
| 15.15 | Instruct patient, client or care giver in orthotic and prosthetic management and assist patient/client in problem solving techniques. |
| 15.16 | Perform postural drainage and instruct patient/client in proper coughing and breathing exercises. |
| 15.17 | Describe action required to remediate barriers based on the plan of care established by the physical therapist. |
| 15.18 | Effectively educate others using teaching methods that are commensurate with the needs of the patient/client, caregiver or healthcare personnel. |
| 15.19 | Demonstrate appropriate use of medical terminology and layman's terms. |
| 15.20 | Define and describe the importance of the following terms:<br>15.20.01 disinfect<br>15.20.02 sterilize<br>15.20.03 germicide<br>15.20.04 vaccinate |

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| | 15.20.05 immunize<br>15.20.06 antiseptic<br>15.20.07 septic |
| 15.21 | Disinfect equipment after each use. |
| 15.22 | State the therapeutic temperature range for modalities in which temperature is a guideline for application. |
| 15.23 | Identify physiological effects of heat vs. cold applications. |
| 15.24 | Demonstrate appropriate therapeutic use of biophysical agents including biofeedback, electrotherapeutic agents, compression therapies, cryotherapy, hydrotherapy, superficial and deep thermal agents, traction, and light therapies. |
| 16.0 | Demonstrate competence in performing components of data collection skills essential for carrying out the plan of care by administering appropriate tests and measures (before, during, and after interventions). – The student will be able to: |
| 16.01 | Describe normal and abnormal motor behavior. |
| 16.02 | Assist physical therapist in collecting data related to a patient/client's disability and condition. |
| 16.03 | Detect and describe normal and abnormal joint movement. |
| 16.04 | Perform appropriate measurement and assessment techniques within the knowledge and limits of practice to assist the supervising physical therapist in monitoring and modifying the plan of care. |
| 16.05 | Recognize gait deviations. |
| 16.06 | Demonstrate competence in performing components of data collection skills essential for carrying out the plan of care such as standard vital signs, anthropometrical characteristics and mental functions. |
| 16.07 | Perform goniometric measurement. |
| 16.08 | Identify which environmental factors are potential architectural barriers. |
| 16.09 | Determine which architectural barriers will impact a patient/client's functional level including the use of ambulatory/mobility equipment. |
| 16.10 | Document all aspects of treatment using correct format, content and terminology. |
| 16.11 | Demonstrate the measurement of standard vital signs; recognize and monitor responses to positional changes and activities (e.g., orthostatic hypotension, response to exercise). |
| 16.12 | Identify the individual's and caregiver's ability to care for the device; recognize changes in skin condition and safety factors while using devices and equipment. |
| 16.13 | Determine the safety, status, and progression of patients while engaged in gait, locomotion, balance, wheelchair management and mobility. |
| 16.14 | Detect absent or altered sensation; normal and abnormal integumentary changes; activities, positioning, and postures that aggravate or relieve pain or altered sensations, or that can produce associated skin trauma; and recognize viable versus nonviable tissue. |
| 16.15 | Measure muscle strength by manual muscle testing; observe the presence or absence of muscle mass; recognize normal and |

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| | | abnormal muscle length, and changes in muscle tone. |
| | 16.16 | Administer standardized questionnaires, graphs, behavioral scales, or visual analog scales for pain; recognize activities, positioning, and postures that aggravate or relieve pain or altered sensations. |
| | 16.17 | Determine normal and abnormal alignment of trunk and extremities at rest and during activities. |
| | 16.18 | Detect signs and symptoms of respiratory distress, and activities that aggravate or relieve edema, pain, dyspnea, or other symptoms; describe thoracoabdominal movements and breathing patterns with activity, and cough and sputum characteristics. |
| | 16.19 | Respond effectively to patient/client and environmental emergencies that commonly occur in the clinical setting. |
| 17.0 | Participate in the health care environment as a member of a patient/client -centered interprofessional collaborative team. – The student will be able to: | |
| | 17.01 | Prepare patient/clients and treatment areas and ensures equipment is in proper working order. |
| | 17.02 | Recognize the importance of routine maintenance of equipment. |
| | 17.03 | Clean and check operation of wheelchairs, assistive devices, treatment tables, electrical equipment, etc. |
| | 17.04 | Demonstrate how to properly operate patient/client equipment. |
| | 17.05 | Instruct in safety considerations for equipment and on indications/contraindications of a specific physical therapy intervention. |
| | 17.06 | Implement appropriate patient/client safety goals. |
| | 17.07 | Describe disciplines within the healthcare system and identify the roles of each discipline. |
| | 17.08 | Describe the categories of healthcare agencies. |
| | 17.09 | Recognize current issues and problems affecting the delivery of healthcare. |
| | 17.10 | Correctly and ethically charge for services provided. |
| | 17.11 | Participate in performance improvement activities (quality assurance). |

## Additional Information

### Laboratory Activities

Laboratory investigations that include scientific inquiry, research, measurement, problem solving, emerging technologies, tools and equipment, as well as, experimental, quality, and safety procedures are an integral part of this career and technical program/course. Laboratory investigations benefit all students by developing an understanding of the complexity and ambiguity of empirical work, as well as the skills required to manage, operate, calibrate and troubleshoot equipment/tools used to make observations. Students understand measurement error; and have the skills to aggregate, interpret, and present the resulting data. Equipment and supplies should be provided to enhance hands-on experiences for students.

Laboratory work is structured so that students begin with basic patient care skills, progress to basic physical therapy skills and then to more advanced physical therapy application and techniques.

### Special Notes

This program meets the Department of Health's education requirements for HIV/AIDS, Domestic Violence and Prevention of Medical Errors. Although not a requirement for initial licensure, it is a requirement for renewal, therefore the instructor may provide a certificate for renewal purposes to the student verifying these requirements have been met.

If students in this program are seeking a licensure, certificate or registration through the Department of Health, please refer to 456.0635 F.S. for more information on disqualification for a license, certificate, or registration through the Department of Health.

The Health Careers Core must be taken by all students (secondary, postsecondary adult and postsecondary vocational) planning to complete any Health Occupations program. Once successfully completed, the core does not need to be repeated at any instructional level.

This program focuses on broad, transferable skills and stresses understanding and demonstration of the following elements of the health care industry; planning, management, finance, technical and production skills, underlying principles of technology, labor issues, community issues and health, safety, and environmental issues.

The cooperative method of instruction is not appropriate for this program.

Outcomes 01-11 are referred to as the Health Careers Core and do not have to be completed if the student has previously completed the Core in another health science program. The CORE should be taken first or concurrently with the first course in the program. Following the successful completion of the core, the student is eligible to take the National Health Care Foundation Skill Standards Assessment with instructor approval and the completion of a portfolio.

### Career and Technical Student Organization (CTSO)

HOSA: Future Health Professionals is the intercurricular career and technical student organization providing leadership training and reinforcing specific career and technical skills. Career and Technical Student Organizations provide activities for students as an integral part of the instruction offered.

## Accommodations

Federal and state legislation requires the provision of accommodations for students with disabilities to meet individual needs and ensure equal access. Postsecondary students with disabilities must self-identify, present documentation, request accommodations if needed, and develop a plan with their counselor and/or instructors. Accommodations received in postsecondary education may differ from those received in secondary education. Accommodations change the way the student is instructed. Students with disabilities may need accommodations in such areas as instructional methods and materials, assignments and assessments, time demands and schedules, learning environment, assistive technology and special communication systems. Documentation of the accommodations requested and provided should be maintained in a confidential file.

**Florida Department of Education**
**Curriculum Framework**

**Program Title:** **Cardiovascular Technology**
**Career Cluster:** **Health Science**

| AS | |
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| CIP Number | 1351090100 |
| Program Type | College Credit |
| Standard Length | 77 credit hours |
| CTSO | HOSA: Future Health Professionals |
| SOC Codes (all applicable) | 29-2031 Cardiovascular Technologists and Technicians |

## Purpose

This program offers a sequence of courses that provides coherent and rigorous content aligned with challenging academic standards and relevant technical knowledge and skills needed to prepare for further education and careers in the Health Science career cluster; provides technical skill proficiency, and includes competency-based applied learning that contributes to the academic knowledge, higher-order reasoning and problem-solving skills, work attitudes, general employability skills, technical skills, and occupation-specific skills, and knowledge of all aspects of Health Science career cluster.

The program is designed to prepare students for employment as cardiovascular technologists, SOC Code 29-2031 (Cardiovascular Technologists and Technicians).

The content includes but is not limited to instruction in performing examinations leading to diagnosis and treatment of patients with cardiovascular disease. A clinical component is a necessary element to a program. Reinforcement of basic skills in English, mathematics and science occurs through classroom instruction and applied laboratory practice.

**Additional Information** relevant to this Career and Technical Education (CTE) program is provided at the end of this document.

## Program Structure

This program is a planned sequence of instruction consisting of 77 credit hours.

**Standards**

After successfully completing this program, the student will be able to perform the following:

01.0 Demonstrate knowledge of the health care delivery system and health occupations.
02.0 Demonstrate the ability to communicate and use interpersonal skills effectively.
03.0 Demonstrate legal and ethical responsibilities.
04.0 Demonstrate an understanding of and apply wellness and disease concepts.
05.0 Recognize and practice safety and security procedures.
06.0 Recognize and respond to emergency situations.
07.0 Recognize and practice infection control procedures.
08.0 Demonstrate an understanding of information technology applications in healthcare.
09.0 Demonstrate employability skills.
10.0 Demonstrate knowledge of blood borne diseases, including HIV/AIDS.
11.0 Apply basic math and science skills.
12.0 Explore career opportunities in invasive cardiovascular technology (cardiac catheterization, invasive cardiac electrophysiology and non-invasive adult echocardiography, pediatric echocardiography, non-invasive vascular technology.
13.0 Identify the anatomic structure and function of body systems in relation to cardiovascular disease and studies.
14.0 Demonstrate the ability to recognize normal and abnormal electrocardiogram (EKG) rhythms and arrhythmias as each apply to intra-procedural therapies.
15.0 Practice safety and quality assurance.
16.0 Follow professional principles related to the practice of cardiovascular technology.
17.0 Use basic medical electronics and medical instrumentation.
18.0 Describe the role of the cardiovascular technologist in catastrophic event management.
19.0 Discuss the pharmacological aspects of cardiovascular drugs.
20.0 Perform patient care, record patient history and practice effective communication.

**One of the following sub-specialties must be added to the intended outcomes for students to complete the Cardiovascular Technology A.S.:**

21.0 Assist in all aspects of invasive cardiovascular diagnostic and interventional procedures and techniques with emphasis on cardiovascular catheterization.
22.0 Perform noninvasive cardiovascular techniques with an emphasis on echocardiography.
23.0 Perform noninvasive peripheral vascular studies.
24.0 Perform noninvasive cardiovascular techniques with an emphasis on echocardiography related to the pediatric patient.
25.0 Assist in all aspects of cardiovascular electrophysiology procedure.

**Florida Department of Education**
**Student Performance Standards**

**Program Title:** **Cardiovascular Technology**
**CIP Number:** **1351090100**
**Program Length:** **77 credit hours**
**SOC Code(s):** **29-2031**

Standards 1-11 are referred to as the **Health Science Core** and are required standards in this program. Secondary and Postsecondary students completing the health science core will not have to repeat the core in any other health science program in which it is a part. When the recommended sequence is followed, the structure allows students to complete at specified points for employment or remain for advanced training or cross-training.

To ensure consistency whenever these courses are offered, the health science core standards (1-11) have been placed in a separate document.

| **Refer to Rule 6A-14.030 (4) F.A.C., for the minimum amount of general education coursework required in the Associate of Science (AS) degree. At the completion of this program, the student will be able to:** | |
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| 12.0 | Explore career opportunities in invasive cardiovascular technology (cardiac catheterization, invasive cardiac electrophysiology and non-invasive adult echocardiography, pediatric echocardiography, non-invasive vascular technology. – The student will be able to: |
| 12.01 | Describe the CVT profession, including but not limited to, history, accreditation, education, job conditions, salaries, critical thinking and team building. |
| 12.02 | Identify the cardiovascular professional organizations and discuss their roles (SDMS, ASE, ACO, SVT, SVU,SICP, HRS). |
| 12.03 | Discuss certification, licensure, and registration for the Cardiovascular Technologist. |
| 12.04 | Describe the sub-specialty of Invasive cardiovascular technology (Cardiovascular Catheterization) and identify the duties of the Cardiovascular Invasive Specialist. |
| 12.05 | Describe the sub-specialty of and identify the duties of the Cardiovascular Technologist. |
| 12.06 | Describe the sub-specialty of adult echocardiography and identify the duties of the Cardiovascular Technologist. |
| 12.07 | Describe the sub-specialty of pediatric echocardiography and identify the duties of the Cardiovascular Technologist. |
| 12.08 | Describe the sub-specialty of Non-invasive Vascular technologist and identify the duties of the Cardiovascular Technologist. |
| 12.09 | Describe the sub-specialty of cardiac electrophysiology and identify the duties of the Cardiovascular Technologist. |
| 13.0 | Identify the anatomic structure and function of body systems in relation to cardiovascular disease and studies. – The student will be able to: |
| 13.01 | Describe human anatomy and physiology with emphasis on the cardiovascular systems. |

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| | 13.02 Discuss principles and methods of disease transmission and prevention. |
| | 13.03 Identify normal and abnormal data obtained from medical tests. |
| | 13.04 Describe basic acquired and congenital pathological conditions of the cardiovascular systems. |
| 14.0 | Demonstrate the ability to recognize normal and abnormal electrocardiogram (EKG) rhythms and arrhythmias as each apply to intra-procedural therapies. – The student will be able to: |
| | 14.01 Identify cardiac anatomy and the normal and abnormal electrical conduction pathways within the heart. |
| | 14.02 Identify the inherent rates of each segment of the nodal pathway of the heart. |
| | 14.03 Identify the components of a normal cardiac cycle including the hemodynamic, mechanical and electrical components. |
| | 14.04 Associate each electrical segment of the EKG cycle (P wave, PR interval, QRS complex, ST segment, T wave, Isoelectric line) to the mechanical function of the heart. |
| | 14.05 Explain how the PR interval and QRS complex are measured within the cardiac cycle. |
| | 14.06 Identify sinus, atrial, junctional, supraventricular, and ventricular rhythms as well as heart blocks and paced rhythms. |
| | 14.07 Correlate the clinical implications of arrhythmias to cardiac pathology. |
| | 14.08 Differentiate artifact, interference, and noise versus arrhythmia. |
| 15.0 | Practice safety and quality assurance. – The student will be able to: |
| | 15.01 Apply acceptable safety practices in cardiovascular instrumentation. |
| | 15.02 Demonstrate knowledge of radiation safety procedures. |
| | 15.03 Demonstrate the practice of radiation safety procedures. |
| | 15.04 Demonstrate knowledge of quality assurance as it relates to imaging equipment. |
| | 15.05 Implement appropriate regulatory, institutional and department specific accreditation patient safety guidelines. |
| | 15.06 Apply the knowledge of blood and air borne pathogens and the psychomotor skills to employ Standard precautions and safe practices to reduce occupational exposure. |
| 16.0 | Follow professional principles related to the practice of cardiovascular technology. – The student will be able to: |
| | 16.01 Carry out all responsibilities in the best interest of the patient in an excellent manner. |
| | 16.02 Carry out assigned tasks conscientiously, honestly, enthusiastically, and accept responsibility for the task and the results. |
| | 16.03 Function effectively as part of a team-adaptable to change and willing to teach others. |

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| | 16.04 Abide by the rules and procedures of the work site. |
| | 16.05 Maintain a hygienic, professional appearance. |
| | 16.06 Demonstrate pride and loyalty to the profession. |
| 17.0 | Use basic medical electronics and medical instrumentation. – The student will be able to: |
| | 17.01 Identify the duties related to electronic monitoring and diagnostic testing of patient. |
| | 17.02 Demonstrate computer literacy skills as applied to cardiovascular practice. |
| | 17.03 Operate equipment used in diagnostic testing, physiological monitoring and interventional procedures for cardiovascular patients. |
| | 17.04 Set up, calibrate, and operate selected equipment in the cardiovascular laboratory. |
| 18.0 | Describe the role of the cardiovascular technologist in catastrophic event management. – The student will be able to: |
| | 18.01 Follow institutional catastrophic event protocol. |
| | 18.02 Respond to simulated emergency care situations encountered in a cardiovascular department. |
| | 18.03 Identify the components of the defibrillator and how it is used. |
| | 18.04 Cite the indications for cardiac defibrillation and cardioversion. |
| 19.0 | Discuss the pharmacological aspects of cardiovascular drugs. – The student will be able to: |
| | 19.01 State the mechanism of action of selected cardiovascular drugs. |
| | 19.02 Identify and describe uses of pharmacological agents on an emergency "crash" cart. |
| | 19.03 Use needles and syringes in preparing medications for administration in simulated practice. |
| 20.0 | Perform patient care, record patient history and practice effective communication. – The student will be able to: |
| | 20.01 Perform patient identification and time-out procedures. |
| | 20.02 Examine the patients chart and/or electronic medical record in order to locate pertinent information. |
| | 20.03 Perform a patient history pertinent to the cardiovascular exam. |
| | 20.04 Practice patient care with emphasis on patient privacy, patient confidentiality, body mechanics, patient positions and patient transportation. |
| | 20.05 Measure vital signs and differentiate between normal and abnormal values. |

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| 20.06 | Cite the indications for and name the methods of oxygen administration. |
| 20.07 | Recognize human behaviors indicative of anxiety. |
| 20.08 | Identify and develop effective communication and interpersonal relations skills. |
| 20.09 | Discuss approaches used in dealing with a variety of hospitalized persons. |
| 20.10 | Describe socio-cultural traits which may affect a person's hospital care. |
| **One of the following sub-specialties must be added to the intended outcomes for cardiovascular. Additional sub-specialties may be included, as desired.**<br><br>***For those programs which include the invasive cardiovascular sub-specialty, the following student performance standards are necessary.** | |
| 21.0 | Assist in all aspects of invasive cardiovascular diagnostic and interventional procedures and techniques with emphasis on cardiovascular catheterization. – The student will be able to: |
| 21.01 | Describe the history of invasive cardiovascular procedures, including pioneers in the field. |
| 21.02 | Practice sterile technique as it applies to the cardiovascular catheterization set up and protocols for cardiovascular catheterization procedures. |
| 21.03 | Demonstrate the knowledge diagnostic left heart, right heart and vascular catheterization set up, protocols and procedures. |
| 21.04 | Apply communication skills and procedure knowledge in patient education pre, during and post procedure. |
| 21.05 | Perform diagnostic left heart, right heart and vascular catheterization set up, protocols, and procedures. |
| 21.06 | Demonstrate the knowledge of diagnostic procedures in the cardiovascular cath lab including, but not limited to, angiography, IVUS (intravascular ultrasound), FFR (fractional flow reserve), optical coherence tomography (OCT), and electrophysiology studies. |
| 21.07 | Demonstrate the knowledge of interventional procedures in the cardiovascular cath lab including, but not limited to, angioplasty, stent implantation, thrombectomy, IABP (intraaortic balloon pumping), valvuloplasty, biopsy pericardiocentesis, atherectomy, closure devices, vena cava filters and LVADs and structural heart procedures (i.e. TAVR). |
| 21.08 | Describe catheter insertion techniques and assist physician with manipulation of catheterization equipment and instruments during the procedures. |
| 21.09 | Recognize cardiovascular anatomy through angiography and assess cardiovascular status from the data. |
| 21.10 | Recognize cardiovascular hemodynamic parameters and record and measure left and right heart and vascular pressures. |
| 21.11 | Determine cardiac output and cardiac index by Fick equation, thermodilution technique and angiographic technique and perform Hemodynamic calculations. |
| 21.12 | Perform calculations which include, but are not limited to, mean arterial pressure, ejection fraction regurgitation fraction, valve area using Gorlin formula and pulmonary and systemic vascular resistances. |

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| 21.13 | Recognize presence of shunts by oximetry and perform shunt calculations. |
| 21.14 | Discuss permanent and temporary pacemaker protocols. |
| 21.15 | Correlate and calculate necessary data from right and left heart and vascular catheterization and assess the cardiovascular status from this information. |
| 21.16 | Demonstrate acceptable post-cath care of the patient and catheterization access site(s). |
| 21.17 | Identify complications which occur during cardiovascular catheterization procedures and describe treatment options. |
| 21.18 | Describe and perform venipuncture to initiate intravenous fluid therapy on a venipuncture model. |
| 21.19 | Maintain and troubleshoot existing intravenous/intra-arterial lines. |
| 21.20 | Demonstrate knowledge of basic x-ray history, theory, production, radiation biology and protection. |
| 21.21 | Demonstrate knowledge of patient assessment and practice patient care of the invasive Cardiovascular patient, including but not limited to basic assessment, history and physical, vital signs, lab values, CNS assessment, CVS assessment, peripheral vascular assessment etc. |
| 21.22 | Demonstrate the knowledge associated with cardiovascular catheterization procedures, including but not limited to Pre and post cardiovascular catheterization patient care, monitoring and recording, manipulation of imaging equipment, image acquisition quality control, scrubbing, and circulating. |
| 21.23 | Perform the psychomotor clinical skills associated with cardiovascular catheterization procedures, including but not limited to Pre and post cardiovascular catheterization patient care, monitoring and recording, manipulation of imaging equipment, image acquisition quality control, scrubbing, and circulating. |
| 21.24 | Demonstrate knowledge of the pharmacologic principles and medications required to function in the cardiovascular cath labs including pharmacology calculations and IV fluid therapy. |
| 21.25 | Administer medications during cardiovascular catheterization procedures under the direction of the physician. |
| 21.26 | Demonstrate knowledge and skills of ACLS protocols. |
| 21.27 | Demonstrate knowledge of the congenital and acquired cardiovascular diseases and their treatments found in cardiovascular patients. |
| 21.28 | Demonstrate knowledge of arterial and venous blood gas and acid-base physiology; identify normal and abnormal blood gas values, interpret blood gas and acid-base data, outline steps in collecting arterial and venous blood samples. |
| 21.29 | Discuss the main components of the blood clotting cascade, how different pathology and pharmacological agents affect the process, and how manual and mechanical arterial closure methods relate to post-op hemostasis. |
| ***For those programs which include the adult echocardiography sub-specialty, these student performance standards are necessary.** | |
| 22.0 | Perform noninvasive cardiovascular techniques with an emphasis on echocardiography. – The student will be able to: |
| 22.01 | Relate normal and abnormal heart sounds to specific cardiac pathology. |

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| 22.02 | Assist in performance of stress electrocardiography and explain indications, contraindications, and positive and negative test results. |
| 22.03 | Assist in performance of ambulatory electrocardiography and explain indications and test results. |
| 22.04 | Describe the physics of ultrasound as it applies to echocardiography and cardiac Doppler. |
| 22.05 | Demonstrate function and use of noninvasive cardiology equipment. |
| 22.06 | Perform, measure and analyze M-Mode and Two-Dimensional echocardiograms. |
| 22.07 | Perform, measure and analyze Color Flow Doppler exams. |
| 22.08 | Perform, measure and analyze interventional spectral Doppler echocardiography. |
| 22.09 | Demonstrate knowledge of pathophysiology of cardiovascular diseases as seen on echocardiography. |
| 22.10 | Perform and demonstrate knowledge of information derived from echocardiography, including but not limited to measurements, normal parameters and equations. |
| 22.11 | Demonstrate knowledge of patient assessment, and practice patient care of the cardiac patient. |
| 22.12 | Perform and demonstrate knowledge of non-invasive modalities and advance techniques, including but not limited to stress echo, effects of medication, normal/abnormal findings, holter monitoring, stress testing, transesophageal echocardiogram, 3D echocardiograms, contrast agents and provocation maneuvers. |
| ***For those programs which include the noninvasive vascular technology sub-specialty, the following student performance standards are necessary.** | |
| 23.0 | Perform noninvasive peripheral vascular studies. -- The student will be able to: |
| 23.01 | Discuss the physics of ultrasound as it applies to Sonography imaging and Doppler, including but not limited to definition of sound, propagation of sound in tissue, Transducers and ultrasound imaging (,B, & M mode), artifacts and risks of bioeffects. |
| 23.02 | Discuss the physical principles and instrumentation as it applies to tissue perfusion, including but not limited to general physics and laws of hemodynamics, tissue mechanics and pressure transmission, & plethysmography. |
| 23.03 | Discuss normal vascular anatomy. |
| 23.04 | Interpret normal vascular ultrasonic anatomy. |
| 23.05 | Describe patient positioning with respect to vascular modalities. |
| 23.06 | Demonstrate knowledge of assessment and care of the cardiovascular patient. |
| 23.07 | Discuss circulatory hemodynamics as it applies to arterial, venous and cerebral hemodynamics. |
| 23.08 | Perform arterial patient physical assessment. |

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| 23.09 | Perform venous patient physical assessment. |
| 23.10 | Perform cerebrovascular patient physical assessment. |
| 23.11 | Perform noninvasive peripheral vascular evaluations, including venous, arterial, visceral and cerebral vascular studies. |
| 23.12 | Discuss therapeutic intervention as it relates to arterial, venous, visceral and cerebrovascular studies. |
| 23.13 | Describe test validation and measurements as they relate to vascular studies. |
| 23.14 | Demonstrate a knowledge of the pathophysiology and etiology of diseases of the circulatory system, including venous, arterial, visceral and cerebrovascular diseases. |
| 23.15 | Discuss appropriate action based on data interpretation. |
| ***For those programs which include the pediatric echocardiography sub-specialty, these student performance standards are necessary.** | |
| 24.0 | Perform noninvasive cardiovascular techniques with an emphasis on echocardiography related to the pediatric patient. – The student will be able to: |
| 24.01 | Demonstrate knowledge of indication for echocardiogram and obtain information required for diagnosis and treatment of the pediatric patient. |
| 24.02 | Describe the physics of ultrasound as it applies to echocardiography and cardiac Doppler. |
| 24.03 | Demonstrate function and safe use of cardiac ultrasound equipment. |
| 24.04 | Demonstrate ability to acquire diagnostic images and utilization of proper display orientation. |
| 24.05 | Perform, measure and analyze M-Mode and Two-Dimensional echocardiograms. |
| 24.06 | Perform, measure and analyze Color Flow Doppler exams. |
| 24.07 | Perform, measure and analyze spectral Doppler and recognize application for assessment of blood flow and prediction of intracardiac pressures. |
| 24.08 | Demonstrate knowledge of cardiac cycles and related hemodynamics. |
| 24.09 | Demonstrate knowledge of embryology, congenital heart diseases and acquired heart diseases. |
| 24.10 | Demonstrate knowledge of pathophysiology of cardiovascular diseases as seen on echocardiography. |
| 24.11 | Demonstrate knowledge of cardiac surgeries, allografts, interventional procedures and sequelae. |
| 24.12 | Perform and demonstrate knowledge of information derived from echocardiography, including but not limited to measurements, normal parameters and equations. |
| 24.13 | Demonstrate knowledge of limitations of echocardiography and Doppler techniques. |

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| 24.14 | Demonstrate knowledge of patient assessment, and practice patient care of the pediatric cardiac patient. |
| 24.15 | Perform and demonstrate knowledge of advanced techniques, including but not limited to stress echo, effects of medication, normal/abnormal findings, stress testing, transesophageal echocardiogram, intra cardiac echo, 3D echo and contrast agents and provocation maneuvers. |
| ***For those programs which include the invasive cardiac electrophysiology sub-specialty, the following student performance standards are necessary.** | |
| 25.0 | Assist in all aspects of cardiovascular electrophysiology procedure. – The student will be able to: |
| 25.01 | Describe the physiology of and indications for diagnostic and interventional EP procedures including, but not limited to, ventricular stimulation, syncope study, SVT study, single, dual and bi-ventricular internal cardiac device implant, venous angiography, PTVA, radiofrequency ablation, cryo-ablation, external cardioversion, internal cardioversion, pericardiocentesis, lead extraction and laser lead extraction. |
| 25.02 | Identify the complications associated with electrophysiology studies and internal cardiac device implants and describe emergency interventions. |
| 25.03 | Demonstrate knowledge and skills of ACLS protocols. |
| 25.04 | Demonstrate knowledge of and practice pre and post patient care for the patient undergoing diagnostic/interventional electrophysiology study and internal cardiac device implant to include review of history and physical, vital signs, lab values, medications and peripheral vascular assessment. |
| 25.05 | Identify diagnostic and interventional catheters, their use, and how they could be configured for EGM acquisition. |
| 25.06 | Describe catheter insertion techniques for manipulation of temporary & permanent pacing and interventional catheters. |
| 25.07 | Practice sterile technique as it applies to the preparation of self and patients for electrophysiology procedures and internal cardiac device implants. |
| 25.08 | Perform patient and sterile table set up for diagnostic and interventional ventricular, syncope and SVT electrophysiology procedures and internal cardiac device implants. |
| 25.09 | Perform as a scrub and record technologist assisting physicians with diagnostic and interventional EP procedures including, but not limited to, ventricular stimulation, syncope study, SVT study, single, dual chamber, and bi-ventricular internal cardiac device implant, venous angiography, PTVA, radiofrequency ablation, cryo-ablation, external cardioversion and internal cardioversion. |
| 25.10 | Identify and properly utilize surgical instruments while assisting with internal cardiac device implants. |
| 25.11 | Identify the ionic properties of the cardiac action potential and the changes to the action potential associated with abnormal values. |
| 25.12 | Identify the normal refractory periods of the nodes & tissue and describe the effects that antiarrhythmics may have on them. |
| 25.13 | Identify intra-cardiac electrograms from the right & left atrium, at the AV node, bundle of His, right & left ventricles and in the coronary sinus. |
| 25.14 | Identify and describe the mechanism and perform differential diagnosis of cardiac arrhythmias including, but not limited to, ventricular tachycardia, AV nodal reentrant tachycardia, AV reentrant tachycardia, atrial flutter and atrial fibrillation. |

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| 25.15 | Perform stimulation protocols and identify pharmacology used for induction, termination, and differential diagnosis of arrhythmias, including but not limited to, ventricular tachycardia's (ischemic, RVOT-VT, idiopathic LV VT & BBRT), AV nodal reentrant tachycardia, AV reentrant tachycardia, atrial flutter and atrial fibrillation. |
| 25.16 | Demonstrate knowledge of the pharmacologic principles and medications used for the care of patients in the cardiac electrophysiology lab. |
| 25.17 | Demonstrate knowledge of differential diagnosis techniques and treatment of congenital arrhythmias, including but not limited to, Brugada Syndrome, Long QT syndrome, Arrhythmogenic Right Ventricular Dysplasia and Wolf-Parkinson-White. |
| 25.18 | Identify the coronary venous system utilizing radiographic and angiographic imaging. |
| 25.19 | Identify venous and arterial hemodynamic waveforms while performing trans-septal puncture and respond appropriately to recognized data. |
| 25.20 | Perform in the record role, demonstrating knowledge of acquisition and evaluation of data, stimulator operations, and provide differential diagnosis of arrhythmias during electrophysiology and internal cardiac device procedures. |
| 25.21 | Demonstrate the ability to perform basic internal cardiac device programmer operations, including interrogation, diagnostic information retrieval, pacing & sensing thresholds, and emergency pacing. |
| 25.22 | Analyze diagnostic data and results of functional testing retrieved from pacemakers and internal cardiac devices. |
| 25.23 | Demonstrate appropriate post-procedure care for venous/arterial access sites and/or electrophysiology procedures or internal cardiac device implant sites. |
| 25.24 | Demonstrate knowledge of basic x-ray history, theory, production, biology, and patient/employee safety. |
| 25.25 | Demonstrate critical behaviors and knowledge of quality control while manipulating imaging equipment, and providing image acquisition during diagnostic/interventional electrophysiology procedures and internal cardiac device implants. |
| 25.26 | Identify mapping technologies and theories currently used in ablation procedures: To include impedance based, hybrid and electromagnetically derived systems. Mapping theories such as: anatomical, high definition, voltage, isochronal, and CFE. |
| 25.27 | Identify the difference between bipolar and unipolar electrograms, including current filtering utilization. |
| 25.28 | Demonstrate basic knowledge of ICE (Intracardiac echocardiography) applications currently used during electrophysiology procedures. |
| 25.29 | Demonstrate knowledge of procedural focused aspects of the transeptal procedure used in EP labs. Including but limited to: Anatomical locations, equipment currently used, complications, indications, monitoring and scrub duties. |

## Additional Information

### Laboratory Activities

Laboratory investigations that include scientific inquiry, research, measurement, problem solving, emerging technologies, tools and equipment, as well as, experimental, quality, and safety procedures are an integral part of this career and technical program/course. Laboratory investigations benefit all students by developing an understanding of the complexity and ambiguity of empirical work, as well as the skills required to manage, operate, calibrate and troubleshoot equipment/tools used to make observations. Students understand measurement error; and have the skills to aggregate, interpret, and present the resulting data. Equipment and supplies should be provided to enhance hands-on experiences for students.

### Special Notes

Basic preparation in English, Mathematics, and the Sciences are recommended prior to entering the Cardiovascular/Cardiopulmonary professional component of the curriculum. The following courses with an (*) marking those thought to be essential. (Prerequisite courses required to complete the program must be included in the listed program length credits.

_ English - Composition*
_ Communications - Speech
_ Electronic
_ Oral Biology
_ Anatomy & Physiology - General*
_ Math - Algebra *
_ Chemistry*
_ Physics*
_ Microbiology
_ Psychology - Social Skills
_ Computers (health informatics)
_ Keyboarding
_ Word processing
_ Hardware & systems
_ Software
_ Humanities - as required for graduation

Cardiovascular/cardiopulmonary technology educational programs will address one or more of the five basic sub-specialties: 1) invasive cardiovascular technology, 2) adult echocardiography) pediatric echocardiography, 4) noninvasive vascular study and 5) cardiac electrophysiology. Cardiopulmonary technology should include the additional component of pulmonary function testing. The Cardiovascular/Cardiopulmonary Technology Program may award an Associate of Applied Science (AAS) and/or Associate of Science (AS) degree within the program length guidelines. When the cardiovascular program competencies are offered, the program cannot exceed 77 credit hours.

This program meets the Department of Health's education requirements for HIV/AIDS, Domestic Violence and Prevention of Medical Errors. Although not a requirement for initial licensure, it is a requirement for renewal, therefore the instructor may provide a certificate for renewal purposes to the student verifying these requirements have been met.

The program should meet the requirements of the American Medical Association and Commission on Accreditation of Allied Health Education Programs (CAAHEP), 1361 Park Street, Clearwater, FL 33756, Phone: 727-210-2350, Fax: 727-210-2354.

Graduates should be prepared to take the appropriate registry and/or state licensure examinations.

Outcomes 01-11 are referred to as the Health Careers Core and do not have to be completed if the student has previously completed the Core in another health science program. The Core should be taken first or concurrently with the first course in the program. Following the successful completion of the core, the student is eligible to take the National Health Care Foundation Skill Standards Assessment with instructor approval and the completion of a portfolio.

**Career and Technical Student Organization (CTSO)**

HOSA: Future Health Professionals is the intercurricular career and technical student organization providing leadership training and reinforcing specific career and technical skills. Career and Technical Student Organizations provide activities for students as an integral part of the instruction offered.

**Accommodations**

Federal and state legislation requires the provision of accommodations for students with disabilities to meet individual needs and ensure equal access. Postsecondary students with disabilities must self-identify, present documentation, request accommodations if needed, and develop a plan with their counselor and/or instructors. Accommodations received in postsecondary education may differ from those received in secondary education. Accommodations change the way the student is instructed. Students with disabilities may need accommodations in such areas as instructional methods and materials, assignments and assessments, time demands and schedules, learning environment, assistive technology and special communication systems. Documentation of the accommodations requested and provided should be maintained in a confidential file.

**Florida Department of Education**
**Curriculum Framework**

**Program Title:** **Emergency Medical Services**
**Career Cluster:** **Health Science**

| AS | |
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| CIP Number | 1351090402 |
| Program Type | College Credit |
| Standard Length | 73 credit hours |
| CTSO | HOSA: Future Health Professionals |
| SOC Codes (all applicable) | 29-2041 Emergency Medical Technicians and Paramedics |

## Purpose

This program offers a sequence of courses that provides coherent and rigorous content aligned with challenging academic standards and relevant technical knowledge and skills needed to prepare for further education and careers in the Health Science career cluster; provides technical skill proficiency, and includes competency-based applied learning that contributes to the academic knowledge, higher-order reasoning and problem-solving skills, work attitudes, general employability skills, technical skills, and occupation-specific skills, and knowledge of all aspects of Health Science career cluster.

The content includes but is not limited to all those objectives identified in the current U S Department of Transportation, National EMS Education Standards for both the EMT and Paramedic.

**Additional Information** relevant to this Career and Technical Education (CTE) program is provided at the end of this document.

## Program Structure

This program is a planned sequence of instruction consisting of 73 credit hours.

## Regulated Programs

The recommended instructor-student ratio may not exceed 1:6 pursuant to 401.1201 F.S. Clinical activity shall include appropriate patient assessment skills, intervention and documentation relevant to each clinical rotation.

This program meets the Department of Health trauma score card methodologies and Sudden Unexpected Infant Death Syndrome (SUIDS) training education requirements. Upon completion of this program, the instructor will provide a certificate to the student verifying that these requirements

have been met. This program also meets the Department of Health's education requirements for HIV/AIDS, Domestic Violence and Prevention of Medical Errors. Although not a requirement for initial licensure, it is a requirement for renewal, therefore the instructor may provide a certificate for renewal purposes to the student verifying these requirements have been met.

Management practicum shall be provided in an agency which will provide the student with the opportunity to observe and practice the learning objectives.

All students must satisfy the requirements of both the EMT and Paramedic certificates prior to completion of the associate's degree.

The medical procedures performed by a Paramedic must be performed under the direction of a licensed physician with appropriate emergency experience according to Chapter 64J, Florida Administrative Code.

It is strongly recommended this program be accredited by Commission on Accreditation of Allied Health Education Programs (CAAHEP). Beginning January 1, 2013, National Registry for Emergency Medical Technicians (NREMT) will require students applying for Paramedic National certification to be from a CAAHEP/CoAEMSP accredited program.

**Standards**

After successfully completing this program, the student will be able to perform the following:

**EMT: Completion of intended outcomes 01-63 lead to the student's eligibility to sit for the licensure exam for EMT.**

01.0 Demonstration of a simple depth and foundational breadth of EMS systems.
02.0 Demonstration of a simple depth, simple breadth of research and evidence-based decision making.
03.0 Demonstration of a fundamental depth, foundational breadth of workforce safety and wellness.
04.0 Demonstration of a fundamental depth, foundational breadth of the principles of medical documentation and report writing.
05.0 Demonstration of a simple depth, simple breadth of the EMS communication system, communication with other health care professionals, and team communication.
06.0 Demonstration of a simple depth and simple breadth of the principles of therapeutic communication.
07.0 Demonstration of a fundamental depth, foundational breadth of medical legality and ethics.
08.0 Demonstrate the application of fundamental knowledge of the anatomy and function of all human systems to the practice of EMS.
09.0 Demonstrate the application of fundamental knowledge in the use of medical terminology and medical terms.
10.0 Demonstrate the application of a fundamental knowledge of the causes, pathophysiology and management of shock and the components of resuscitation.
11.0 Demonstrate the application of fundamental knowledge of life span development to patient assessment and management.
12.0 Demonstrate the use of simple knowledge of the principles of illness and injury prevention in emergency care.
13.0 Demonstrate a simple depth, simple breadth for medication safety and kinds of medications used during an emergency.
14.0 Demonstrate a fundamental depth and foundational breadth of medication administration within the scope of practice of the EMT.
15.0 Demonstrate a fundamental depth and simple breadth of emergency medications within the scope of practice of the EMT.
16.0 Demonstrate a foundational depth, foundational breadth of airway management within the scope of practice of the EMT.
17.0 Demonstrate a fundamental depth, foundational breadth of respiration.
18.0 Demonstrate a fundamental depth, foundational breadth of assessment and management utilizing artificial ventilation.
19.0 Demonstrate a fundamental depth, foundational breadth of scene management and multiple patient situations.
20.0 Demonstrate a fundamental depth, simple breadth of the primary assessment for all patient situations.
21.0 Demonstrate a fundamental depth, foundational breadth of the components of history taking.
22.0 Demonstrate a fundamental depth, foundational breadth of techniques used for a secondary assessment.
23.0 Demonstrate a simple depth, simple breath of monitoring devices within the scope of practice of the EMT.
24.0 Demonstrate a fundamental depth, foundational breadth of how and when to perform a reassessment for all patient situations.
25.0 Demonstrate a simple depth, foundation breadth of pathophysiology, assessment and management of medical complaints.
26.0 Demonstrate a fundamental depth, foundational breadth of the assessment and management of neurologic disorders/emergencies for all age groups.
27.0 Demonstrate a fundamental depth, foundational breadth of the assessment and management of abdominal and gastrointestinal disorders/emergencies for all age groups.
28.0 Demonstrate a fundamental depth, foundational breadth of the assessment and management of immunology disorders/emergencies for all age groups.

29.0 Demonstrate a simple depth, simple breadth of the assessment and management of a patient who may have an infectious disease for all age groups.
30.0 Demonstrate a fundamental depth, foundational breadth of the assessment and management of endocrine disorders/emergencies for all age groups.
31.0 Demonstrate a fundamental depth, foundational breadth regarding the assessment and management of psychiatric emergencies for all age groups.
32.0 Demonstrate a fundamental depth, foundational breadth of the assessment and management of cardiovascular emergencies for all age groups.
33.0 Demonstrate a fundamental depth, foundational breadth of the assessment and management of toxicological (poisoning and overdose) emergencies for all age groups.
34.0 Demonstrate a fundamental depth, foundational breadth of the assessment and management of respiratory disorders/emergencies for all age groups.
35.0 Demonstrate a simple depth, simple breadth of the assessment, and management of hematology disorders for all age groups.
36.0 Demonstrate a simple depth, simple breath of the assessment and management of genitourinary/ renal emergency for all age groups.
37.0 Demonstrate a fundamental depth, foundational breadth of the assessment and management of gynecologic emergencies for all age groups.
38.0 Demonstrate a fundamental depth, foundational breadth of the assessment and management of non-traumatic fractures for all age groups.
39.0 Demonstrate a simple depth, simple breadth in recognition and management of nose bleed for all age groups.
40.0 Demonstrate the application of fundamental knowledge of the causes, pathophysiology, and management of shock and respiratory failure.
41.0 Demonstrate a fundamental depth, foundational breadth of pathophysiology, assessment and management of the trauma patient for all age groups.
42.0 Demonstrate a fundamental depth, foundational breadth of pathophysiology, assessment, and management of bleeding for all age groups.
43.0 Demonstrate a fundamental depth, simple breadth of pathophysiology, assessment and management of chest trauma for all age groups.
44.0 Demonstrate a fundamental depth, simple breadth of pathophysiology, assessment and management of abdominal and genitourinary trauma for all age groups.
45.0 Demonstrate a fundamental depth, foundational breadth of pathophysiology, assessment, and management of orthopedic trauma for all age groups.
46.0 Demonstrate a fundamental depth, foundational breadth of pathophysiology, assessment, and management of soft tissue trauma for all age groups.
47.0 Demonstrate a fundamental depth, foundational breadth of pathophysiology, assessment, and management of head, facial, neck and spine trauma for all age groups.
48.0 Demonstrate a fundamental depth, foundational breadth of pathophysiology, assessment, and management of nervous system trauma for all age groups.
49.0 Demonstrate a fundamental depth, foundational breadth of pathophysiology, assessment and management of trauma patients with special considerations for all age groups.
50.0 Demonstrate a fundamental depth, foundational breadth of pathophysiology, assessment and management of environmental emergencies for all age groups.
51.0 Demonstrate a fundamental depth, foundational breadth of the pathophysiology, assessment, and management of multi-system trauma and blast injuries.

52.0 Demonstrate a fundamental depth, foundational breadth of management of the obstetric patient within the scope of practice of the EMT.
53.0 Demonstrate a fundamental depth, foundational breadth of management of the newborn and neonatal patient within the scope of practice of the EMT.
54.0 Demonstrate a fundamental depth, fundamental breath of management of the pediatric patient within the scope of practice of the EMT.
55.0 Demonstrate a fundamental depth, foundational breadth of management of the geriatric patient within the scope of practice of the EMT.
56.0 Demonstrate a simple depth, simple breadth of management of the patient with special challenges.
57.0 Demonstrate a simple depth, foundational breadth of risks and responsibilities of transport.
58.0 Demonstrate a fundamental depth, fundamental breadth of establishing and working within the incident management system.
59.0 Demonstrate a simple depth, foundational breadth of responding to an emergency during a multiple casualty incident.
60.0 Demonstrate a simple depth, simple breadth of safe air medical operations and criteria for utilizing air medical response.
61.0 Demonstrate a simple depth, simple breadth for safe vehicle extrication and use of simple hand tools.
62.0 Demonstrate a simple depth, simple breadth of risks and responsibilities of operating in a cold zone at a hazardous material or other special incident.
63.0 Demonstrate a simple depth, simple breadth of risks and responsibilities of operating on the scene of a natural or man-made disaster.

**Paramedic: Completion of intended outcomes 64-125 lead to the student's eligibility to sit for the licensure exam for Paramedic.**

64.0 Demonstrate a fundamental depth and foundational breadth of the History of EMS and a complex depth and comprehensive breadth of EMS Systems.
65.0 Demonstrate a fundamental depth, foundational breath of research principles to interpret literature and advocate evidence-based practice.
66.0 Demonstrate a complex depth, comprehensive breadth of workforce safety and wellness.
67.0 Demonstrate a complex depth, comprehensive breadth of the principles of medical documentation and report writing.
68.0 Demonstrate a complex depth, comprehensive breadth of EMS communication system.
69.0 Demonstrate a complex depth and comprehensive breadth of the therapeutic communication principles.
70.0 Demonstrate a complex depth, comprehensive breadth of medical legal and ethical concepts related to EMS.
71.0 Demonstrate a complex depth and comprehensive breadth of anatomy and physiology of all human systems.
72.0 Demonstrate the integration of comprehensive anatomical and medical terminology and abbreviations into written and oral communication with health care professionals.
73.0 Demonstrate a comprehensive knowledge of pathophysiology of major systems.
74.0 Apply the integration of knowledge of the physiological, psychological, and sociological changes throughout human development.
75.0 Demonstrate the application of fundamental knowledge of principles of public health.
76.0 Demonstrate a complex depth, comprehensive breadth in the principles of pharmacology.
77.0 Demonstrate a complex depth, comprehensive breadth of medication administration within the scope of practice of the paramedic.
78.0 Demonstrate a complex depth, comprehensive breadth of emergency medications within the scope of practice for the paramedic.
79.0 Demonstrate a complex depth, comprehensive breadth of airway management and respiration within the scope of practice of the paramedic.
80.0 Demonstrate a complex breadth, comprehensive breadth of assessment and management utilizing artificial ventilation.
81.0 Demonstrate a complex depth, comprehensive breadth of scene management.
82.0 Demonstrate a complex depth, comprehensive breadth of the primary assessment for all patient situations.
83.0 Demonstrate a complex depth, comprehensive breath of the components of history taking.

84.0 Demonstrate a complex depth, comprehensive breadth of techniques used for a secondary assessment.
85.0 Demonstrate a fundamental depth, foundational breadth of monitoring devices within the scope of practice of the paramedic.
86.0 Demonstrate a complex depth, comprehensive breadth of how and when to perform a reassessment for all patient situations.
87.0 Demonstrate a complex depth and comprehensive breadth of pathophysiology, assessment, and management of medical complaints.
88.0 Demonstrate a complex depth and comprehensive breadth of neurologic disorders/emergencies for all age groups.
89.0 Demonstrate a complex depth and comprehensive breadth of abdominal and gastrointestinal disorders/emergencies for all age groups.
90.0 Demonstrate a complex depth, comprehensive breadth of immunology disorders/emergencies for all age groups.
91.0 Demonstrate a complex depth, comprehensive breadth of assessment and management of a patient who may have an infectious diseases for all age groups.
92.0 Demonstrate a complex depth, comprehensive breadth in endocrine disorders/emergencies for all age groups.
93.0 Demonstrate a complex depth, comprehensive breadth regarding the assessment and management of psychiatric disorders/emergencies for all age groups.
94.0 Demonstrate a complex depth, comprehensive breadth of cardiovascular disorders/ emergencies for all age groups.
95.0 Demonstrate a complex depth, comprehensive breadth of the assessment and management of toxicology emergencies for all age groups.
96.0 Demonstrate a complex depth, comprehensive breadth of the assessment and management of respiratory disorders/emergencies for all age groups.
97.0 Demonstrate a complex depth, foundational breadth of the assessment, and management of hematology disorders/ emergencies for all age groups.
98.0 Demonstrate a complex depth, comprehensive breadth of genitourinary and renal emergencies all age groups.
99.0 Demonstrate a complex depth, comprehensive breadth of the assessment findings and the management of gynecology disorders/emergencies for all age groups.
100.0 Demonstrate a fundamental depth, foundation breadth of the assessment and management of non-traumatic fractures for all age groups.
101.0 Demonstrate a fundamental depth, foundational breadth of the assessment and management of common or major diseases of the eyes, ears, nose and throat for all age groups.
102.0 Demonstrate the integration of a comprehensive knowledge of causes and pathophysiology into the management of shock and respiratory failure.
103.0 Demonstrate a complex depth, comprehensive breadth of pathophysiology, assessment and management of the trauma patient for all age groups.
104.0 Demonstrate a complex depth, comprehension breadth of pathophysiology, assessment and management of bleeding for all age groups.
105.0 Demonstrate a complex depth, comprehensive breadth of pathophysiology, assessment, and management of chest trauma for all age groups.
106.0 Demonstrate a complex depth, comprehensive breadth of pathophysiology, assessment, and management of abdominal and genitourinary trauma for all age groups.
107.0 Demonstrate a fundamental depth, foundational breadth of pathophysiology, assessment, and management of orthopedic trauma for all age groups.
108.0 Demonstrate a complex depth, comprehensive breadth of pathophysiology, assessment, and management of soft tissue trauma for all age groups.
109.0 Demonstrate a fundamental depth, foundational breadth of head, face, neck and spine trauma for all age groups.

110.0 Demonstrate a fundamental depth, foundational breadth of nervous system trauma for all age groups.
111.0 Demonstrate a complex depth, comprehensive breadth of special considerations in trauma for all age groups.
112.0 Demonstrate a complex depth, comprehensive breadth of environmental emergencies for all age groups.
113.0 Demonstrate a complex depth, comprehensive breadth of multi-system trauma and blast injuries.
114.0 Demonstrate a complex depth, comprehensive breadth of the management of the obstetric patient within the scope of practice of the paramedic.
115.0 Demonstrate a complex depth, comprehensive breadth of the management of the neonatal patient within the scope of practice of the paramedic.
116.0 Demonstrate a complex depth, comprehensive breadth of the management of the pediatric patient within the scope of practice of the paramedic.
117.0 Demonstrate a complex depth, comprehensive breadth of the management of the geriatric patient within the scope of practice of the paramedic.
118.0 Demonstrate a complex depth, comprehensive breadth of management of the patient with special challenges within the scope of practice of the paramedic.
119.0 Demonstrate a simple depth, foundational breadth of risks and responsibilities of transport.
120.0 Demonstrate a complex depth, comprehensive breadth of establishing and working within the incident management system.
121.0 Demonstrate a simple depth, foundational breadth of responding to an emergency during a multiple casualty incident.
122.0 Demonstrate a complex depth, comprehensive breadth of air Medical transport risks, needs and advantages.
123.0 Demonstrate a simple depth, simple breadth for safe vehicle extrication and use of simple hand tools.
124.0 Demonstrate a simple depth, simple breadth of risks and responsibilities of operating in a cold zone at a hazardous material or other special incident.
125.0 Demonstrate a simple depth, simple breadth of risks and responsibilities of operating on the scene of a natural or man- made disaster.

**Management Option: This option (outcomes 126-136) prepares students for administrative and supervisory positions in the Emergency Medical Services field.**

126.0 Demonstrate leadership and administrative skills basic to management emergency medical service systems.
127.0 Interpret federal, state and local laws as they apply to emergency medical service systems.
128.0 Demonstrate knowledge of operational and organizational structures of emergency medical service systems.
129.0 Demonstrate knowledge of psychological problems and stressors in emergency medical service employees and find appropriate solutions.
130.0 Demonstrate knowledge of materials and supplies used in emergency medical service systems.
131.0 Demonstrate knowledge of occupational safety and health.
132.0 Demonstrate knowledge of appropriate workloads for each employee.
133.0 Review, approve and monitor departmental capital and operational budgets.
134.0 Identify and apply legal reimbursement systems.
135.0 Comply with accreditation standards of governmental or governmental-appointed agencies and organizations.
136.0 Demonstrate computer literacy.

**Education Option:  This option (outcomes 137-142) prepares students as trainers and/or instructors in the EMS field.**

137.0 Demonstrate knowledge of basic teaching methods, learning and educational psychology.
138.0 Describe and discuss curriculum design and development.
139.0 Demonstrate appropriate measurement and evaluation skills.
140.0 Demonstrate mastery of required technical skills.
141.0 Demonstrate classroom management skills.
142.0 Demonstrate computer literacy.

**Florida Department of Education**
**Student Performance Standards**

**Program Title:** **Emergency Medical Services**
**CIP Number:** **1351090402**
**Program Length:** **73 credit hours**
**SOC Code(s):** **29-2041**

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| **Refer to Rule 6A-14.030 (4) F.A.C., for the minimum amount of general education coursework required in the Associate of Science (AS) degree. At the completion of this program, the student will be able to:** | |
| **EMT: Completion of intended outcomes 01-63 lead to the student's eligibility to sit for the licensure exam for EMT.** | |
| 01.0 | **EMS Systems:** Demonstration of a simple depth and foundational breadth of EMS systems. – The student will be able to: |
| 01.01 | Define Emergency Medical Services (EMS) systems. |
| 01.02 | Discuss the historical background of the development of the EMS system. |
| 01.03 | Identify the four levels of national EMS providers (EMR, EMT, AEMT and PM) as well as the three levels in the State of Florida. |
| 01.04 | Discuss the specific statutes and regulations regarding the EMS system in Florida. |
| 01.05 | Discuss vehicle and equipment readiness. |
| 01.06 | Characterize the EMS system's role in prevention and public education. |
| 01.07 | Discuss the roles and responsibilities of the EMT related to personal safety of the crew, patient and by standers. |
| 01.08 | Discuss the roles and responsibilities of the EMT to operate emergency vehicles, provide scene leadership and perform patient assessment and administer emergency care. |
| 01.09 | Discuss the maintenance of certification and licensure for the EMT in the State of Florida and NREMT. |
| 01.10 | Define quality improvement and discuss the EMT's role in the process. |
| 01.11 | Identify the basics of common methods of payment for healthcare services. |
| 01.12 | Analyze attributes and attitudes of an effective leader. |
| 01.13 | Demonstrate effective techniques for managing team conflict. |
| 01.14 | Describe factors that influence the current delivery system of healthcare. |

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| | 01.15 Discuss the importance of continuing medical education and skills retention. |
| | 01.16 Assess personal attitudes and demeanor that may distract from professionalism. |
| | 01.17 Serve as a role model and exhibit professional behaviors in the following areas:<br>01.17.01 integrity<br>01.17.02 empathy<br>01.17.03 self-motivation<br>01.17.04 appearance and personal hygiene<br>01.17.05 self-confidence<br>01.17.06 communications ( including phone, email and social media etiquette)<br>01.17.07 time management<br>01.17.08 teamwork and diplomacy<br>01.17.09 respect<br>01.17.10 patient advocacy (inclusive of those with special needs, alternate life styles and cultural diversity)<br>01.17.11 careful delivery of service |
| 02.0 | **Research:** Demonstration of a simple depth, simple breadth of research and evidence-based decision making. – The student will be able to: |
| | 02.01 Discuss EMS research and evidence based decision making<br>02.01.01 Conduct scientific literature searches<br>02.01.02 Read, interpret and extract information from journal articles relevant to a project |
| | 02.02 Explain the importance to assess and treat patients based on evidence based decision making. |
| | 02.03 Interpret graphs, charts, and tables. |
| | 02.04 Measure time, temperature, distance, capacity, and mass/weight. |
| | 02.05 Convert and use traditional and metric units. |
| | 02.06 Make estimations, approximations and judge the reasonableness of the result. |
| | 02.07 Convert time from a 12 hour format to a 24 hour format |
| | 02.08 Demonstrate ability to evaluate and draw conclusions. |
| | 02.09 Calculate ratios. |
| | 02.10 Explain the rationale for the ems system gathering data. |
| 03.0 | **Workforce Safety and Wellness:** Demonstration of a fundamental depth, foundational breadth of workforce safety and wellness. – The student will be able to: |
| | 03.01 Explain the need to determine scene safety. |

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| 03.02 | Discuss the importance of body substance isolation (BSI). |
| 03.03 | Describe the steps the EMT should take for personal protection from airborne and blood borne pathogens as well as communicable disease. |
| 03.04 | List the personal protective equipment necessary to protect oneself in common emergency situations. |
| 03.05 | List possible emotional reactions that an individual (EMT and EMT family, Patient and Patient family) may experience when faced with trauma, illness, death and dying. |
| 03.06 | State the steps the EMT should take when approaching a family confronted with death and dying. |
| 03.07 | Recognize the warning signs of personal stress and discuss the strategies EMTs can apply to manage it. |
| 03.08 | Demonstrate good body mechanics while using a stretcher and other patient moving devices. |
| 03.09 | Discuss the guidelines and safety precautions that need to be followed when lifting a patient. |
| 03.10 | Describe the guidelines and safety precautions for carrying patients and/or equipment. |
| 03.11 | State the guidelines for reaching and their application. |
| 03.12 | State the guidelines for pushing and pulling. |
| 03.13 | Discuss patient positioning in common emergency situations. |
| 03.14 | Discuss situation that may require the use of medical restraints on the patient and explain guidelines and safety consideration for their use. |
| 03.15 | Define “infectious disease” and “communicable disease.” |
| 03.16 | Describe the routes of transmission for infectious disease. |
| 03.17 | Explain the mode of transmission and the steps to prevent/deal with an exposure of hepatitis, meningitis, tuberculosis and HIV. |
| 03.18 | Explain how immunity to infectious diseases is acquired. |
| 03.19 | Explain post exposure management of exposure to patient blood or body fluids, including completing a post exposure report. |
| 03.20 | Describe the components of physical fitness and mental wellbeing. |
| 03.21 | Identify personal health practices and environmental factors which affect function of each of the major body systems. |
| 03.22 | Develop an awareness of complementary and alternative health practices. |
| 03.23 | Explain the basic concepts of positive self-image, wellness and stress. |
| 03.24 | Develop a wellness and stress control plan that can be used in personal and professional life. |

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| | 03.25 Explore the importance of adequate nutrition (i.e. U.S. Department of Agriculture's MyPlate food guide). |
| | 03.26 Identify personal health practices and environmental factors which affect function of each of the major body systems. |
| | 03.27 Demonstrate the safe use of medical equipment. |
| | 03.28 Explain the theory of root- cause analysis. |
| | 03.29 Identify and describe methods in medical error reduction and prevention in the various healthcare settings. |
| | 03.30 Identify and practice security procedures for medical supplies and equipment in the various healthcare settings. |
| | 03.31 Describe fire, safety, disaster and evacuation procedures in the various healthcare settings. |
| | 03.32 Discuss applicable accrediting and regulatory agency patient safety guidelines. |
| 04.0 | **Documentation:** Demonstration of a fundamental depth, foundational breadth of the principles of medical documentation and report writing. – The student will be able to: |
| | 04.01 Recognize applications of technology in healthcare. |
| | 04.02 Demonstrate basic computer skills. |
| | 04.03 Interpret and utilize information from electronic health records. |
| | 04.04 Identify methods of communication to access and distribute data such as fax, e-mail and internet. |
| | 04.05 Describe the use and importance of written communication and patient care documentation. |
| | 04.06 Explain the legal implication of the patient care report. |
| | 04.07 Identify the minimum dataset reference patient information and administrative information on the patient care report. |
| | 04.08 Understand how to document refusal of care, including legal implications. |
| | 04.09 Discuss the implications of the Health Insurance Portability and Accountability Act of 1996 on confidential documentation. |
| | 04.10 Describe the special considerations concerning mass casualty incident documentation. |
| | 04.11 Explain the relevance and importance of properly completed documentation. |
| | 04.12 Demonstrate completion of a patient care report for a medical and trauma patient. |
| | 04.13 Explain the rationale for patient care documentation. |
| 05.0 | **EMS System Communication:** Demonstration of a simple depth, simple breadth of the EMS communication system, communication with other health care professionals, and team communication. – The student will be able to: |

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| | 05.01 Understand the basic principles of the various types of communications equipment used in EMS. |
| | 05.02 Describe the use of radio communication and correct radio procedures, including the proper methods of initiating and terminating the radio call/transmission. |
| | 05.03 Explain the rationale for providing efficient and effective radio communications and patient reports. |
| | 05.04 Identify the essential components of the verbal report and legal aspects that need to be considered. |
| | 05.05 Perform an organized and concise radio transmission. |
| | 05.06 Perform an organized, concise patient report that would be given to the staff at a receiving facility. |
| | 05.07 Perform a brief, organized report that would be given to an ALS provider arriving at an incident scene at which the EMT was already providing care. |
| 06.0 | **Therapeutic Communication:** Demonstration of a simple depth and simple breadth of the principles of therapeutic communication. – The student will be able to: |
| | 06.01 Describe principles of therapeutic and effective communication with patients in a manner that achieves a positive relationship. |
| | 06.02 Develop basic speaking and active listening skills. |
| | 06.03 Recognize the importance of patient/client educations regarding healthcare. |
| | 06.04 Demonstrate the adjustment of communication strategies to effectively communicate with patients with:<br>06.04.01 differing age groups<br>06.04.02 differing developmental stages<br>06.04.03 special needs<br>06.04.04 Differing cultures, including language barriers |
| | 06.05 Demonstrate the communication techniques that should be used to interact with the patient, patient family, bystanders, and individuals from other agencies including verbal diffusion and interview techniques. |
| | 06.06 Demonstrate the strategies for interviewing persons in special situations. |
| | 06.07 Distinguish between and respond to verbal and non-verbal cues. |
| | 06.08 Analyze elements of communication using a sender-receiver/close loop model. |
| | 06.09 Exhibit positive non-verbal behaviors. |
| | 06.10 Establish proper patient rapport. |
| 07.0 | **Medical/Legal and Ethics:** Demonstration of a fundamental depth, foundational breadth of medical legality and ethics. – The student will be able to: |
| | 07.01 Differentiate between expressed, implied and involuntary consent. |
| | 07.02 Discuss the methods of obtaining consent and procedures for minors. |

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| | 07.03 Discuss the issues of abandonment, negligence, false imprisonment and battery and their implications to the EMT. |
| | 07.04 Discuss the implications for the EMT in patient refusal of care and/or transport. |
| | 07.05 Explain the importance, necessity and legality of patient confidentiality. |
| | 07.06 Discuss the importance of Do Not Resuscitate [DNR] (advance directives) and local or Florida provisions regarding EMS application. |
| | 07.07 Discuss State of Florida and Federal special reporting situations including:<br>07.07.01 abuse<br>07.07.02 sexual assault<br>07.07.03 gunshot and knife wounds<br>07.07.04 communicable disease |
| | 07.08 Differentiate between civil tort and criminal actions. |
| | 07.09 List the elements of negligence and defenses/protections from liability. |
| | 07.10 Discuss the role of the EMT at crime scenes and preservation of evidence. |
| | 07.11 Define ethics and morality and discuss their implication for the EMT. |
| | 07.12 Differentiate between licensure and certification as they apply to EMS. |
| | 07.13 Discuss Florida legislation such as the Baker Act, Marchman Act, and the Emergency Examination and Treatment of Incapacitated Persons Act. |
| | 07.14 Differentiate between the scope of practice and the standard of care as applied to the EMT. |
| | 07.15 Discuss the legal concept of immunity, including Good Samaritan statutes and governmental immunity. |
| | 07.16 Describe the appropriate patient management and care techniques in a refusal of care situation. |
| | 07.17 Analyze the relationship between the law, morals and ethics in EMS and the premise that should under lie the EMTs ethical decisions. |
| | 07.18 Describe the criteria necessary to honor an advance directive. |
| | 07.19 Explain the rationale for the needs, benefits and varying degrees of advance directives. |
| 08.0 | **Anatomy and Physiology**: Demonstrate the application of fundamental knowledge of the anatomy and function of all human systems to the practice of EMS. – The student will be able to: |
| | 08.01 Label the following topographic terms:<br>08.01.01 medial<br>08.01.02 lateral<br>08.01.03 proximal<br>08.01.04 distal |

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| | 08.01.05 superior<br>08.01.06 inferior<br>08.01.07 anterior<br>08.01.08 posterior<br>08.01.09 midline<br>08.01.10 right and left<br>08.01.11 mid-clavicular<br>08.01.12 bilateral<br>08.01.13 mid-axillary |
| 08.02 | Chart the life support chain, aerobic metabolism, and anaerobic metabolism. |
| 08.03 | Define anatomy, physiology, pathophysiology, and homeostasis. |
| 08.04 | Identify and describe the anatomical structures and functions of the following:<br>08.04.01 skeletal system<br>08.04.02 muscular system<br>08.04.03 respiratory System<br>08.04.04 circulatory/ Cardiovascular system<br>08.04.05 nervous System<br>08.04.06 integumentary system<br>08.04.07 digestive system<br>08.04.08 endocrine system including glands and hormones<br>08.04.09 renal system<br>08.04.10 reproductive system<br>08.04.11 lymphatic System |
| 08.05 | Explain cellular anatomy and physiology. |
| 08.06 | Explain cellular respiration. |
| 08.07 | Discuss cell division. |
| 08.08 | Describe the different types of muscle tissues including skeletal, smooth and cardiac. |
| 08.09 | Describe the functions and divisions of the skeletal system including the classifications of bones. |
| 08.10 | Name and identify the location of the bones of the axial and appendicular skeleton. |
| 08.11 | Describe the classification and types of joints. |
| 08.12 | Describe the function of muscles. |
| 08.13 | Identify major muscles of the body. |

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| | 08.14 Describe the general function of the respiratory system and its structures. |
| | 08.15 Discuss the mechanisms of breathing including:<br>08.15.01 mechanical ventilation<br>08.15.02 pulmonary volumes<br>08.15.03 dead space<br>08.15.04 lung compliance |
| | 08.16 Explain the diffusion of gases in external and internal respiration. |
| | 08.17 Describe oxygen and carbon dioxide transport in the blood. |
| | 08.18 Describe nervous and chemical mechanisms that regulate respirations. |
| | 08.19 Discuss respiration and acid-base balance. |
| | 08.20 Describe the composition and function of blood and plasma. |
| | 08.21 Identify and describe the anatomical structures and functions of the cardiovascular system. |
| | 08.22 Discuss the hemodynamics of blood pressure. |
| | 08.23 Discuss the role of nutrition, metabolism and body temperature on body function. |
| | 08.24 Describe the causes, advantages and disadvantages of a fever. |
| | 08.25 Discuss the hypothalamus functions as the thermostat in the body. |
| 09.0 | **Medical Terminology:** Demonstrate the application of fundamental knowledge in the use of medical terminology and medical terms. – The student will be able to: |
| | 09.01 Identify medical terminology word parts such as:<br>09.01.01 root words<br>09.01.02 prefixes<br>09.01.03 suffixes<br>09.01.04 combining forms |
| | 09.02 Correctly utilize medical terminology describing each of the following:<br>09.02.01 body structures<br>09.02.02 functions,<br>09.02.03 conditions and disorders<br>09.02.04 body regions<br>09.02.05 cavities<br>09.02.06 areas<br>09.02.07 landmarks |
| | 09.03 Correctly use medical abbreviations and symbols. |

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| | 09.04 Read and understand basic medical documentation in medical records and medical reports. |
| | 09.05 Communicate with healthcare professionals utilizing basic medical terminology. |
| | 09.06 Explain the rationale for using accepted medical terminology correctly. |
| 10.0 | **Pathophysiology:** Demonstrate the application of a fundamental knowledge of the causes, pathophysiology, and management of shock and the components of resuscitation. – The student will be able to: |
| | 10.01 Discuss signs of irreversible death. |
| | 10.02 Review the anatomy and physiology of the respiratory and cardiovascular systems. |
| | 10.03 Discuss and identify the pathophysiology and medical care for respiratory failure as well as respiratory and cardiac arrest. |
| | 10.04 Explain the system components of CPR, the four links in the AHA chain of survival and how each one relates to maximizing the survival of the patient. |
| | 10.05 Show Provider (AHA guidelines) certification required prior to EMT program admission as per FS 401.27. |
| | 10.06 Understand shock, including the pathophysiology, causes, and its signs and symptoms associated with the various types of shock. |
| | 10.07 Discuss patient assessment and steps to the emergency care of the patient with signs and symptoms of shock. |
| | 10.08 Based on age variations, discuss and distinguish the variations and causes between the management of patient experiencing shock. |
| 11.0 | **Life Span Development:** Demonstrate the application of fundamental knowledge of life span development to patient assessment and management. – The student will be able to: |
| | 11.01 Describe the major physiologic and psychosocial characteristics of:<br>11.01.01 an infant's life<br>11.01.02 a toddler and preschooler's life<br>11.01.03 a school age child's life<br>11.01.04 an adolescent's life<br>11.01.05 an early adults life<br>11.01.06 a middle adult's life<br>11.01.07 a late adult's life |
| 12.0 | **Public Health:** Demonstrate the use of simple knowledge of the principles of illness and injury prevention in emergency care. – The student will be able to: |
| | 12.01 Define public health and explain the goal of the public health field. |
| | 12.02 Identify the EMS role within the public health field. |
| | 12.03 Recognize the three categories of public health laws. |
| | 12.04 Discuss basic concepts of epidemiology. |

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| | 12.05 Discuss ways of EMS involvement in injury prevention. |
| | 12.06 Identify areas of need for prevention programs in the community. |
| 13.0 | **Principles of Pharmacology:** Demonstrate a simple depth, simple breadth for medication safety and kinds of medications used during an emergency. – The student will be able to: |
| | 13.01 Explain the “six rights” of medication administration and describe how each one related to EMS. |
| | 13.02 Discuss the forms in which the medications may be found and provide examples of each and discuss how the form of a medication dictates its route of administration. |
| | 13.03 Describe the difference between a generic medication name and trade name, and provide an example of each. |
| | 13.04 Discuss the components and elements of a drug profile including:<br>13.04.01 actions<br>13.04.02 contraindications<br>13.04.03 side effects<br>13.04.04 dose<br>13.04.05 route |
| | 13.05 Describe the role of medical direction in medication administration and explain the difference between direct orders (online) and standing orders (off-line). |
| 14.0 | **Medication Administration:** Demonstrate a fundamental depth and foundational breadth of medication administration within the scope of practice of the EMT. – The student will be able to: |
| | 14.01 Discuss the difference between administration versus assistance of patient medications. |
| | 14.02 Explain the rationale for the administration of medications. |
| | 14.02.01 Assist in the administration of medications by the following routes:<br>14.02.02 oral<br>14.02.03 sublingual<br>14.02.04 inhalation<br>14.02.05 auto- injector |
| 15.0 | **Emergency Medications:** Demonstrate a fundamental depth and simple breadth of emergency medications within the scope of practice of the EMT. – The student will be able to: |
| | 15.01 State the following for each medication that can be administered by an EMT as dictated by the State of Florida and local medical direction :<br>15.01.01 generic and trade names<br>15.01.02 actions<br>15.01.03 indication<br>15.01.04 contraindications<br>15.01.05 complications<br>15.01.06 routes of administration<br>15.01.07 side effects<br>15.01.08 interactions |

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| | 15.01.09 Doses of medications |
| | 15.02 Discuss the forms in which the medications may be found. |
| | 15.03 Demonstrate the steps in properly inspecting each type of medication. |
| 16.0 | **Airway Management:** Demonstrate a foundational depth, foundational breadth of airway management within the scope of practice of the EMT. – The student will be able to: |
| | 16.01 Review the structures and functions of the respiratory system. |
| | 16.02 State what care should be provided for a patient with or without adequate breathing. |
| | 16.03 Describe and demonstrate the steps in performing the head-tilt chin-lift and jaw thrust in all age groups. |
| | 16.04 Relate mechanism of injury to opening the airway. |
| | 16.05 Explain the differences between airway anatomies in all age groups. |
| | 16.06 Describe the following for a patient with an automatic transport ventilator (ATV):<br>16.06.01 indications<br>16.06.02 contraindications<br>16.06.03 advantages<br>16.06.04 disadvantages<br>16.06.05 complications<br>16.06.06 technique for ventilating |
| | 16.07 Describe the following regarding supplemental oxygen delivery devices:<br>16.07.01 indications<br>16.07.02 contraindications<br>16.07.03 advantages<br>16.07.04 disadvantages<br>16.07.05 complications<br>16.07.06 liter Flow Range<br>16.07.07 concentration of delivered oxygen |
| | 16.08 Define, identify and describe the following:<br>16.08.01 tracheostomy<br>16.08.02 laryngectomy<br>16.08.03 stoma<br>16.08.04 tracheostomy tube |
| | 16.09 Describe the special considerations in airway management and ventilation for the pediatric patient. |
| | 16.10 Demonstrate the techniques of suctioning in all age groups. |
| | 16.11 Demonstrate relief of FBAO in all age groups. |

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| | 16.12 Demonstrate how to insert an oral and nasal -airway adjunct in all age groups. |
| | 16.13 Demonstrate how to insert both esophageal and supra-glottic airways in all age groups. |
| 17.0 | **Respirations:** Demonstrate a fundamental depth, foundational breadth of respiration. – The student will be able to: |
| | 17.01 Review the pulmonary ventilation process to include mechanics of ventilation and alveolar ventilation (tidal volumes, dead space, etc.). |
| | 17.02 Describe the oxygenation process. |
| | 17.03 Explain both external and internal respiration process. |
| | 17.04 Discuss the various pathophysiologies of the respiratory system. |
| | 17.05 Describe assessment and management for adequate and inadequate respiration, including the use of pulse oximetry and capnography. |
| | 17.06 State the following for oxygen delivery devices:<br>17.06.01 components<br>17.06.02 purpose<br>17.06.03 indications<br>17.06.04 contraindications<br>17.06.05 complications<br>17.06.06 procedures |
| | 17.07 Describe and demonstrate the steps in performing the skill of assisting ventilations in the conscious and unconscious patient in respiratory distress using a bag-valve-mask (BVM), and continuous positive airway pressure (CPAP). |
| | 17.08 Review the anatomy and physiology of the respiratory system including:<br>17.08.01 control of respirations<br>17.08.02 mechanics of respiration<br>17.08.03 pulmonary ventilation<br>17.08.04 oxygenation<br>17.08.05 mechanical ventilation |
| | 17.09 Explain the rationale for providing adequate oxygenation through high inspired oxygen concentrations to patients who, in the past, may have received low concentrations. |
| | 17.10 Demonstrate the correct operation of oxygen tanks and regulators. |
| | 17.11 Demonstrate the use of high, medium, low, and variable concentration oxygen delivery devices for all age groups. |
| | 17.12 Demonstrate the use of an oxygen humidifier and the requirements needed for its use. |
| | 17.13 Discuss the differences between negative pressure and positive pressure ventilation. |
| 18.0 | **Artificial Ventilations:** Demonstrate a fundamental depth, foundational breadth of assessment and management utilizing artificial ventilation. – The student will be able to: |

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| | 18.01 Demonstrate how to artificially ventilate a patient with a pocket mask. |
| | 18.02 Demonstrate the steps in performing the skill of artificially ventilating a patient with a BVM for one and two rescuers using oral-nasal airway adjusts, head tilt chin lift and jaw thrust. |
| | 18.03 Demonstrate the signs of adequate and inadequate artificial ventilation using the BVM. |
| | 18.04 Describe and demonstrate the steps in artificially ventilating a patient with a manually triggered ventilation device. |
| | 18.05 Demonstrate how to artificially ventilate the pediatric, adult and geriatric patient. |
| | 18.06 Describe the steps involved in performing a comprehensive assessment of ventilations in all age groups. |
| | 18.07 Demonstrate how to artificially ventilate a patient with a stoma. |
| | 18.08 Demonstrate how to artificially ventilate a patient for all age groups. |
| | 18.09 Demonstrate the use of various devices used in the assessment of supra-glottic and esophageal airway placement. |
| 19.0 | **Scene Size-Up:** Demonstrate a fundamental depth, foundational breadth of scene management and multiple patient situations**.** – The student will be able to: |
| | 19.01 Recognize and describe hazards/potential hazards at the scene. |
| | 19.02 Discuss common mechanisms of injury/nature of illness. |
| | 19.03 Discuss the procedures for multiple-patient situations. |
| | 19.04 Explain why it is important for the EMT to determine the need for additional or specialized resources. |
| | 19.05 Discuss the importance of continuous scene assessment to ensure safety of the EMS team and the patient. |
| | 19.06 List the minimum standard precautions that should be followed and PPE that should be worn at the emergency scene. |
| | 19.07 Determine special considerations for dealing with a violent scene. |
| | 19.08 Explain the rationale for crew members to evaluate scene safety prior to entering. |
| | 19.09 Explain how patient situations affect your evaluation of mechanism of injury or illness. |
| 20.0 | **Primary Assessment:** Demonstrate a fundamental depth, simple breadth of the primary assessment for all patient situations. – The student will be able to: |
| | 20.01 Summarize the elements of a general impression of the patient. |
| | 20.02 Explain the reason for performing a primary assessment. |
| | 20.03 Discuss and demonstrate methods of assessing altered mental status using assess for level of consciousness (AVPU). |

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| | 20.04 | Discuss and demonstrate methods of assessing the airway and providing airway care. |
| | 20.05 | Describe and demonstrate methods used for assessing if a patient is breathing |
| | 20.06 | Differentiate between a patient with adequate and inadequate breathing. |
| | 20.07 | Distinguish between methods of assessing breathing for all age groups. |
| | 20.08 | Describe and demonstrate the methods used to obtain a pulse in all age groups. |
| | 20.09 | Compare the methods of providing airway care in all age groups. |
| | 20.10 | Discuss and demonstrate the need for assessing the patient for external bleeding. |
| | 20.11 | Describe and demonstrate normal and abnormal findings when assessing skin color, temperature, moisture and capillary refill for all age groups. |
| | 20.12 | Explain the reason for and demonstrate prioritizing a patient for care and transport. |
| | 20.13 | Describe when it is appropriate to expose the patient completely. |
| | 20.14 | Differentiate between critical life-threatening, potentially life- threatening, and non-life-threatening patient presentations. |
| 21.0 | **History-Taking:** Demonstrate a fundamental depth, foundational breadth of the components of history taking. – The student will be able to: | |
| | 21.01 | Determine the chief complaint. |
| | 21.02 | Investigate the chief complaint. |
| | 21.03 | Describe components of the patient history. |
| | 21.04 | Explain the importance of obtaining a SAMPLE and OPQRST history. |
| | 21.05 | Recognize and respond to the feelings patients experience during assessment. |
| | 21.06 | Discuss the value of obtaining a family and social history. |
| | 21.07 | Describe examples of different techniques the EMT may use to obtain information from patients, family or bystanders during the history taking process. |
| 22.0 | **Secondary Assessment:** Demonstrate a fundamental depth, foundational breadth of techniques used for a secondary assessment. – The student will be able to: | |
| | 22.01 | Describe the unique needs and demonstrate assessing an individual with a specific chief complaint with no known prior history. |
| | 22.02 | Discuss the components and techniques of the physical exam and skills involved. |
| | 22.03 | Differentiate between the history and physical exam that are performed for responsive patients with no known prior history, responsive patients with a known prior history and unresponsive patients. |

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| | 22.04 State the circumstances for performing a rapid assessment. |
| | 22.05 Discuss the reason for performing a focused history and physical exam. |
| | 22.06 Describe and demonstrate the techniques of inspection, palpation, percussion, and auscultation. |
| | 22.07 Describe and demonstrate the importance of obtaining a baseline set of vital signs. |
| | 22.08 List normal blood pressure ranges for all age groups. |
| | 22.09 Describe and demonstrate the head to toe examination. |
| | 22.10 Demonstrate special examination techniques of the cardiovascular examination. |
| | 22.11 Demonstrate the examination of the nervous system. |
| | 22.12 Demonstrate a physical exam performed for a responsive patient with and without a known prior history. |
| | 22.13 Demonstrate a physical exam performed for an unresponsive patient. |
| | 22.14 Recognize and respond to the feelings patients experience during assessment. |
| 23.0 | **Monitoring Devices:** Demonstrate a simple depth, simple breath of monitoring devices within the scope of practice of the EMT. – The student will be able to: |
| | 23.01 Explain and demonstrate the use and interpretation of pulse oximetry and capnography device readings. |
| | 23.02 Demonstrate and understand the findings of a blood pressure measured by palpation, auscultation and electronic device. |
| | 23.03 Describe and demonstrate the purpose, indications, procedure, normal findings, and limitations of the following patient monitoring technologies.<br>23.03.01 pulse oximetry<br>23.03.02 glucometry<br>23.03.03 capnography |
| | 23.04 Demonstrate the application of a cardiac monitor. |
| 24.0 | **Reassessment:** Demonstrate a fundamental depth, foundational breadth of how and when to perform a reassessment for all patient situations. – The student will be able to: |
| | 24.01 Describe the components of the reassessment and demonstrate the skills involved. |
| | 24.02 Discuss the reasons for repeating the initial assessment as part of the reassessment. |
| | 24.03 Explain trending assessment components and its value to other health professionals who assume care of the patient. |
| | 24.04 Demonstrate the steps for performing the reassessment of patients in all age groups. |

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| | 24.05 Explain the rationale of recording additional sets of vital signs. |
| 25.0 | **Medical Overview:** Demonstrate a simple depth, foundation breadth of pathophysiology, assessment and management of medical complaints. – The student will be able to: |
| | 25.01 Identify the assessment factors for a patient with a medical complaint including: |
| | 25.01.01 scene safety |
| | 25.01.02 environmental factors |
| | 25.01.03 chief complaint |
| | 25.01.04 non-life threatening conditions |
| | 25.01.05 distracting injuries |
| | 25.01.06 tunnel vision |
| | 25.01.07 patient cooperation |
| | 25.01.08 rescuer attitude |
| | 25.02 Discuss forming a field impression and utilizing available information to determine a differential diagnosis. |
| 26.0 | **Neurology:** Demonstrate a fundamental depth, foundational breadth of the assessment and management of neurologic disorders/emergencies for all age groups. – The student will be able to: |
| | 26.01 Review the anatomy and physiology of the nervous system. |
| | 26.02 Describe the pathophysiology of the following neurologic disorders:<br>26.02.01 altered mental status<br>26.02.02 stroke<br>26.02.03 transient ischemic attack<br>26.02.04 headache<br>26.02.05 seizures<br>26.02.06 syncope |
| | 26.03 Discuss and identify the causes, signs and symptoms of ischemic strokes, hemorrhagic strokes, and transient ischemic attacks and their similarities and differences. |
| | 26.04 Discuss and demonstrate how to use a stroke scoring system in the assessment of patients with suspected stroke. |
| | 26.05 Define and differentiate generalize seizure, partial seizure and status epilepticus and list their possible causes. |
| | 26.06 Define and differentiate migraine headache, sinus headache, tension headache and discuss how to distinguish a harmless headaches from something more serious. |
| | 26.07 Define “altered mental status” and identify the possible causes. |

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| | 26.08 Describe and demonstrate the assessment and management of the patient with various neurological emergencies in all age groups to include:<br>26.08.01 strokes<br>26.08.02 headaches<br>26.08.03 seizures<br>26.08.04 altered mental status |
| | 26.09 Discuss the transport of the stroke patient to the appropriate treatment center. |
| 27.0 | **Abdominal and Gastrointestinal Disorder:** Demonstrate a fundamental depth, foundational breadth of the assessment and management of abdominal and gastrointestinal disorders/emergencies for all age groups. – The student will be able to: |
| | 27.01 Review the basic anatomy and physiology the gastrointestinal, genital and urinary systems. |
| | 27.02 Describe the pathophysiology of the following abdominal and gastrointestinal disorders:<br>27.02.01 abdominal pain<br>27.02.02 acute abdomen<br>27.02.03 peritonitis<br>27.02.04 appendicitis<br>27.02.05 pancreatitis<br>27.02.06 cholecystitis<br>27.02.07 gastrointestinal bleeding<br>27.02.08 esophageal varices<br>27.02.09 gastroenteritis<br>27.02.10 ulcers<br>27.02.11 intestinal obstruction<br>27.02.12 hernia<br>27.02.13 abdominal aortic aneurysm |
| | 27.03 Define the term," acute abdomen". |
| | 27.04 Identify the signs and symptoms, and common causes of an acute abdomen. |
| | 27.05 Define upper and lower gastrointestinal bleeding. |
| | 27.06 Describe and demonstrate the assessment and management of the patient in all age groups with various gastrointestinal emergencies to include upper and lower gastrointestinal bleeding. |
| | 27.07 Recognize the signs and symptoms related to upper and lower gastrointestinal bleeding. |
| | 27.08 Define acute gastroenteritis. |
| | 27.09 Differentiate between hemorrhagic and non-hemorrhagic abdominal pain. |
| | 27.10 Discuss the signs and symptoms of peritoneal inflammation relative to acute abdominal pain. |
| 28.0 | **Immunology:** Demonstrate a fundamental depth, foundational breadth of the assessment and management of immunology |

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| | disorders/emergencies for all age groups. – The student will be able to: |
| | 28.01 Define and differentiate allergic reaction and anaphylaxis. |
| | 28.02 Describe the pathophysiology of the following immunology disorders:<br>28.02.01 allergic reaction<br>28.02.02 anaphylaxis<br>28.02.03 anaphylactic shock |
| | 28.03 Describe and demonstrate the assessment and management of the patient in all age groups experiencing an allergic or anaphylactic reaction. |
| | 28.04 State the following for the epinephrine auto-injector:<br>28.04.01 generic and trade names<br>28.04.02 medication forms<br>28.04.03 dose<br>28.04.04 administration<br>28.04.05 action<br>28.04.06 contraindications |
| | 28.05 Demonstrate the use of epinephrine auto-injector. |
| | 28.06 Review the anatomy and physiology of the organs and structures related to anaphylaxis. |
| | 28.07 Describe the incidence, morbidity and mortality of anaphylaxis. |
| | 28.08 Identify the risk factors most predisposing to anaphylaxis. |
| | 28.09 Recognize the signs and symptoms related to anaphylaxis. |
| | 28.10 Describe the prevention of anaphylaxis and appropriate patient education. |
| | 28.11 List common antigens most frequently associated with anaphylaxis. |
| | 28.12 Demonstrate how to remove a stinger from a bee sting and proper management following its removal. |
| 29.0 | **Infectious Disease:** Demonstrate a simple depth, simple breadth of the assessment and management of a patient who may have an infectious disease for all age groups. – The student will be able to: |
| | 29.01 List the causes of infectious diseases |
| | 29.02 Describe the pathophysiology of the following infectious diseases:<br>29.02.01 Hepatitis B<br>29.02.02 Hepatitis C<br>29.02.03 Tuberculosis<br>29.02.04 Human Immunodeficiency Virus (AIDS)<br>29.02.05 Severe Acute Respiratory Syndrome<br>29.02.06 West Nile Virus |

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| | 29.02.07 | Multidrug-Resistant Organisms |
| 29.03 | Describe and demonstrate the assessment and management of the patient in all age groups experiencing an infectious disease. | |
| 29.04 | Discuss mandatory notification to State or Federal agencies of various diseases. | |
| 29.05 | Identify patients with risk factors for infectious disease. | |
| 29.06 | Explain the principles and practices of infection control in prehospital care. | |
| 29.07 | Describe and discuss the rationale for the various types of PPE. | |
| 29.08 | Discuss the proper disposal of contaminated supplies (sharps, gauze sponges, tourniquets, etc.). | |
| 29.09 | Discuss decontamination of the ambulance and disinfection of patient care equipment, and areas in which care of the patient occurred. | |
| 29.10 | Describe the actions to take if the EMS provider is exposed to an infectious disease. | |
| 29.11 | Demonstrate the ability to comply with body substance isolation guidelines. | |
| 30.0 | **Endocrine Disorders:** Demonstrate a fundamental depth, foundational breadth of the assessment and management of endocrine disorders/emergencies for all age groups. – The student will be able to: | |
| 30.01 | Review the anatomy and physiology of the endocrine system and its main function in the body. | |
| 30.02 | Describe the pathophysiology of the following endocrine disorders: | |
| | 30.02.01 | Insulin Dependent Diabetes Mellitus |
| | 30.02.02 | Non-Insulin Dependent Diabetes Mellitus |
| | 30.02.03 | Hypoglycemia |
| | 30.02.04 | Hyperglycemia |
| | 30.02.05 | Diabetic Ketoacidosis(DKA) |
| | 30.02.06 | Hyperglycemic Hyperosmolar Nonketotic Syndrome (HHNS) |
| 30.03 | Define and differentiate diabetes (type I and II), Hypoglycemia, Hyperglycemia, insulin shock and diabetic ketoacidosis. | |
| 30.04 | Identify and demonstrate the steps in the management of the patient taking diabetic medicine with an altered mental status and a history of diabetes. | |
| 30.05 | State the following for oral glucose: | |
| | 30.05.01 | generic and trade names |
| | 30.05.02 | medication forms |
| | 30.05.03 | dose |
| | 30.05.04 | administration |
| | 30.05.05 | action |
| | 30.05.06 | contraindications |
| 30.06 | Demonstrate the steps of using a glucometer device and administering oral glucose. | |

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| | 30.07 Describe and demonstrate the assessment and the management of the patient in all age groups experiencing an endocrinologic emergency to include hypo- and hyper-glycemia. |
| | 30.08 Discuss the general assessment findings associated with endocrinologic emergencies. |
| | 30.09 Differentiate between the pathophysiology of normal glucose metabolism and diabetic glucose metabolism. |
| | 30.10 Recognize the signs and symptoms of the patient with hypoglycemia. |
| | 30.11 Recognize the signs and symptoms of the patient with hyperglycemia. |
| | 30.12 Discuss the pathophysiology of diabetic ketoacidosis. |
| | 30.13 Recognize the signs and symptoms of the patient with diabetic ketoacidosis. |
| 31.0 | **Psychiatric:** Demonstrate a fundamental depth, foundational breadth regarding the assessment and management of psychiatric emergencies for all age groups. – The student will be able to: |
| | 31.01 Define behavior, psychiatric disorders and behavioral emergencies. |
| | 31.02 Describe the pathophysiology of the following psychiatric disorders:<br>31.02.01 anxiety<br>31.02.02 phobias<br>31.02.03 depression<br>31.02.04 paranoia<br>31.02.05 psychosis<br>31.02.06 schizophrenia<br>31.02.07 suicidal ideations<br>31.02.08 agitated delirium<br>31.02.09 violence toward others |
| | 31.03 Discuss the general factors that may cause an alteration in a patient's behavior. |
| | 31.04 Discuss the risk factors/signs or symptoms of various psychiatric emergencies to include suicide. |
| | 31.05 Given an scenario, apply knowledge of the special medical/legal considerations for managing behavioral emergencies to include Florida Statues:<br>31.05.01 Baker Act (FS 394.451)<br>31.05.02 Marchman Act (FS 397.601 and FS 397.675)<br>31.05.03 Emergency examination and treatment of incapacitated (FS401.445) |
| | 31.06 Describe and demonstrate the assessment and management of the patient in all age groups experiencing a behavioral or psychiatric emergency. |
| | 31.07 Describe the biological, psychosocial, and sociocultural influences on psychiatric disorders. |
| | 31.08 Describe the special considerations for the safety of the EMS provider and EMS crew, the patient and bystanders when dealing with behavioral and psychiatric disorders. |

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| | 31.09 Describe methods of restraint that may be necessary in managing the emotionally disturbed patient and the possible legal implications. |
| | 31.10 Explain the rationale for learning how to modify your behavior toward the patient with a behavioral emergency. |
| 32.0 | **Cardiovascular**: Demonstrate a fundamental depth, foundational breadth of the assessment and management of cardiovascular emergencies for all age groups. – The student will be able to: |
| | 32.01 Review the basic anatomy and physiology of the cardiovascular system. |
| | 32.02 Describe the pathophysiology of the following cardiovascular disorders:<br>32.02.01 acute coronary syndrome<br>32.02.02 angina pectoris<br>32.02.03 thromboembolism<br>32.02.04 myocardial infarction<br>32.02.05 hypertensive emergencies<br>32.02.06 aortic aneurysm/dissection<br>32.02.07 left and right sided heart failure<br>32.02.08 cardiogenic shock<br>32.02.09 hypertensive emergencies<br>32.02.10 cardiac arrest |
| | 32.03 Describe and demonstrate the assessment and management of the patient in all age groups experiencing a cardiac emergency. |
| | 32.04 List the indications and contraindications for automated external defibrillation (AED). |
| | 32.05 Explain the impact of age and weight on defibrillation. |
| | 32.06 Discuss the position of comfort for patients with various cardiac emergencies. |
| | 32.07 Explain the rationale for early defibrillation. |
| | 32.08 Discuss the various types of automated external defibrillators. |
| | 32.09 Differentiate between the fully automated and the semi-automated defibrillator. |
| | 32.10 Understand the importance of maintenance and operators check list for AED's. |
| | 32.11 Demonstrate the ability to use an AED according to the latest American Heart Association (AHA) guidelines. |
| | 32.12 Explain the role medical direction plays in the use of automated external defibrillation. |
| | 32.13 Explain the rationale for administering nitroglycerin and ASA to a patient with chest pain or discomfort. |
| | 32.14 Demonstrate the assessment and documentation of patient response to the automated external defibrillator. |
| | 32.15 Demonstrate the assessment and documentation of patient response to nitroglycerin. |

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| 33.0 | **Toxicology:** Demonstrate a fundamental depth, foundational breadth of the assessment and management of toxicological (poisoning and overdose) emergencies for all age groups. – The student will be able to: |
| | 33.01 Define and differentiate toxicology, poisoning and overdose. |
| | 33.02 Describe the pathophysiology of the following toxicological emergencies:<br>33.02.01 food poisoning<br>33.02.02 carbon monoxide poisoning<br>33.02.03 cyanide poisoning<br>33.02.04 exposure to acid or alkaline substances<br>33.02.05 exposure to hydrocarbons<br>33.02.06 methanol ingestion<br>33.02.07 isopropanol ingestion<br>33.02.08 ethylene glycol ingestion<br>33.02.09 exposure to poisonous plants<br>33.02.10 drug withdrawal<br>33.02.11 alcoholic syndrome<br>33.02.12 withdrawal syndrome (including delirium tremens)<br>33.02.13 illicit drug use<br>33.02.14 medication overdose |
| | 33.03 List various ways that poisons enter the body. |
| | 33.04 List signs/symptoms associated with poisoning. |
| | 33.05 Discuss and demonstrate the assessment and management for the patient in all age groups with poisoning or overdose. |
| | 33.06 Discuss the role of the Poison Control Center with the nationwide contact number 800-222-1222 in the United States. |
| | 33.07 Explain the rationale for contacting medical direction early in the prehospital management of the poisoning or overdose patient. |
| 34.0 | **Respiratory:** Demonstrate a fundamental depth, foundational breadth of the assessment and management of respiratory disorders/emergencies for all age groups. – The student will be able to: |
| | 34.01 Review the basic anatomy and physiology of the respiratory system. |
| | 34.02 Describe the pathophysiology of the following respiratory disorders:<br>34.02.01 Chronic Obstructive Pulmonary Disease: Emphysema, Chronic Bronchitis, and Asthma<br>34.02.02 Pulmonary Edema<br>34.02.03 Spontaneous Pneumothorax<br>34.02.04 Hyperventilation Syndrome<br>34.02.05 Epiglottitis<br>34.02.06 Pertussis<br>34.02.07 Cystic Fibrosis<br>34.02.08 Pulmonary Embolism<br>34.02.09 Pneumonia |

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| | 34.02.10 Viral Respiratory Infections<br>34.02.11 Poisonous Exposures |
| | 34.03 List signs of adequate air exchange. |
| | 34.04 State the signs and symptoms of a patient with respiratory distress. |
| | 34.05 Describe and demonstrate the assessment and management of the patient in all age groups with a respiratory emergency. |
| | 34.06 State the following for the metered-dose inhaler:<br>34.06.01 generic name<br>34.06.02 medication forms<br>34.06.03 dose<br>34.06.04 administration<br>34.06.05 action<br>34.06.06 indications<br>34.06.07 contraindications |
| | 34.07 Describe and demonstrate the steps in facilitating the use of an inhaler. |
| | 34.08 Differentiate between upper airway obstruction and lower airway disease in the patient for all age groups. |
| | 34.09 Discuss the measures needed to ensure personal safety while attending to the patient with a respiratory emergency or infection. |
| | 34.10 Demonstrate proper use of airway and ventilation devices. |
| | 34.11 Explain the rationale and demonstrate the application of a CPAP/ BiPAP unit. |
| 35.0 | **Hematology:** Demonstrate a simple depth, simple breadth of the assessment, and management of hematology disorders for all age groups. –The student will be able to: |
| | 35.01 Review the anatomy and physiology of blood. |
| | 35.02 Describe the pathophysiology of the following hematology disorders:<br>35.02.01 Anemia<br>35.02.02 Sickle Cell Anemia / Sickle Cell Crisis<br>35.02.03 Hemophilia |
| | 35.03 State the signs and symptoms of a patient with a Sickle Cell crisis or a clotting disorder. |
| | 35.04 Describe and demonstrate the assessment and the management of the patient with Sickle Cell crisis or a clotting disorder. |
| | 35.05 Describe the anatomy and physiology of the hematologic system to the pathophysiology and assessment of patients with hematologic disorders such as Sickle cell. |
| 36.0 | **Genitourinary /Renal:** Demonstrate a simple depth, simple breath of the assessment and management of genitourinary/ renal emergency for all age groups. – The student will be able to: |
| | 36.01.01 Review the basic anatomy and physiology of the genitourinary and renal systems. |

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| | 36.02 Describe the pathophysiology of the following genitourinary/ renal disorders:<br>36.02.01 urinary tract infection<br>36.02.02 kidney stones<br>36.02.03 kidney failure |
| | 36.03 Understand the basic principles of kidney dialysis. |
| | 36.04 Discuss the signs and symptoms of a patient with a dialysis emergency. |
| | 36.05 Describe and demonstrate the assessment and management of the patient with a dialysis emergency. |
| 37.0 | **Gynecology:** Demonstrate a fundamental depth, foundational breadth of the assessment and management of gynecologic emergencies for all age groups. – The student will be able to: |
| | 37.01 Review the basic anatomy and physiology of the female reproductive system. |
| | 37.02 Describe the pathophysiology of the following gynecologic disorders and emergencies:<br>37.02.01 sexual assault<br>37.02.02 nontraumatic vaginal bleeding<br>37.02.03 menstrual pain<br>37.02.04 ovarian cyst<br>37.02.05 endometritis<br>37.02.06 endometriosis<br>37.02.07 pelvic inflammatory disease<br>37.02.08 Sexually Transmitted Diseases |
| | 37.02.09 Describe and demonstrate the assessment and management of the patient in all age groups experiencing a gynecologic emergency to include:<br>37.02.10 excessive bleeding<br>37.02.11 abdominal pain<br>37.02.12 sexual assault. |
| | 37.03 Discuss the special consideration and precautions an EMT must observe when arriving at the scene of a suspected case of sexual assault or rape. |
| | 37.04 Describe the assessment and management of a patient who has experienced a sexual assault including the psychosocial impact and assessment findings/presentations. |
| | 37.05 Value the importance of maintaining a patient's modesty and privacy while still being able to obtain necessary information. |
| | 37.06 Defend the need to provide care for a patient of sexual assault, while still preventing destruction of crime scene information. |
| 38.0 | **Non-Traumatic Musculoskeletal Disorders:** Demonstrate a fundamental depth, foundational breadth of the assessment and management of non-traumatic fractures for all age groups. – The student will be able to: |
| | 38.01 Review the basic anatomy and physiology of the musculoskeletal system. |
| | 38.02 Describe and demonstrate the assessment and management of the patient in all age groups with a non-traumatic musculoskeletal emergency. |

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| 39.0 | **Diseases of the Eyes, Ears, Nose, and Throat:** Demonstrate a simple depth, simple breadth in recognition and management of nose bleed for all age groups. – The student will be able to: |
| | 39.01 Discuss the recognition and management of an epistaxis. |
| | 39.02 Describe and demonstrate the assessment and management of the patient in all age groups with abnormal conditions affecting the eyes, ears, nose, and throat. |
| 40.0 | **Shock and Resuscitation:** Demonstrate the application of fundamental knowledge of the causes, pathophysiology, and management of shock and respiratory failure. – The student will be able to: |
| | 40.01 Discuss and identify causes and pathophysiology of the categories of hemorrhage and shock. |
| | 40.02 Discuss and identify causes and pathophysiology of respiratory failure and arrest. |
| | 40.03 Discuss and identify causes and pathophysiology of cardiac failure or arrest. |
| | 40.04 Discuss the various types and degrees of shock. |
| | 40.05 Discuss and identify post resuscitation and management. |
| | 40.06 Explain the system components of CPR, the links in the AHA chain of survival and how each one relates to maximizing the survival of the patient. |
| | 40.07 Show Provider (AHA guidelines) certification required prior to rescuer program completion. |
| | 40.08 Discuss and distinguish the variations and causes between the management of the infant, child, adult and geriatric patient experiencing shock. |
| | 40.09 Define and differentiate compensated and decompensated hemorrhagic shock. |
| | 40.10 Defend the importance of teamwork, experience, and practice in preparation to manage the critical patient. |
| | 40.11 Demonstrate how to perform one and two rescuer CPR, adult, child, and infant. |
| | 40.12 Demonstrate how to perform rescuer level appropriate defibrillation in an adult, child, and infant patient. |
| | 40.13 Demonstrate the steps of rescuer level appropriate post resuscitative care. |
| | 40.14 Management and resuscitation of the critical patient. |
| | 40.15 Demonstrate rapid decision making based on differential field diagnosis of the critical patient with a peri-arrest condition. |
| | 40.16 Describe and demonstrate the assessment and management of the patient with hemorrhage and shock. |
| 41.0 | **Trauma Overview:** Demonstrate a fundamental depth, foundational breadth of pathophysiology, assessment and management of the trauma patient for all age groups. – The student will be able to: |
| | 41.01 Discuss and define pathophysiology of the trauma patient. |

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| | 41.02 List and describe the components of a comprehensive trauma systems and levels of trauma centers. |
| | 41.03 Describe the criteria for different transportation modes to a trauma center. |
| | 41.04 Explain the relationship between mechanism of injury and potential energy, kinetic energy and work in relation to trauma.<br>41.04.01 Define energy, force, laws of motion<br>41.04.02 Explain the physics of trauma |
| | 41.05 Define the term blunt and penetrating trauma and provide examples of the mechanism of injury (MOI) that would cause each to occur and include:<br>41.05.01 Effects of high, medium and low velocity penetrating trauma<br>41.05.02 Primary, secondary, tertiary and miscellaneous blast injuries<br>41.05.03 Factors to consider of a patient injured in a fall.<br>41.05.04 Consider all age groups |
| | 41.06 Describe the kinematics of penetrating injuries. |
| | 41.07 Discuss the role of documentation in trauma. |
| | 41.08 Demonstrate the use of the Florida Trauma Alert Criteria, classify various types of trauma patients. |
| | 41.09 Discuss and describe significant and non-significant Mechanism of Injury (MOI) and provide examples of each. |
| | 41.10 Discuss and describe State of Florida's trauma scorecard methodologies as required in Florida Statute and Florida Administrative Code (F.A.C.). |
| | 41.11 Discuss the National Trauma Triage Protocol of injured Patients. |
| 42.0 | **Bleeding:** Demonstrate a fundamental depth, foundational breadth of pathophysiology, assessment, and management of bleeding for all age groups. – The student will be able to: |
| | 42.01 Review the anatomy and physiology of the circulatory system. |
| | 42.02 Review the different types of bleeding and classes of hemorrhage. |
| | 42.03 List signs and symptoms of shock (hypo-perfusion). |
| | 42.04 Describe the body's physiologic response to bleeding. |
| | 42.05 Review the pathophysiology of hemorrhagic shock. |
| | 42.06 Explain the sense of urgency to transport patients that are bleeding and show signs of shock (hypoperfusion). |
| | 42.07 Describe and demonstrate the assessment and management of a patient in all age groups with hemorrhagic shock. |
| | 42.08 Demonstrate how to apply a commercial tourniquet. |
| | 42.09 Formulate a field impression based upon the assessment findings for a patient with hemorrhagic shock. |

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| 43.0 | **Chest Trauma:** Demonstrate a fundamental depth, simple breadth of pathophysiology, assessment and management of chest trauma for all age groups. –.The student will be able to: |
| | 43.01 Review the anatomy and physiology of the thoracic/chest cavity and respiratory system. |
| | 43.02 Differentiate between a pneumothorax (open, simple and tension) and hemothorax. |
| | 43.03 Discuss the pathophysiology and MOI of myocardial injuries, including the following:<br>43.03.01 pericardial tamponade<br>43.03.02 myocardial contusion<br>43.03.03 myocardial rupture<br>43.03.04 commotio cordis |
| | 43.04 Identify the need for rapid intervention and transport of the patient with thoracic injuries. |
| | 43.05 Discuss the pathophysiology and MOI of specific chest wall injuries, including the following:<br>43.05.01 rib fracture<br>43.05.02 flail segment<br>43.05.03 sternal fracture |
| | 43.06 Describe and demonstrate the assessment and management of injuries to the chest wall, lung, and myocardial tissue. |
| | 43.07 Identify the need for rapid intervention and transport of the patient with chest wall, lung, and myocardial tissue injuries. |
| | 43.08 Formulate a field impression based upon the assessment findings for a patient with chest trauma. |
| 44.0 | **Abdominal and Genitourinary Trauma:** Demonstrate a fundamental depth, simple breadth of pathophysiology, assessment and management of abdominal and genitourinary trauma for all age groups. – The student will be able to: |
| | 44.01 Review the anatomy and physiology and of the abdominal cavity and genitourinary (both male and female) system. |
| | 44.02 Describe the abdominal quadrants and the organs found within each quadrant. |
| | 44.03 Describe the differences between hollow and solid organs. |
| | 44.04 Discuss the pathophysiology and MOI for abdominal trauma including hallow and solid injuries. |
| | 44.05 Describe and demonstrate the assessment and management of a patient with a suspected abdominal or genitourinary injury including:<br>44.05.01 penetrating<br>44.05.02 blunt<br>44.05.03 open<br>44.05.04 closed |
| | 44.06 Formulate a field impression based upon the assessment findings for a patient with abdominal trauma. |
| 45.0 | **Orthopedic Trauma:** Demonstrate a fundamental depth, foundational breadth of pathophysiology, assessment, and management of orthopedic trauma for all age groups. – The student will be able to: |

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| 45.01 | Review the anatomy and physiology of the musculo-skeletal system. |
| 45.02 | and Discuss pathophysiology and MOI for orthopedic injury including:<br>45.02.01 fractures<br>45.02.02 sprains<br>45.02.03 strains<br>45.02.04 pelvic Injury<br>45.02.05 amputation |
| 45.03 | Describe the different types of orthopedic injuries including:<br>45.03.01 fractures<br>45.03.02 sprains<br>45.03.03 strains<br>45.03.04 pelvic Injury<br>45.03.05 amputation |
| 45.04 | List the primary signs and symptoms of extremity trauma. |
| 45.05 | Explain the rationale for stabilization of an open and a closed painful, swollen, deformed extremity. |
| 45.06 | Describe and demonstrate the assessment and management of a patient with a suspected orthopedic injury including:<br>45.06.01 fractures<br>45.06.02 sprains<br>45.06.03 strains<br>45.06.04 pelvic Injury<br>45.06.05 amputation |
| 45.07 | Explain the benefits and general guidelines for the following management techniques:<br>45.07.01 heat therapy<br>45.07.02 cold therapy<br>45.07.03 splinting |
| 45.08 | List the six “Ps” of orthopedic injury assessment. |
| 45.09 | Discuss the need for assessment of pulses, motor, and sensation before and after splinting. |
| 45.10 | Describe age-associated changes in the bones. |
| 45.11 | Discuss the usefulness of the pneumatic anti-shock garment (PASG) in the management of fractures. |
| 45.12 | Discuss the out-of-hospital management of dislocation/fractures, including splinting and realignment and sprains and strains. |
| 45.13 | Discuss the pathophysiology of replantation. |
| 45.14 | Explain the rationale for splinting at the scene versus load and go. |
| 45.15 | Demonstrate the proper use of following techniques for a patient with a suspected fracture:<br>45.15.01 hard |

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| | 45.15.02 | improvised |
| | 45.15.03 | soft |
| | 45.15.04 | traction splints |
| 45.16 | Formulate a field impression based upon the assessment findings for a patient with orthopedic trauma. | |
| 46.0 | **Soft Tissue Trauma:** Demonstrate a fundamental depth, foundational breadth of pathophysiology, assessment, and management of soft tissue trauma for all age groups. – The student will be able to: | |
| 46.01 | Review anatomy and physiology of the integumentary system to include the layers of the skin. | |
| 46.02 | Describe the pathophysiology and MOI of wounds, burns, crush injuries and high pressure injection injuries. | |
| 46.03 | Describe and demonstrate the assessment and management of the following types of closed soft tissue injuries: | |
| | 46.03.01 | wounds |
| | 46.03.02 | burns |
| | 46.03.03 | high pressure injection |
| | 46.03.04 | crush syndrome injuries |
| | 46.03.05 | compartment syndrome injuries |
| | 46.03.06 | contusion |
| | 46.03.07 | hematoma |
| 46.04 | Describe and demonstrate the assessment and management of the following types of open soft tissue injuries: | |
| | 46.04.01 | abrasions |
| | 46.04.02 | lacerations |
| | 46.04.03 | major arterial lacerations |
| | 46.04.04 | avulsions, |
| | 46.04.05 | bites |
| | 46.04.06 | impaled objects |
| | 46.04.07 | amputations |
| | 46.04.08 | incisions |
| | 46.04.09 | crush injuries |
| | 46.04.10 | blast injuries |
| | 46.04.11 | penetrations/punctures. |
| 46.05 | Identify types of burn injuries, including: | |
| | 46.05.01 | thermal burn |
| | 46.05.02 | inhalation burn |
| | 46.05.03 | chemical burn |
| | 46.05.04 | electrical burn |
| | 46.05.05 | radiation exposure |
| 46.06 | Describe the depth classifications of burn injuries, including: | |
| | 46.06.01 | superficial burn |
| | 46.06.02 | partial-thickness burn |
| | 46.06.03 | full-thickness burn |
| | 46.06.04 | other depth classifications |

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| | 46.07 Describe methods for determining body surface area percentage of a burn injury including the “rules of nines," the "rules of palms," and other methods. |
| | 46.08 Explain how the seriousness of a burn is related to its depth and extent (percent of body surface area (BSA) involved or rule of nines) for patients in all age groups. |
| | 46.09 Differentiate and demonstrate the various management techniques for hemorrhage control of open soft tissue injuries, including but not limited to:<br>46.09.01 direct pressure<br>46.09.02 pressure dressing<br>46.09.03 tourniquet application<br>46.09.04 hemostatic agents |
| | 46.10 Differentiate between the types of injuries requiring the use of an occlusive versus non- occlusive dressing. |
| | 46.11 Discuss the possible complications of an improperly applied dressing, bandage, tourniquet and hemostatic agents. |
| | 46.12 Describe and demonstrate the assessment and management of specific burn injuries including:<br>46.12.01 thermal<br>46.12.02 inhalation<br>46.12.03 chemical<br>46.12.04 electrical<br>46.12.05 radiation |
| | 46.13 Formulate a field impression based upon the assessment findings for a patient with soft tissue trauma. |
| 47.0 | **Head, Facial, Neck, and Spine Trauma:** Demonstrate a fundamental depth, foundational breadth of pathophysiology, assessment, and management of head, facial, neck and spine trauma for all age groups. – The student will be able to: |
| | 47.01 Review the anatomy and physiology and of the head, face, and neck (non-spinal). |
| | 47.02 Describe the pathophysiology and MOI for head, face, and neck (non-spinal) hemorrhage. |
| | 47.03 Describe and demonstrate the assessment and management of a patient with the following injuries to the head, face, and neck (non-spinal):<br>47.03.01 penetrating neck trauma<br>47.03.02 laryngotracheal injury<br>47.03.03 skull fracture<br>47.03.04 facial fracture<br>47.03.05 eye injury ( foreign body)<br>47.03.06 dental trauma |
| | 47.04 Recognize and manage life threats due to head, neck, and spine trauma. |
| | 47.05 Discuss and demonstrate the rationale and use of the Glasgow Coma Score. |
| | 47.06 Formulate a field impression based upon the assessment findings for a patient with head, facial, and/ or neck (non-spinal) trauma. |

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| 48.0 | **Nervous System Trauma:** Demonstrate a fundamental depth, foundational breadth of pathophysiology, assessment, and management of nervous system trauma for all age groups. – The student will be able to: |
| | 48.01 Review the anatomy and physiology and of the nervous system. |
| | 48.02 Discuss the pathophysiology and MOI for brain and spinal injury including:<br>48.02.01 increased intracranial pressure (ICP)<br>48.02.02 concussion<br>48.02.03 contusion |
| | 48.03 Describe and demonstrate the assessment and management of a patient with a brain and spinal injury including:<br>48.03.01 brain trauma<br>48.03.02 spinal cord trauma<br>48.03.03 cervical spine trauma |
| | 48.04 Explain the rationale for motion restriction of the entire spine when a cervical spine injury is suspected. |
| | 48.05 Explain the rationale for utilizing spinal motion restriction methods apart from the straps on the cots. |
| | 48.06 Explain the rationale for utilizing a short spine motion restriction device when moving a patient from the sitting to the supine position. |
| | 48.07 Given a scenario, defend whether or not to remove a helmet prior to transport of a patient. |
| | 48.08 Demonstrate specific management techniques for a patient with a suspected spinal cord injury. |
| | 48.09 Demonstrate various methods for stabilization and removal of a helmet. |
| | 48.10 Demonstrate documentation of assessment before, during and after spinal motion restriction. |
| | 48.11 Formulate a field impression based upon the assessment findings for a patient with brain and/or spinal trauma. |
| 49.0 | **Special Considerations in Trauma:** Demonstrate a fundamental depth, foundational breadth of pathophysiology, assessment and management of trauma patients with special considerations for all age groups. – The student will be able to: |
| | 49.01 Review the anatomy and physiology for the following trauma patients:<br>49.01.01 pregnant<br>49.01.02 pediatric<br>49.01.03 geriatric<br>49.01.04 cognitively impaired |
| | 49.02 Discuss the pathophysiology and MOI of trauma in the following patients:<br>49.02.01 pregnant<br>49.02.02 pediatric<br>49.02.03 geriatric<br>49.02.04 cognitively impaired |
| | 49.03 Discuss and demonstrate unique assessment and management considerations for the following trauma patients:<br>49.03.01 pregnant<br>49.03.02 pediatric |

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| | 49.03.03 | geriatric |
| | 49.03.04 | cognitively impaired |
| 49.04 | Formulate a field impression based upon the assessment findings for a patient requiring special considerations. | |
| 50.0 | **Environmental Emergencies:** Demonstrate a fundamental depth, foundational breadth of pathophysiology, assessment and management of environmental emergencies for all age groups. – The student will be able to: | |
| 50.01 | Define drowning and discuss its incidence, rick factors and prevention. | |
| 50.02 | Discuss the pathophysiology and MOI of the following: | |
| | 50.02.01 | Drowning and water related incidents |
| | 50.02.02 | temperature-related illness |
| | 50.02.03 | bites and envenomation |
| | 50.02.04 | dysbarism such as high-altitude edema |
| | 50.02.05 | diving injuries |
| | 50.02.06 | lightning (electrical) injury |
| | 50.02.07 | high altitude illness |
| 50.03 | Describes and demonstrate the assessment and management for a patient with the following: | |
| | 50.03.01 | drowning and water related incidents |
| | 50.03.02 | temperature-related illness |
| | 50.03.03 | bites and envenomation |
| | 50.03.04 | dysbarism such as high-altitude edema |
| | 50.03.05 | diving injuries |
| | 50.03.06 | lightning (electrical) injury |
| | 50.03.07 | high altitude illness |
| 50.04 | Discuss the physics of the gas laws including: Boyle's, Dalton, Henry, and Charles. | |
| 50.05 | Discuss scene management and provider safety considerations for a submersion, diving, or lightning incident. | |
| 50.06 | Explain the five ways a body can lose heat. | |
| 50.07 | Identify the species of insects, spiders, and snakes in the US that may cause life threatening injuries. | |
| 50.08 | Formulate a field impression based upon the assessment findings for a patient with an environmental emergency. | |
| 51.0 | **Multi-Systems Trauma:** Demonstrate a fundamental depth, foundational breadth of the pathophysiology, assessment, and management of multi-system trauma and blast injuries. – The student will be able to: | |
| 51.01 | Discuss the pathophysiology and MOI of multi-system trauma and blast injuries. | |
| 51.02 | Discuss the golden principle of out-of-hospital trauma care. | |
| 51.03 | Describe and demonstrate assessment and management considerations for a patient of multi system trauma and blast injuries. | |
| 51.04 | Formulate a field impression based upon the assessment findings for a patient with multi systems trauma and/ or blast injuries. | |

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| 52.0 | **Obstetrics:** Demonstrate a fundamental depth, foundational breadth of management of the obstetric patient within the scope of practice of the EMT. – The student will be able to: |
| | 52.01 Identify and describe the anatomical structures and functions of the female reproductive system and how these structures and functions change during pregnancy. |
| | 52.02 Define the stages of labor and discuss how to assess them. |
| | 52.03 Differentiate between normal delivery, abnormal delivery and complications associated with delivery. |
| | 52.04 Differentiate the management of a patient with predelivery emergencies from a normal delivery. |
| | 52.05 State the patient care measures for all stages of labor in a normal (cephalic) delivery for the mother and the newborn. |
| | 52.06 Describe how to care for the newborn post-delivery. |
| | 52.07 Describe the management of the mother post-delivery. |
| | 52.08 State the patient care measures for all stages of labor in abnormal (non-cephalic) deliveries for the mother and the newborn. |
| | 52.09 Describe the procedures for handling complications of pregnancy. |
| | 52.10 Describe special considerations when meconium is present in amniotic fluid or during delivery. |
| | 52.11 Describe special patient care considerations of a premature baby. |
| | 52.12 Demonstrate how to listen to fetal heart tones. |
| | 52.13 Demonstrate the patient care measures for all stages of labor in a normal (cephalic) delivery for the mother and the newborn. |
| | 52.14 Demonstrate the patient care measures for all stages of labor in abnormal (non-cephalic) deliveries for the mother and the newborn. |
| | 52.15 Demonstrate the procedures for handling complications of pregnancy including pre-eclampsia and eclampsia. |
| 53.0 | **Neonatal Care:** Demonstrate a fundamental depth, foundational breadth of management of the newborn and neonatal patient within the scope of practice of the EMT. – The student will be able to: |
| | 53.01 Discuss and demonstrate assessment and management considerations of a neonate. |
| | 53.02 Define the term neonate. |
| | 53.03 Identify the factors that lead to premature birth and low birth weight newborns. |
| | 53.04 Calculate the APGAR score given various newborn situations. |
| | 53.05 Discuss the common signs when ventilator assistance is appropriate for a neonate. |
| | 53.06 Identify and discuss the use of oxygen/airway adjuncts in the neonate. |

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| | 53.07 Discuss the steps in resuscitation of a neonate. |
| | 53.08 Discuss the signs of hypovolemia in a newborn. |
| | 53.09 Discuss the effects maternal narcotic usage has on the newborn. |
| | 53.10 Discuss the management/treatment plan for vomiting in the neonate. |
| | 53.11 Discuss the assessment findings associated with common birth injuries in the neonate. |
| | 53.12 Demonstrate assessment of APGAR scoring during a scenario. |
| | 53.13 Demonstrate appropriate assessment technique for examining a neonate. |
| | 53.14 Demonstrate appropriate assisted ventilations for a neonate. |
| | 53.15 Demonstrate appropriate chest compression and ventilation technique for a neonate. |
| | 53.16 Demonstrate the initial steps in resuscitation of a neonate. |
| | 53.17 Demonstrate blow-by oxygen delivery for a neonate. |
| 54.0 | **Pediatrics:** Demonstrate a fundamental depth, fundamental breath of management of the pediatric patient within the scope of practice of the EMT. – The student will be able to: |
| | 54.01 Review the anatomy, physiology and pathophysiology and differences of patients in the pediatric age ranges. |
| | 54.02 Discuss the differences in approaching and assessing patients in the pediatric age ranges. |
| | 54.03 Discuss and demonstrate assessment and management considerations for Sudden Unexplained Infant Death Syndrome (SUIDS). |
| | 54.04 Describe the selection of appropriate airway adjuncts and ventilation devices for infants and children. |
| | 54.05 Discuss complications of improper utilization of airway adjuncts and ventilation devices with infants and children. |
| | 54.06 Describe the common causes, assessment and management of respiratory distress, failure, or arrest in infants and children. |
| | 54.07 Discuss the common causes, assessment and management of hypoperfusion in infants and children. |
| | 54.08 Discuss the common causes, assessment and management of cardiopulmonary arrest in infants and children. |
| | 54.09 Describe the common causes, assessment and management of altered level of consciousness in infants and children. |
| | 54.10 Describe the common causes, assessment and management of trauma in infants and children. |
| | 54.11 Discuss the pathophysiology of hypo-perfusion in infants and children. |

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| | 54.12 | Describe the common causes, assessment and management of hypoperfusion in infants and children. |
| | 54.13 | Describe the common causes, assessment and management of neurological emergencies in infants and children. |
| | 54.14 | Demonstrate proper technique for administering blow-by oxygen to infants and children. |
| | 54.15 | Demonstrate proper technique for suctioning of infants and children. |
| | 54.16 | Demonstrate appropriate use of airway adjuncts and ventilation devices with infants and children. |
| | 54.17 | Demonstrate age appropriate basic airway clearing maneuvers for infants and children with a completely obstructed airway. |
| | 54.18 | Demonstrate appropriate airway and breathing control maneuvers for infant and child trauma patients. |
| 55.0 | **Geriatrics:** Demonstrate a fundamental depth, foundational breadth of management of the geriatric patient within the scope of practice of the EMT. – The student will be able to: | |
| | 55.01 | Define and discuss the term “geriatrics”. |
| | 55.02 | Review the anatomy, physiology and pathophysiology of the geriatric patient. |
| | 55.03 | Discuss common emotional and psychological reactions to aging to include causes and manifestations. |
| | 55.04 | Discuss the problems with mobility in the elderly and develop strategies to prevent falls. |
| | 55.05 | Discuss factors that may complicate the assessment of the elderly patient including communication issues and methods to overcome them. |
| | 55.06 | Describe principles that should be employed when assessing and communicating with the elderly. |
| | 55.07 | Describe the common causes, assessment and management of the elderly patient with the following complaints: |
| | 55.07.01 | Pulmonary, including pneumonia, chronic obstructive pulmonary diseases, and pulmonary embolism. |
| | 55.07.02 | Cardiovascular, including myocardial infarction, heart failure, dysrhythmias, aneurism, and hypertension. |
| | 55.07.03 | Nervous system, including cerebral vascular disease, delirium, dementia, Alzheimer’s disease and Parkinson’s disease. |
| | 55.07.04 | Endocrine system, including diabetes and thyroid diseases. |
| | 55.07.05 | Gastrointestinal problems. |
| | 55.07.06 | Toxicological problems including alcohol/drug abuse, and polypharmacy errors. |
| | 55.07.07 | Environmental considerations. |
| | 55.07.08 | Traumatic injuries, including orthopedic injuries, burns, and head injuries. |

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| 56.0 | **Patients with Special Challenges:** Demonstrate a simple depth, simple breadth of management of the patient with special challenges. – The student will be able to: |
| 56.01 | Define child abuse / neglect. |
| 56.02 | Define children with special health care needs. |
| 56.03 | Discuss the pathophysiology of abuse and neglect in infants and children. |
| 56.04 | Discuss the assessment and management/treatment plan for abuse and neglect in infants and children, including documentation and reporting. |
| 56.05 | Discuss the pathophysiology of children with special health care needs including technology. |
| 56.06 | Discuss the assessment management/treatment plan for children with special health care needs including technology assisted children. |
| 56.07 | Discuss the incidence and categories of abuse and assault. |
| 56.08 | Describe the characteristics associated with the profile of the typical abuser of a spouse, elder and child. |
| 56.09 | Identify the profile of the "at-risk" spouse, elder and child. |
| 56.10 | Discuss special considerations for the assessment and management of the abused patient. |
| 56.11 | Discuss the legal aspects of documentation and mandatory reporting associated with abused and assaulted patient. |
| 56.12 | Discuss considerations for approach, assessment and treatment of patients with the following impairments/disabilities: (LIST) Hearing, Vision, and Speech. |
| 56.13 | Describe paraplegia/quadriplegia. |
| 56.14 | Recognize the patient with a developmental disability. |
| 56.15 | Recognize the patient with Down's syndrome. |
| 56.16 | Describe the following diseases/illnesses:<br>56.16.01 Cerebral palsy<br>56.16.02 Cystic fibrosis<br>56.16.03 Spina bifida<br>56.16.04 Patients with a previous head injury |
| 56.17 | Identify a patient that is terminally ill. |
| 56.18 | Differentiate between the role of EMS provider and the role of the home care provider. |
| 56.19 | Discuss the aspects of home care that impact quality of the care for a given patient. |
| 56.20 | List complications commonly seen in the home care patients, which result in their hospitalization. |

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| | 56.21 Define hospice care and comfort care. |
| | 56.22 List the stages of the grief process and relate them to an individual in hospice care. |
| | 56.23 Describe airway maintenance devices typically found in the home care environment. |
| | 56.24 Describe indwelling catheters, implanted central IV ports and central line monitoring. |
| | 56.25 Identify failure of GI/GU devices found in the home care setting. |
| | 56.26 Identify failure of ventilating devices found in the home care setting. |
| | 56.27 Identify failure of vascular access devices found in the home care setting. |
| | 56.28 Demonstrate the ability to assess a spouse, elder or child abused patient. |
| | 56.29 Demonstrate the ability to assess a sexually assaulted patient. |
| | 56.30 Demonstrate the assessment of a patient with a sensory deficit or developmental disability. |
| | 56.31 Develop a treatment and management plan of the elderly psychiatric patient, including depression and suicide. |
| 57.0 | **Principles of Safely Operating a Ground Ambulance:** Demonstrate a simple depth, foundational breadth of risks and responsibilities of transport. – The student will be able to: |
| | 57.01 Discuss the importance of performing regular vehicle and equipment inspection. |
| | 57.02 Demonstrate how to perform a daily inspection of an ambulance. |
| | 57.03 Describe the general provisions of Florida laws relating to the operation of the ambulance and privileges. |
| | 57.04 Identify current local and state standards which influence ambulance design. |
| | 57.05 Demonstrate how to place a patient in, and remove a patient from an ambulance. |
| | 57.06 Discuss the guidelines for operating an ambulance safety during emergency and non-emergency situation/incident. |
| | 57.07 Discuss considerations that are required for ensuring scene safety, including personal safety, patient safety, and traffic control. |
| | 57.08 Demonstrate how to clean and disinfect the ambulance and equipment. |
| 58.0 | **Incident Management:** Demonstrate a fundamental depth, fundamental breadth of establishing and working within the incident management system. – The student will be able to: |
| | 58.01 Explain the need for the incident management system (IMS)/incident command system (ICS) in managing emergency medical services incidents. |
| | 58.02 Define the term disaster management. |

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| | 58.03 Discuss the importance of NIMS (National Incidence Management System). |
| | 58.04 Describe the functional components of the incident management system in terms of the following:<br>58.04.01 command<br>58.04.02 finance<br>58.04.03 logistics<br>58.04.04 operations<br>58.04.05 planning |
| | 58.05 Differentiate between singular and unified command and when each is most applicable. |
| | 58.06 Describe the role of command. |
| | 58.07 Describe the need for transfer of command and procedures for transferring it. |
| | 58.08 List and describe the functions of the following groups and leaders in ICS as it pertains to EMS incidents:<br>58.08.01 safety<br>58.08.02 logistics<br>58.08.03 rehabilitation<br>58.08.04 staging,<br>58.08.05 treatment<br>58.08.06 triage<br>58.08.07 transportation<br>58.08.08 extrication/rescue<br>58.08.09 morgue<br>58.08.10 communications |
| | 58.09 Describe techniques used to allocate patients to hospitals and track them. |
| | 58.10 List the physical and psychological signs of critical incident stress. |
| | 58.11 Explain the organizational benefits for having standard operating procedures (SOPs) for using the incident management system or incident command system. |
| 59.0 | **Multiple Casualty Incidents:** Demonstrate a simple depth, foundational breadth of responding to an emergency during a multiple casualty incident. – The student will be able to: |
| | 59.01 Describe essential elements of scene size-up when arriving at a potential MCI. |
| | 59.02 Describe the role of the rescuers and EMS systems in planning for MCIs and disasters. |
| | 59.03 Describe the role of the physician at multiple casualty incidents. |
| | 59.04 Define triage and describe the principles of triage. |
| | 59.05 Describe the START (simple triage and rapid treatment) method of initial triage. |

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| | 59.06 Describe techniques used to allocate patients to hospitals and track them. |
| | 59.07 List and describe the essential equipment to provide logistical support to MCI operations, including but not limited to:<br>59.07.01 airway<br>59.07.02 respiratory and hemorrhage control<br>59.07.03 burn management<br>59.07.04 patient packaging/immobilization |
| | 59.08 List the physical and psychological signs of critical incident stress. |
| | 59.09 Describe the role of critical incident stress management sessions in MCIs. |
| | 59.10 Explain the organizational benefits for having standard operating procedures (SOPs) for using the incident management system or incident command system. |
| | 59.11 Demonstrate the use of local/regional triage tagging system used for primary and secondary triage. |
| | 59.12 Given a classroom simulation of a MCI with 5-10 patients, fulfill the role of triage group leader. |
| 60.0 | **Air Medical:** Demonstrate a simple depth, simple breadth of safe air medical operations and criteria for utilizing air medical response. – The student will be able to: |
| | 60.01 Discuss safe air medical operations. |
| | 60.02 Describe key scene safety considerations when preparing for a helicopter medivac, including establishing a landing zone and approaching the aircraft. |
| | 60.03 Describe the capabilities, protocols, and methods for accessing air medical transport. |
| | 60.04 Describe the advantages and disadvantages of air medical transport. |
| | 60.05 Identify the conditions/situations in which air medical transport should be considered. |
| | 60.06 Assess personal practices relative to air medical operations which may affect the safety of the crew, the patient and bystanders. |
| | 60.07 Perform setting up an air medical helicopter landing zone. |
| 61.0 | **Vehicle Extrication:** Demonstrate a simple depth, simple breadth for safe vehicle extrication and use of simple hand tools. – The student will be able to: |
| | 61.01 Describe the role of the EMT in patient rescue and vehicle extrication |
| | 61.02 Describe personal and patient safety during vehicle extrication. |
| | 61.03 Explain the difference between simple access and complex access in vehicle extrication. |
| | 61.04 Discuss patient care consideration related to assisting with rapid extrication, providing emergency care to the trapped patient and removing and transferring a patient. |
| | 61.05 Discuss the use of simple hand tools used for vehicle extrication. |

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| 61.06 | Describe the effects of traffic flow on the highway rescue incident including limited access superhighways and regular access highways. |
| 61.07 | List and describe the hazards associated with the following auto/ truck components:<br>61.07.01 energy absorbing bumpers<br>61.07.02 air bag/supplemental restraint systems<br>61.07.03 catalytic converters and conventional fuel systems<br>61.07.04 stored energy<br>61.07.05 alternate fuel systems |
| 61.08 | Describe methods for emergency stabilization using rope, cribbing, jacks, spare tire, and come-a-longs for vehicles. |
| 61.09 | Describe the electrical hazards commonly found at highway incidents (above and below ground). |
| 61.10 | Explain the difference between tempered and safety glass, identify its locations on a vehicle and how to break it safely. |
| 61.11 | Explain typical door anatomy and methods to access through stuck doors. |
| 61.12 | Explain SRS or "air bag" systems and methods to neutralize them. |
| 61.13 | Demonstrate the use of wood cribbing to stabilize a vehicle. |
| 61.14 | Demonstrate how to gain access to a patient by using a spring- loaded center punch. |
| 62.0 | **Hazardous Materials Awareness:** Demonstrate a simple depth, simple breadth of risks and responsibilities of operating in a cold zone at a hazardous material or other special incident. – The student will be able to: |
| 62.01 | Identify resources for substance identification, decontamination and treatment information, including but not limited to the following:<br>62.01.01 poison control center<br>62.01.02 medical control<br>62.01.03 material safety data sheets (MSDS),<br>62.01.04 reference textbooks<br>62.01.05 computer databases<br>62.01.06 Computer-Aided Management of Emergency Operations (CAMEO)<br>62.01.07 CHEMTREC<br>62.01.08 technical specialists<br>62.01.09 Agency for toxic substances and disease registry |
| 62.02 | Explain primary and secondary contamination risk. |
| 62.03 | List and describe the following routes of exposure: |
| | 62.03.01 topical |
| | 62.03.02 respiratory |
| | 62.03.03 gastrointestinal |

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| | 62.03.04 | parenteral |
| 62.04 | Explain how the substance and route of contamination alters triage and decontamination methods. | |
| 62.05 | List and explain the common signs, symptoms and treatment for the following substances: | |
| | 62.05.01 | corrosives (acids/alkalis) |
| | 62.05.02 | pesticides (carbamates / organophosphates), |
| | 62.05.03 | chemical asphyxiants (cyanide/carbon monoxide) |
| | 62.05.04 | hydrocarbon solvents (xylene, methylene chloride) |
| 62.06 | Identify local facilities and resources capable of treating patients | |
| 62.07 | Determine the appropriate level of PPE by considering the following: | |
| | 62.07.01 | types |
| | 62.07.02 | application |
| | 62.07.03 | use and limitations |
| | 62.07.04 | use of chemical compatibility chart |
| 62.08 | Explain specific decontamination procedures. | |
| 62.09 | Demonstrate the donning and doffing of appropriate PPE. | |
| 62.10 | Set up and demonstrate an emergency two-step decontamination process. | |
| 62.11 | Identify DOT Labels, placards and markings that are used to designate HAZMAT materials. | |
| 62.12 | Demonstrate the ability to use a variety of reference materials to identify a HAZMAT material. | |
| 63.0 | **Mass Casualty Incidents Due to Terrorism and Disaster:** Demonstrate a simple depth, simple breadth of risks and responsibilities of operating on the scene of a natural or man-made disaster. – The student will be able to: | |
| 63.01 | Describe the role of the EMT on the scene of a natural or man-made disaster. | |
| 63.02 | Define the different types of terrorism and provide examples of incidents of each. | |
| 63.03 | Describe personal and patient safety during a natural or man-made disaster. | |
| 63.04 | Describe the factors related to ensuring situational safety at the site of a disaster and the procedures required. | |
| 63.05 | Discuss the National Terrorism Advisory System. | |
| 63.06 | Discuss factors to consider when responding to a terrorist situation. | |
| 63.07 | Discuss important actions to take at the scene of a terrorist event such as: | |
| | 63.07.01 | scene safety |
| | 63.07.02 | personal protection |
| | 63.07.03 | notification procedures |
| | 63.07.04 | available resources |

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| 63.07.05 | working with in the command system |
| 63.08 | List the main categories of weapons of mass destruction. |
| 63.09 | Discuss the different types of chemical agents and their signs and symptoms. |
| 63.10 | Discuss the treatment and management of patients exposed to various types of chemical agents and radiation. |
| 63.11 | Define the different types of radiations and their effect on the human body. |
| 63.12 | Demonstrate the use of a nerve agent antidote kit. |

| **Paramedic: Completion of intended outcomes 64-125 lead to the student's eligibility to sit for the licensure exam for Paramedic.** | |
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| 64.0 | **EMS Systems:** Demonstrate a fundamental depth and foundational breadth of the History of EMS and a complex depth and comprehensive breadth of EMS Systems. – The student will be able to: |
| 64.01 | Define terms, including but not limited to: EMS systems, licensure, registration, profession, professionalism, health care professional, ethics, peer review, medical direction, and protocols. |
| 64.02 | Describe the attributes of a paramedic as a health care professional. |
| 64.03 | Explain paramedic licensure/ certification, recertification, and reciprocity requirements in his or her state. |
| 64.04 | Evaluate the importance of maintaining one's paramedic license/ certification. |
| 64.05 | Describe the benefits of paramedic continuing education. |
| 64.06 | Discuss the role of national associations and of a national registry agency. |
| 64.07 | Discuss Chapter 401, Florida Statutes, and Chapter 64-E, Florida Administrative Code. |
| 64.08 | Discuss the roles of various EMS standard setting agencies. |
| 64.09 | Identify the standards (components) of an EMS System as defined by the National Highway Traffic Safety Administration. |
| 64.10 | Describe examples of professional behaviors in the following areas: integrity, empathy, self-motivation, appearance and personal hygiene, self-confidence, communications, time management, teamwork and diplomacy, respect, patient advocacy, and careful delivery of service. |
| 64.11 | Describe the importance of quality EMS research to the future of EMS. |
| 64.12 | Describe the role of the EMS physician in providing medical direction. |
| 64.13 | Provide examples of local protocols. |
| 64.14 | Describe the relationship between a physician on the scene, the paramedic on the scene, and the EMS physician providing on-line medical direction. |

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| | 64.15 Define the role of the paramedic relative to the safety of the crew, the patient, and bystanders. |
| | 64.16 Assess personal practices relative to the responsibility for personal safety, the safety of the crew, the patient, and bystanders. |
| | 64.17 Advocate the need for injury prevention, including abusive situations. |
| | 64.18 Exhibit professional behaviors in the following areas: integrity, empathy, self-motivation, appearance and personal hygiene, self-confidence, communications, time management, teamwork and diplomacy, respect, patient advocacy, and careful delivery of service. |
| | 64.19 Discuss the diverse types of EMS services and how they affect the delivery of advanced pre-hospital care |
| 65.0 | **Research:** Demonstrate a fundamental depth, foundational breath of research principles to interpret literature and advocate evidence-based practice. – The student will be able to: |
| | 65.01 Interpret results, reach conclusions, and generate new ideas based on results. |
| | 65.02 Discuss the importance of evidenced based medicine and medical research and its role in refining EMS practices. |
| 66.0 | **Workforce Safety and Wellness:** Demonstrate a complex depth, comprehensive breadth of workforce safety and wellness. – The student will be able to: |
| | 66.01 Discuss the concept of wellness and its benefits. |
| | 66.02 Discuss how cardiovascular endurance, muscle strength, and flexibility contribute to physical fitness. |
| | 66.03 Describe the impact of shift work on circadian rhythms. |
| | 66.04 Discuss how periodic risk assessments and knowledge of warning signs contribute to cancer and cardiovascular disease prevention. |
| | 66.05 Differentiate proper from improper body mechanics for lifting and moving patients in emergency and non-emergency situations. |
| | 66.06 Describe the problems that a paramedic might encounter in a hostile situation and the techniques used to manage the situation. |
| | 66.07 Describe the equipment available for self-protection when confronted with a variety of adverse situations. |
| | 66.08 Describe the three phases and factors that trigger the stress response. |
| | 66.09 Differentiate between normal/ healthy and detrimental reactions to anxiety and stress. |
| | 66.10 Identify and describe the defense mechanisms and management techniques commonly used to deal with stress. |
| | 66.11 Describe the components of critical incident stress management (CISM). |
| | 66.12 Describe the needs of the paramedic when dealing with death and dying. |
| | 66.13 Discuss the importance of standard precautions and body substance isolation practices. |

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| | 66.14 Defend the need to treat each patient as an individual, with respect and dignity. |
| | 66.15 Defend the need to respect the emotional needs of dying patients and their families. |
| | 66.16 Identify the human, environmental, and socioeconomic impact of unintentional and alleged unintentional events. |
| | 66.17 Identify health hazards and potential crime areas within the community. |
| | 66.18 Describe the importance of effective documentation as one justification for funding of prevention programs. |
| 67.0 | **Documentation:** Demonstrate a complex depth, comprehensive breadth of the principles of medical documentation and report writing. – The student will be able to: |
| | 67.01 Identify the general principles regarding the importance of EMS documentation and ways in which documents are used. |
| | 67.02 Identify and use medical terminology correctly. |
| | 67.03 Record all pertinent administrative information to a given standard. |
| | 67.04 Analyze the documentation for accuracy and completeness, including spelling. |
| | 67.05 Describe the differences between subjective and objective elements of documentation. |
| | 67.06 Describe the potential consequences of illegible, incomplete, or inaccurate documentation. |
| | 67.07 Describe the special considerations concerning patient refusal of transport. |
| | 67.08 Explain how to properly record direct patient or bystander comments. |
| | 67.09 Describe the special considerations concerning mass casualty incident documentation. |
| | 67.10 Identify and record the pertinent, reportable clinical data of each patient interaction. |
| | 67.11 Note and record pertinent negative clinical findings. |
| | 67.12 Demonstrate proper completion of an EMS event record used locally. |
| 68.0 | **EMS Communication:** Demonstrate a complex depth, comprehensive breadth of EMS communication system. – The student will be able to: |
| | 68.01 Identify the role of verbal, written, and electronic communications in the provision of EMS. |
| | 68.02 Describe the phases of communications necessary to complete a typical emergency. |
| | 68.03 Identify the importance of proper terminology when communicating during an emergency. |
| | 68.04 List factors that impede effective verbal and written communications. |

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| | 68.05 | List factors which enhance verbal and written communications. |
| | 68.06 | Recognize the legal status of written communications related to an emergency. |
| | 68.07 | Identify the components of the local EMS communications system and describe their function and use. |
| | 68.08 | Identify and differentiate among the following communications systems: simplex, multiplex, duplex, trunked, digital communications, and cellular telephone. |
| | 68.09 | Describe the functions and responsibilities of the Federal Communications Commission. |
| | 68.10 | Describe how an emergency medical dispatcher (EMD) functions as an integral part of the EMS team. |
| | 68.11 | List appropriate information to be gathered by the Emergency Medical Dispatcher. |
| | 68.12 | Describe and organize a list of patient assessment information in the correct order for electronic transmission to medical direction according to the format used locally. |
| | 68.13 | State the proper procedures and sequence for delivery of patient information to other healthcare professionals. |
| 69.0 | **Therapeutic Communication:** Demonstrate a complex depth and comprehensive breadth of the therapeutic communication principles. – The student will be able to: | |
| | 69.01 | Identify internal and external factors that affect a patient/ bystander interview conducted by a paramedic. |
| | 69.02 | Review the strategies for developing patient rapport. |
| | 69.03 | Summarize the methods to assess mental status based on interview techniques. |
| | 69.04 | Discuss the strategies for interviewing a patient who is unmotivated to talk. |
| | 69.05 | Summarize developmental considerations of various age groups that influence patient interviewing. |
| | 69.06 | Review unique interviewing techniques necessary to employ with patients who have special needs. |
| | 69.07 | Discuss interviewing considerations used by paramedics in cross-cultural communications. |
| 70.0 | **Medical/Legal and Ethics:** Demonstrate a complex depth, comprehensive breadth of medical legal and ethical concepts related to EMS. – The student will be able to: | |
| | 70.01 | Differentiate between legal and ethical responsibilities. |
| | 70.02 | Differentiate between licensure and certification as they apply to the paramedic. |
| | 70.03 | List the specific problems or conditions encountered while providing care that a paramedic is required to report, and identify in each instance to whom the report is to be made. |
| | 70.04 | Review terms, including but not limited to, the following: abandonment, battery, breach of duty, consent (expressed, implied, informed, voluntary), DNR orders, duty to act, emancipated minor, false imprisonment, liability, libel, negligence, proximate cause, scope of practice, slander, and tort. |

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| | 70.05 | Differentiate between the scope of practice and the standard of care for paramedic practice. |
| | 70.06 | Discuss the concept of medical direction, including off-line medical direction and on-line medical direction, and its relationship to the standard of care of a paramedic. |
| | 70.07 | Review the four elements that must be present in order to prove negligence. |
| | 70.08 | Review the legal concept of immunity, including Good Samaritan statutes and governmental immunity, as it applies to the paramedic. |
| | 70.09 | Review the importance and necessity of patient confidentiality and the standards for maintaining patient confidentiality that apply to the paramedic. |
| | 70.10 | Review consent to include expressed, informed, implied, and involuntary. |
| | 70.11 | Given a scenario, demonstrate appropriate patient management and care techniques in a refusal of care situation. |
| | 70.12 | Differentiate between assault and battery and describe how to avoid each. |
| | 70.13 | Describe the actions that the paramedic should take to preserve evidence at a crime or accident scene. |
| | 70.14 | Describe the importance of providing accurate documentation (oral and written) in substantiating an incident. |
| | 70.15 | Describe the characteristics of a patient care report required to make it an effective legal document. |
| | 70.16 | Describe the criteria necessary to honor an advance directive in Florida. |
| | 70.17 | Demonstrate an understanding of the Paramedic's role in mandatory reporting associated with abused, neglected and/or assaulted patient. |
| 71.0 | **Anatomy and Physiology:** Demonstrate a complex depth and comprehensive breadth of anatomy and physiology of all human systems. – The student will be able to: | |
| | 71.01 | Review the EMT standards and benchmarks for the Anatomy & Physiology and apply an integration of a complex depth and comprehensive breath of knowledge of the anatomy and physiology of all human body systems. |
| 72.0 | **Medical Terminology:** Demonstrate the integration of comprehensive anatomical and medical terminology and abbreviations into written and oral communication with health care professionals. – The student will be able to: | |
| | 72.01 | Review the EMT standards and benchmarks for the medical terminology and apply an integration of comprehensive anatomical and medical terminology and abbreviations with colleagues and other health care professionals. |
| 73.0 | **Pathophysiology:** Demonstrate a comprehensive knowledge of pathophysiology of major systems. – The student will be able to: | |
| | 73.01 | Describe the factors that precipitate disease in the human body including familial diseases and risk factors. |
| | 73.02 | Describe environmental risk factors. |
| | 73.03 | Review terms including but not limited to: cardiogenic, hypovolemic, neurogenic, anaphylactic, and septic shock. |
| | 73.04 | Describe multiple organ dysfunction syndrome (MODS). |

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| | 73.05 Discuss the correlation of pathophysiology with disease processes. |
| | 73.06 Identify the Major classes of cells. |
| | 73.07 Describe and discuss the cellular structure, function and components. |
| | 73.08 Define the types of body tissues. |
| | 73.09 Describe alterations in cells and tissues including cellular adaptation, cellular injury, manifestation of cellular injury, and cellular death/necrosis. |
| | 73.10 Discuss the cellular environment including distribution of body fluids, aging and distribution of body fluids, water movement between ICF and ECF, water movement between plasma and interstitial fluid, alterations in water movement - edema, water balance and the role of electrolytes, and acid-base balances. |
| | 73.11 Describe genetics and familial diseases including factors causing disease, analyzing risk, combined effects and interaction among risk factors, and common familial disease and associated risk factors. |
| | 73.12 Define hypoperfusion and discuss pathogenesis, types of shock, multiple organ dysfunction syndrome, and cellular metabolism impairment. |
| | 73.13 Describe the self –defense mechanisms including the lines of defense, characteristics of the immune response, introduction of the immune response, humoral immune response, cell-mediated immune response, cellular interactions in the immune response, fetal and neonatal immune function and aging and the immune response in the elderly. |
| | 73.14 Describe the inflammation process including the acute inflammatory response, mast cells plasma protein systems, cellular components of inflammation, cellular products, systemic response of acute inflammation, chronic inflammation responses, local inflammation responses, phases of resolution and repair, and aging and self defense mechanisms. |
| | 73.15 Discuss variances in immunity and inflammation including hypersensitivity, allergy, autoimmunity and isoimmunity, and immunity and inflammation deficiencies. |
| | 73.16 Discuss blood volume circulation disturbances. |
| | 73.17 Describe the buffer system. |
| 74.0 | **Life Span Development:** Apply the integration of knowledge of the physiological, psychological, and sociological changes throughout human development. –The student will be able to: |
| | 74.01 Compare, contrast and analyze the physiological and psychosocial characteristics of the following age groups to an early adult:<br>74.01.01 an infant<br>74.01.02 a toddler<br>74.01.03 pre-school child<br>74.01.04 school aged child<br>74.01.05 adolescent<br>74.01.06 middle aged adult |
| 75.0 | **Public Health:** Demonstrate the application of fundamental knowledge of principles of public health. – The student will be able to: |
| | 75.01 Review the EMT standards and benchmarks for the public health and apply a fundamental knowledge of the principles of public health, epidemiology, health promotion and illness and injury prevention. |

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| 76.0 | **Principles of Pharmacology:** Demonstrate a complex depth, comprehensive breadth in the principles of pharmacology. – The student will be able to: |
| | 76.01 Differentiate among the chemical, generic (nonproprietary), and trade (proprietary) names of a drug. |
| | 76.02 List the four main sources of drug products. |
| | 76.03 Describe how drugs are classified. |
| | 76.04 List legislative acts controlling drug use and abuse in the United States. |
| | 76.05 Differentiate among Schedule I, II, III, IV, and V substances. |
| | 76.06 Use reference materials to research medications. |
| | 76.07 Discuss standardization of drugs. |
| | 76.08 Discuss investigational drugs, including the Food and Drug Administration (FDA) approval process and the FDA classifications for newly approved drugs. |
| | 76.09 Discuss the paramedic's responsibilities and scope of management pertinent to the administration of medications. |
| | 76.10 List and describe general properties of drugs. |
| | 76.11 List and describe liquid and solid drug forms. |
| | 76.12 List and differentiate all methods and routes of medication administration covered in the current National EMS Scope of Practice Model. |
| | 76.13 Describe the process called pharmacokinetics, and pharmacodynamics, including theories of drug action, drug-response relationship, factors altering drug responses, predictable drug responses, iatrogenic drug responses, and unpredictable adverse drug responses. |
| | 76.14 Describe specific medications used by rescuers in the prehospital setting. |
| | 76.15 Describe common unintended adverse effects of medication administration. |
| | 76.16 Discuss the prevention, recognition and management of adverse medication reactions. |
| | 76.17 Anticipate how various factors, such as age, body mass, and others, can alter drug responses. |
| | 76.18 Select the optimal medication and method of medication administration for patients with a particular clinical condition or situation. |
| 77.0 | **Medication Administration:** Demonstrate a complex depth, comprehensive breadth of medication administration within the scope of practice of the paramedic. – The student will be able to: |
| | 77.01 Review the specific anatomy and physiology pertinent to medication administration. |
| | 77.02 Discuss the paramedic’s responsibilities and scope of management pertinent to the administration of medications. |

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| 77.03 | Review mathematical principles and discuss equations as a basis for performing drug calculations. |
| 77.04 | Describe the indications, contraindications, procedure, equipment and risks associated with peripheral intravenous or external jugular access. |
| 77.05 | Describe the indications, equipment needed, technique used, precautions, and general principles of intraosseous needle placement and infusion. |
| 77.06 | Describe complications that can occur as a result of IV therapy. |
| 77.07 | Discuss the "six rights" of drug administration and correlate these with the principles of medication administration. |
| 77.08 | Describe the use of standard precautions and body substance isolation (BSI) procedures when administering a medication. |
| 77.09 | Prepare medications for administration from a variety of types of packaging, including vials, non-constituted vials, ampules, prefilled syringes, and packaging for intravenous solutions. |
| 77.10 | Describe the role of medical direction in medication administration and describe the difference between direct orders (online) and standing orders (off-line). |
| 77.11 | Explain why determining what medications (prescribed / OTC) a patient is taking is a critical aspect of patient assessment. |
| 77.12 | Describe the equipment needed and general principles of administering oral medications. |
| 77.13 | Describe the indications, equipment needed, techniques used, precautions, and general principles of administering medications by the following routes:<br>77.13.01 inhalation route<br>77.13.02 gastric tube<br>77.13.03 rectal route |
| 77.14 | Differentiate among the different percutaneous routes of medication administration. |
| 77.15 | Describe the purpose, equipment needed, techniques used, complications, and general principles for obtaining a blood sample. |
| 77.16 | Obtain venous and capillary blood for testing and discuss blood chemistry and normal values as referenced in the National EMS educational guidelines: Paramedic Instructional Guidelines. |
| 77.17 | Demonstrate principles of medical asepsis in the administration of medications. |
| 77.18 | Synthesize a pharmacologic management plan including medication administration. |
| 77.19 | Demonstrate the procedure for disposal of contaminated items and supplies. |
| 77.20 | Demonstrate cannulation of peripheral or external jugular veins. |
| 77.21 | Demonstrate intraosseous needle placement and infusion. |

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| | 77.22 Demonstrate administration of medications by the following routes:<br>77.22.01 oral<br>77.22.02 sublingual<br>77.22.03 auto-injector<br>77.22.04 inhalation route<br>77.22.05 intranasal route.<br>77.22.06 subcutaneous route.<br>77.22.07 intramuscular route.<br>77.22.08 intravenous route.<br>77.22.09 intraosseous route. | |
| 78.0 | **Emergency Medications:** Demonstrate a complex depth, comprehensive breadth of emergency medications within the scope of practice for the paramedic. – The student will be able to: | |
| | 78.01 Identify medications used by the paramedic, including indications, contraindications, dosages, adverse reactions, side effects, and interactions for the following: | |
| | 78.01.01 Airway management | |
| | 78.01.02 Respiratory | |
| | 78.01.03 Cardiovascular | |
| | 78.01.04 Neurologic conditions | |
| | 78.01.05 Gastrointestinal | |
| | 78.01.06 Miscellaneous medications | |
| 79.0 | **Airway Management and Respiration:** Demonstrate a complex depth, comprehensive breadth of airway management and respiration within the scope of practice of the paramedic. – The student will be able to: | |
| | 79.01 Explain the primary objective of airway maintenance. | |
| | 79.02 Explain the differences between pediatric, adult and geriatric airway anatomy. | |
| | 79.03 List the concentration of gases that comprise atmospheric air. | |
| | 79.04 Describe the measurement of oxygen in the blood. | |
| | 79.05 Describe the measurement of carbon dioxide in the blood. | |
| | 79.06 Describe peak expiratory flow. | |
| | 79.07 List factors that cause decreased oxygen concentrations in the blood. | |
| | 79.08 List the factors that increase and decrease carbon dioxide production in the body. | |

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| | 79.09 | Define pulses paradoxes. |
| | 79.10 | Describe indications, contraindications, advantages, disadvantages, complications, and technique for ventilating a patient with an automatic transport ventilator (ATV). |
| | 79.11 | Describe the indications, contraindications, advantages, disadvantages, complications, liter flow range, and concentration of delivered oxygen for supplemental oxygen delivery devices. |
| | 79.12 | Define, identify and describe a tracheostomy, stoma, and tracheostomy tube. |
| | 79.13 | Define, identify, and describe a laryngectomy. |
| | 79.14 | Describe the special considerations in airway management and ventilation for the pediatric patient. |
| | 79.15 | Describe the indications, contraindications, advantages, disadvantages, complications and equipment for rapid sequence intubation with neuromuscular blockade. |
| | 79.16 | Identify neuromuscular blocking drugs and other agents used in rapid sequence intubation. |
| | 79.17 | Describe the indications, contraindications, advantages, disadvantages, complications and equipment for sedation during intubation. |
| | 79.18 | Describe the indications, contraindications, advantages, disadvantages and complications for performing an open cricothyrotomy. |
| | 79.19 | Demonstrate the procedure for percutaneous cricothyrotomy. |
| | 79.20 | Identify and describe the function of the structures located in the upper and lower airway. |
| | 79.21 | Discuss the physiology of ventilation and respiration. |
| 80.0 | **Artificial Ventilation:** Demonstrate a complex breadth, comprehensive breadth of assessment and management utilizing artificial ventilation. – The student will be able to: | |
| | 80.01 | Perform pulse oximetry. |
| | 80.02 | Perform and interpret wave form capnography and colormetric in all age groups. |
| | 80.03 | Demonstrate proper use of airway and ventilation devices including administration of BIPAP/CPAP and PEEP devices. |
| | 80.04 | Demonstrate effective techniques of advanced airway management of the following:<br>80.04.01 orotracheal,<br>80.04.02 nasotracheal,<br>80.04.03 subglottic,<br>80.04.04 supraglottic,<br>80.04.05 digital intubation |
| | 80.05 | Describe and demonstrate methods of assessment for confirming correct placement of any airway device. |
| | 80.06 | Describe the indications, contraindications, advantages, disadvantages, complications, equipment and technique for extubation. |

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| | 80.07 Describe methods of endotracheal intubation in the pediatric patient. |
| | 80.08 Demonstrate proper use of airway and ventilation devices. |
| | 80.09 Demonstrate the procedure for the following :<br>80.09.01 lighted stylet<br>80.09.02 fiber optic |
| 81.0 | **Scene Size-Up:** Demonstrate a complex depth, comprehensive breadth of scene management. – The student will be able to: |
| | 81.01 Describe common hazards found at the scene of a trauma and a medical patient. |
| | 81.02 Discuss common mechanisms of injury/ nature of illness. |
| | 81.03 Explain the rationale for crew members to evaluate scene safety prior to entering. |
| | 81.04 Observe various scenarios and identify potential hazards. |
| | 81.05 Demonstrate the scene-size-up. |
| 82.0 | **Primary Assessment:** Demonstrate a complex depth, comprehensive breadth of the primary assessment for all patient situations. – The student will be able to: |
| | 82.01 Summarize the reasons for forming a general impression of the patient. |
| | 82.02 Discuss and demonstrate methods of evaluating and assessing mental status. |
| | 82.03 Categorize levels of consciousness in the pediatric, adult and geriatric patient. |
| | 82.04 Discuss and demonstrate methods of assessing the airway in the pediatric, adult and geriatric patient. |
| | 82.05 Describe and demonstrate methods used for assessing if a patient is breathing. |
| | 82.06 Differentiate between the methods of assessing breathing and providing airway care to the pediatric, adult and geriatric patient. |
| | 82.07 Differentiate between locating and assessing a pulse in the pediatric, adult and geriatric patient. |
| | 82.08 Discuss the need for assessing the patient for external bleeding. |
| | 82.09 Demonstrate the techniques for assessing the patient for external bleeding. |
| | 82.10 Describe normal and abnormal findings when assessing skin color, temperature, and condition. |
| | 82.11 Demonstrate the techniques for assessing if the patient has a pulse. |
| | 82.12 Demonstrate the techniques for assessing the patient's skin color, temperature, and condition. |
| | 82.13 Discuss and demonstrate prioritizing a patient for care and transport. |

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| | 82.14 Perform a detailed physical examination. |
| 83.0 | **History Taking:** Demonstrate a complex depth, comprehensive breath of the components of history taking. – The student will be able to: |
| | 83.01 Describe the components and demonstrate techniques of patient history taking. |
| | 83.02 Demonstrate the importance of empathy when obtaining a health history. |
| | 83.03 Adapt communication strategies to communicate effectively with the following types of patients: patients of all ages; patients of various cultures; patients with sensory impairments; angry, hostile, uncooperative, silent or overly talkative patients; patients who are anxious, crying or depressed; patients who offer multiple complaints or symptoms; intoxicated patients. |
| 84.0 | **Secondary Assessment:** Demonstrate a complex depth, comprehensive breadth of techniques used for a secondary assessment. – The student will be able to: |
| | 84.01 Describe the techniques of inspection, palpation, percussion, and auscultation for patients of all ages. |
| | 84.02 Distinguish the importance of abnormal findings of the assessment of the skin. |
| | 84.03 Differentiate normal and abnormal assessment findings of the mouth and pharynx. |
| | 84.04 Appreciate the limitations of conducting a physical exam in the out-of-hospital environment. |
| | 84.05 Demonstrate the examination of the patient including the following:<br>84.05.01 skin, hair and nails.<br>84.05.02 head and neck<br>84.05.03 eyes, ears and nose<br>84.05.04 mouth and pharynx<br>84.05.05 thorax and ventilation<br>84.05.06 peripheral vascular system<br>84.05.07 musculoskeletal system<br>84.05.08 nervous system |
| | 84.06 Demonstrate the examination of the posterior chest including auscultation and percussion of the chest. |
| | 84.07 Demonstrate the examination of the arterial pulse including location, rate, rhythm, and amplitude. |
| | 84.08 Demonstrate special examination techniques of the cardiovascular examination. |
| | 84.09 Demonstrate the examination of the abdomen including auscultation of the abdomen. |
| | 84.10 Demonstrate the examination of the, and the. |
| | 84.11 Describe the evaluation of patient's perfusion status based on findings in the initial assessment. |
| | 84.12 State the reasons for performing a rapid trauma assessment. |

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| | 84.13 Discuss the reason for performing a focused history and physical exam. |
| | 84.14 Discuss the components of the detailed physical exam in relation to the techniques of examination. |
| | 84.15 Demonstrate the external visual examination of the female genitalia. |
| | 84.16 Demonstrate the examination of the male genitalia. |
| | 84.17 Explain the reasons for identifying the need for additional help or assistance. |
| | 84.18 State reasons for management of the cervical spine once the patient has been determined to be a trauma patient. |
| | 84.19 Discuss the reasons for repeating the initial assessment as part of the on-going assessment. |
| | 84.20 Describe the components of the on-going assessment. |
| | 84.21 Discuss medical identification devices/ systems. |
| 85.0 | **Monitoring Devices:** Demonstrate a fundamental depth, foundational breadth of monitoring devices within the scope of practice of the paramedic. – The student will be able to: |
| | 85.01 Describe the purpose, indications, procedure, normal findings, and limitations of the following patient monitoring technologies.<br>85.01.01 Continuous ECG monitoring<br>85.01.02 12-Lead ECG<br>85.01.03 Capnography (wave form)<br>85.01.04 Capnometry (colorimetric)<br>85.01.05 CO-oximetry<br>85.01.06 Methaglobin monitoring<br>85.01.07 Total hemoglobin<br>85.01.08 Basic blood chemistry<br>85.01.09 Ultrasound<br>85.01.10 other devices identified at the EMT level |
| | 85.02 Demonstrate the use of the following patient monitoring technologies.<br>85.02.01 Continuous ECG monitoring<br>85.02.02 12-Lead ECG<br>85.02.03 Capnography (wave form)<br>85.02.04 Capnometry (colorimetric)<br>85.02.05 other devices identified at the EMT level |
| 86.0 | **Reassessment:** Demonstrate a complex depth, comprehensive breadth of how and when to perform a reassessment for all patient situations. – The student will be able to: |
| | 86.01 Review the EMT standards and benchmarks for the reassessment section and demonstrate a complex depth and comprehensive breadth of how and when to perform a reassessment for all patient situations. |
| 87.0 | **Medical Overview:** Demonstrate a complex depth and comprehensive breadth of pathophysiology, assessment, and management of medical complaints. – The student will be able to: |

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| | 87.01 Review the EMT standards and benchmarks for medical overview and demonstrate a complex depth and comprehensive breadth of pathophysiology, assessment and management of medical complaints. |
| 88.0 | **Neurology:** Demonstrate a complex depth and comprehensive breadth of neurologic disorders/emergencies for all age groups. –The student will be able to: |
| | 88.01 Identify the risk factors associated with nervous system dysfunction. |
| | 88.02 Review the anatomy and physiology of the organs and structures related to nervous system. |
| | 88.03 Discuss the pathophysiology and demonstrate the assessment, and management of patients with the following conditions: :<br>88.03.01 coma<br>88.03.02 altered mental status<br>88.03.03 seizures<br>88.03.04 syncope<br>88.03.05 transient ischemic attack<br>88.03.06 stroke and intracranial hemorrhage<br>88.03.07 degenerative neurologic diseases<br>88.03.08 chronic alcoholism<br>88.03.09 back pain and non-traumatic spinal disorders |
| | 88.04 Describe and differentiate the major types of seizures. |
| | 88.05 Describe the types of stroke and intracranial hemorrhage. |
| | 88.06 Describe the significance of the prevalence of neurologic disorders in the United States. |
| | 88.07 Adapt the scene size-up, primary assessment, patient history, secondary assessment, and use of monitoring technology to meet the needs of patients with complaints and presentations related to neurologic disorders. |
| 89.0 | **Abdominal and Gastrointestinal Disorders:** Demonstrate a complex depth and comprehensive breadth of abdominal and gastrointestinal disorders/emergencies for all age groups. – The student will be able to: |
| | 89.01 Review the anatomy and physiology of the organs and structures related to gastrointestinal diseases. |
| | 89.02 Discuss the pathophysiology of inflammation and its relationship to acute abdominal pain. |
| | 89.03 Differentiate between hemorrhagic and non-hemorrhagic abdominal pain. |
| | 89.04 Describe the technique for performing a comprehensive physical examination on a patient complaining of abdominal pain. |

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| | 89.05 Discuss the pathophysiology and demonstrate the assessment, and management of patients with the following abdominal and gastrointestinal disorders:<br>89.05.01 Both Upper and lower gastrointestinal bleeding<br>89.05.02 Acute gastroenteritis.<br>89.05.03 Colitis.<br>89.05.04 Diverticulitis.<br>89.05.05 Appendicitis.<br>89.05.06 Peptic ulcer disease.<br>89.05.07 Bowel obstruction.<br>89.05.08 Crohn's disease.<br>89.05.09 Pancreatitis.<br>89.05.10 Esophageal varices.<br>89.05.11 Hemorrhoids.<br>89.05.12 Cholecystitis.<br>89.05.13 Acute hepatitis. |
| | 89.06 Identify patients with risk factors for gastrointestinal emergencies. |
| | 89.07 Adapt the scene size-up, primary assessment, patient history, secondary assessment, and use of monitoring technology to meet the needs of patients with complaints and presentations related to gastrointestinal disorders. |
| | 89.08 Demonstrate how to auscultate the abdomen to assess for diminished, absent or abnormal bowel sounds. |
| 90.0 | **Immunology:** Demonstrate a complex depth, comprehensive breadth of immunology disorders/emergencies for all age groups. – The student will be able to: |
| | 90.01 Define:<br>90.01.01 Allergic reaction.<br>90.01.02 Anaphylaxis<br>90.01.03 Antigens<br>90.01.04 Antibodies |
| | 90.02 Review the anatomy and physiology of the organs and structures related to anaphylaxis. |
| | 90.03 Describe the prevention of anaphylaxis and appropriate patient education. |
| | 90.04 Discuss the pathophysiology of allergy and anaphylaxis. |
| | 90.05 Describe the common methods of entry of substances into the body. |
| | 90.06 List common antigens most frequently associated with anaphylaxis. |
| | 90.07 Describe physical manifestations in anaphylaxis. |
| | 90.08 Differentiate manifestations of an allergic reaction from anaphylaxis. |
| | 90.09 Recognize the signs and symptoms related to anaphylaxis. |

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| | 90.10 Differentiate among the various treatment and pharmacological interventions used in the management of anaphylaxis. |
| | 90.11 Develop a treatment plan based on field impression in the patient with allergic reaction and anaphylaxis. |
| 91.0 | **Infectious Diseases:** Demonstrate a complex depth, comprehensive breadth of assessment and management of a patient who may have an infectious diseases for all age groups. – The student will be able to: |
| | 91.01 Review the specific anatomy and physiology pertinent to infectious and communicable diseases. |
| | 91.02 List and describe the steps of an infectious process. |
| | 91.03 List and describe infectious agents, including bacteria, viruses, fungi, protozoans, and helminths (worms). |
| | 91.04 Describe characteristics of the immune system, including the categories of white blood cells, the reticuloendothelial system (RES), and the complement system. |
| | 91.05 Describe and discuss the rationale for the various types of PPE. |
| | 91.06 Discuss the proper disposal of contaminated supplies (sharps, gauze sponges, tourniquets, etc.). |
| | 91.07 Discuss disinfection of patient care equipment, and areas in which care of the patient occurred. |
| | 91.08 Consistently demonstrate the proper use of body substance isolation. |
| | 91.09 Perform an assessment of a patient with an infectious/communicable disease. |
| | 91.10 Effectively and safely manage a patient with an infectious/communicable disease, including airway and ventilation care, support of circulation, pharmacological intervention, transport considerations, psychological support/communication strategies, and other considerations as mandated by local protocol. |
| | 91.11 Explain public health principles related to infectious disease. |
| | 91.12 Describe the roles of local, state, and federal agencies involved in infectious disease surveillance and outbreaks. |
| | 91.13 Describe the interactions of the agent, host, and environment as determining factors in disease transmission. |
| | 91.14 Explain the principles and practices of infection control in prehospital care. |
| | 91.15 Describes the EMS professional’s responsibilities as well as their rights under the Ryan White Act. |

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| | 91.16 Discuss the causative agent, body systems affected and potential secondary complications, routes of transmission, susceptibility and resistance, signs and symptoms and demonstrate the patient management and protective/control measures, and immunization for the following infectious diseases:<br>91.16.01 HIV<br>91.16.02 Hepatitis A, B, C, D, E<br>91.16.03 Tuberculosis<br>91.16.04 Meningococcal meningitis (spinal meningitis)<br>91.16.05 Pneumonia<br>91.16.06 Tetanus<br>91.16.07 Varicella (chickenpox)<br>91.16.08 Mumps<br>91.16.09 Rubella (German measles)<br>91.16.10 Measles (rubeola, hard measles)<br>91.16.11 Influenza<br>91.16.12 Mononucleosis<br>91.16.13 gastroenteritis |
| | 91.17 Discuss the characteristics of, and organisms associated with, febrile and afebrile respiratory disease, to include bronchiolitis, bronchitis, laryngitis, croup, epiglottitis, and the common cold. |
| | 91.18 Describe the pathophysiology of infectious diseases of immediate concern to EMS providers. |
| | 91.19 Describe the EMS provider's role in patient education and preventing disease transmission. |
| | 91.20 Explain the pathophysiology, risk factors, assessment, and prehospital management of sepsis/systemic inflammatory response syndrome (SIRS). |
| 92.0 | **Endocrine Disorders:** Demonstrate a complex depth, comprehensive breadth in endocrine disorders/emergencies for all age groups. – The student will be able to: |
| | 92.01 Identify the risk factors related to disorders of the endocrine system. |
| | 92.02 Review the anatomy and physiology of organs and structures related to endocrinologic diseases. |
| | 92.03 Discuss the pathophysiology and demonstrate the assessment, and management of patients with the following endocrinologic emergencies:<br>92.03.01 30.03.01 hypoglycemia (responsive and unresponsive)<br>92.03.02 30.03.02 hyperglycemia<br>92.03.03 30.03.03 diabetic ketoacidosis<br>92.03.04 30.03.04 Cushing's syndrome<br>92.03.05 30.03.05 Adrenal insufficiency<br>92.03.06 30.03.06 Pituitary disorders<br>92.03.07 30.03.07 Thyroid disorders |
| | 92.04 Describe the mechanism of ketone body formation and its relationship to ketoacidosis. |
| | 92.05 Describe the compensatory mechanisms utilized by the body to promote homeostasis relative to hypoglycemia. |

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| | 92.06 Develop a patient management plan based on field impression in the patient with an endocrinologic emergency. |
| | 92.07 Demonstrate how to administer glucagon to a hypoglycemic patient. |
| 93.0 | **Psychiatric:** Demonstrate a complex depth, comprehensive breadth regarding the assessment and management of psychiatric disorders/emergencies for all age groups. – The student will be able to: |
| | 93.01 Define behavior and distinguish between normal and abnormal behavior. |
| | 93.02 Discuss the prevalence of behavior and psychiatric disorders. |
| | 93.03 Discuss the factors that may alter the behavior or emotional status of an ill or injured individual. |
| | 93.04 Describe the medical legal considerations for management of emotionally disturbed patients. |
| | 93.05 Discuss the pathophysiology of behavioral and psychiatric disorders. |
| | 93.06 Define the following terms:<br>93.06.01 Affect<br>93.06.02 Anger<br>93.06.03 Anxiety<br>93.06.04 Confusion<br>93.06.05 Depression<br>93.06.06 Fear<br>93.06.07 Mental status<br>93.06.08 Open-ended questions<br>93.06.09 Posture |
| | 93.07 Describe the verbal techniques useful in managing the emotionally disturbed patient. |
| | 93.08 Describe the circumstances when relatives, bystanders and others should be removed from the scene. |
| | 93.09 Describe the techniques that facilitate the systematic gathering of information from the disturbed patient. |
| | 93.10 Identify techniques for physical assessment in a patient with behavioral problems. |
| | 93.11 Describe methods of restraint that may be necessary in managing the emotionally disturbed patient. |
| | 93.12 List the risk factors (including behaviors) for suicide. |
| | 93.13 Differentiate between the various behavioral and psychiatric disorders based on the assessment and history. |
| | 93.14 Develop a patient management plan based on the field impressions. |
| | 93.15 Demonstrate safe techniques for managing and restraining a violent patient. |

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| 94.0 | **Cardiovascular:** Demonstrate a complex depth, comprehensive breadth of cardiovascular disorders/ emergencies for all age groups. – The student will be able to: |
| 94.01 | Describe the epidemiology, incidence, morbidity and mortality of cardiovascular disease. |
| 94.02 | Identify the risk factors of coronary artery disease. |
| 94.03 | Review the anatomy and physiology of the cardiovascular system. |
| 94.04 | Describe the blood flow pathway through the vascular system including the arteries, veins and associated structures. |
| 94.05 | Explain how the heart functions as a pump; including the concepts of cardiac output, stroke volume, heart rate, and ejection fraction. |
| 94.06 | Discuss the physiology of the cardiac cycle and the fluid dynamics associated with the cardiovascular system including Starling's Law, systole and diastole. |
| 94.07 | Identify the four properties that aid in the function of the heart including excitability, conductivity, automaticity, and contractility. |
| 94.08 | Define the terms:<br>94.08.01 depolarization<br>94.08.02 repolarization<br>94.08.03 pulse deficit<br>94.08.04 pulsus paradoxus<br>94.08.05 pulsus alternans<br>94.08.06 hypertensive emergency<br>94.08.07 cardiac tamponade<br>94.08.08 cardiogenic shock<br>94.08.09 cardiac arrest |
| 94.09 | List the ions involved in myocardial action potential and their primary and their primary function in this process. |
| 94.10 | Describe the events involved in the steps from excitation to contraction of the cardiac muscle fibers. |
| 94.11 | Identify the structure and course of all divisions and subdivisions of the cardiac conduction system. |
| 94.12 | Identify and describe how the heart's pacemaking control, rate, and rhythm are determined. |
| 94.13 | Compare and contrast the coronary artery distribution to the major portions of the cardiac conduction systems. |
| 94.14 | Identify the structures of the autonomic nervous system (ANS). |
| 94.15 | Identify the effect of the ANS on heart rate, rhythm and contractility. |
| 94.16 | Define and give examples of positive and negative inotropes, chronotropes and dromotropes. |
| 94.17 | Identify and describe the components of the focused history as it relates to the patient with cardiovascular compromise. |

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| 94.18 | Explain the assessment and management of the following cardiovascular conditions. |
| 94.19 | Identify the normal characteristics of the point of maximal impulse (PMI). |
| 94.20 | Identify and define the normal and abnormal heart sounds. |
| 94.21 | Relate heart sounds to hemodynamic events in the cardiac cycle. |
| 94.22 | Explain the purpose of ECG monitoring and how ECG wave forms are produced. |
| 94.23 | Identify the components of the ECG rhythm strip and list any limitations. |
| 94.24 | Identify how heart rates, durations, and amplitudes may be determined from ECG tracings. |
| 94.25 | Describe the placement of leads and electrodes in 3 lead and 12 lead ECG monitoring. |
| 94.26 | Differentiate among the primary mechanisms responsible for producing cardiac dysrhythmias. |
| 94.27 | Describe a systematic approach to the analysis and interpretation of cardiac dysrhythmias. |
| 94.28 | Describe the dysrhythmias originating or sustained in the in the following areas:<br>94.28.01 sinus node<br>94.28.02 the AV junction<br>94.28.03 bundle branch system<br>94.28.04 atria<br>94.28.05 ventricles |
| 94.29 | Describe the process and the pitfalls of differentiation of wideQRS complex tachycardias. |
| 94.30 | Describe the conditions of pulseless electrical activity. |
| 94.31 | Describe the phenomena of reentry, aberration and accessory pathways. |
| 94.32 | Identify the ECG changes characteristically produced by electrolyte imbalances and specify the clinical implications. |
| 94.33 | Identify patient situations where ECG rhythm analysis is indicated. |
| 94.34 | Recognize the changes and any limitations on the ECG that may reflect evidence of myocardial ischemia and injury. |
| 94.35 | Compare manual defibrillation from cardioversion and synchronized cardioversion. |
| 94.36 | Describe the components of a transcutaneous pacer, its application and setting adjustments as well as the clinical indications and techniques for use. |
| 94.37 | Based on field impressions, identify the need for rapid intervention for the patient in cardiovascular compromise. |

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| 94.38 | Discuss the pathophysiology and demonstrate the assessment, and management of patients following conditions including the development of a treatment plan:<br>94.38.01 Angina<br>94.38.02 Myocardial infarction STEMI/Non-STEMI<br>94.38.03 Congestive heart failure<br>94.38.04 Cardiac tamponade<br>94.38.05 Cardiogenic shock<br>94.38.06 Hypertension and acute hypertensive states<br>94.38.07 Cardiac arrest<br>94.38.08 Vascular disorders<br>94.38.09 Hypertrophic cardiomyopathies<br>94.38.10 Infectious diseases of the heart |
| 94.39 | Identify the drugs of choice, the rationale for use, clinical precautions and disadvantages and/or complications for the following conditions:<br>94.39.01 Angina<br>94.39.02 Myocardial infarction STEMI/Non-STEMI<br>94.39.03 Congestive heart failure<br>94.39.04 Cardiac tamponade<br>94.39.05 Cardiogenic shock<br>94.39.06 Hypertension and acute hypertensive states<br>94.39.07 Cardiac arrest<br>94.39.08 Vascular disorders<br>94.39.09 Hypertrophic cardiomyopathies<br>94.39.10 Infectious diseases of the heart |
| 94.40 | Describe the most commonly used pharmacological agents in the management of congestive heart failure in terms of therapeutic effect, dosages, and routes of administration, side effects, and toxic effects. |
| 94.41 | List other clinical conditions that may mimic signs and symptoms of coronary artery disease and angina pectoris. |
| 94.42 | Compare fibrinolysis from percutaneous intervention as reperfusion techniques used in patients with AMI or suspected AMI and describe the "window of opportunity" as it pertains to reperfusion of a myocardial infarction. |
| 94.43 | List the characteristics of a patient eligible for thrombolytic therapy. |
| 94.44 | Define the term "acute pulmonary edema" and describe its relationship to left ventricular failure. |
| 94.45 | Define preload, afterload and left ventricular end-diastolic pressure and relate each to the pathophysiology of heart failure. |
| 94.46 | Differentiate between early and late signs and symptoms of left ventricular failure and those of right ventricular failure. |
| 94.47 | Explain the clinical significance of paroxysmal nocturnal dyspnea. |
| 94.48 | Explain clinical significance of edema of the extremities and sacrum. |

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| 94.49 | Describe how to determine if pulses paradoxus, pulses alternans, or electrical alternans is present. |
| 94.50 | Identify non-cardiac causes of cardiac arrest. |
| 94.51 | Identify the clinical significance of claudication and presence of arterial bruits in a patient with peripheral vascular disorders. |
| 94.52 | Describe the clinical significance of unequal arterial blood pressure readings in the arms. |
| 94.53 | Discuss the components of post resuscitation care including how to determine the return of spontaneous circulation (ROSC). |
| 94.54 | Explain how to confirm asystole using 3 lead ECG. |
| 94.55 | Identify circumstances and situations where resuscitation efforts would not be initiated. |
| 94.56 | Identify and list inclusion and exclusion criteria for termination of resuscitative efforts. |
| 94.57 | Identify communication and documentation protocols with medical direction and law enforcement used for termination of resuscitation efforts. |
| 94.58 | Apply knowledge of the epidemiology of cardiovascular disease to develop prevention strategies. |
| 94.59 | Defend the urgency in rapid determination of and rapid intervention of patients in cardiac arrest. |
| 94.60 | Defend the possibility of termination of resuscitative efforts in the out-of-hospital setting. |
| 94.61 | Demonstrate how to set and adjust the ECG monitor settings to varying patient situations. |
| 94.62 | Demonstrate how to record a 3, 4, 10 and 12 lead ECG. |
| 94.63 | Given the model of a patient with signs and symptoms of heart failure, position the patient to afford them comfort or relief. |
| 94.64 | Demonstrate how to determine if pulsus paradoxus, pulsus alternans, or electrical alternans is present. |
| 94.65 | Set up and apply a transcutaneous pacing system. |
| 94.66 | List the possible complications of pacing. |
| 94.67 | Demonstrate how to perform post-resuscitative care. |
| 94.68 | Demonstrate satisfactory performance of psychomotor skills of basic and advanced life support techniques according to the current American Heart Association guidelines or its equivalent, including:<br>94.68.01 cardiopulmonary resuscitation<br>94.68.02 defibrillation<br>94.68.03 synchronized cardioversion<br>94.68.04 transcutaneous pacing |
| 95.0 | **Toxicology:** Demonstrate a complex depth, comprehensive breadth of the assessment and management of toxicology emergencies for all age groups. – The student will be able to: |

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| 95.01 | Describe the epidemiology, incidence, morbidity and mortality of toxic emergencies. |
| 95.02 | Identify the risk factors of toxic emergencies. |
| 95.03 | Discuss the role of the Poison Control Center in the United States. |
| 95.04 | List the most common poisonings by ingestion. |
| 95.05 | Recognize the signs and symptoms related to the most common poisonings by ingestion. |
| 95.06 | Discuss the factors affecting the decision to induce vomiting in a patient with ingested poison. |
| 95.07 | Integrate pathophysiological principles and the assessment findings to formulate a field impression and implement a treatment plan for the patient with the most common poisonings by ingestion. |
| 95.08 | Define poisoning by inhalation. |
| 95.09 | List the most common poisonings by inhalation. |
| 95.10 | Describe the pathophysiology of poisoning by inhalation. |
| 95.11 | Recognize the signs and symptoms related to the most common poisonings by inhalation. |
| 95.12 | Integrate pathophysiological principles and the assessment findings to formulate a field impression and implement a treatment plan for the patient with the most common poisonings by inhalation. |
| 95.13 | Define poisoning by injection. |
| 95.14 | List the most common poisonings by injection. |
| 95.15 | Recognize the signs and symptoms related to the most common poisonings by injection. |
| 95.16 | Integrate pathophysiological principles and the assessment findings to formulate a field impression and implement a treatment plan for the patient with the most common poisonings by injection. |
| 95.17 | Define poisoning by surface absorption. |
| 95.18 | List the most common poisonings by surface absorption. |
| 95.19 | Describe the pathophysiology of poisoning by surface absorption. |
| 95.20 | Recognize the signs and symptoms related to the most common poisonings by surface absorption. |
| 95.21 | Integrate pathophysiological principles and the assessment findings to formulate a field impression and implement a treatment plan for patients with the most common poisonings by surface absorption. |
| 95.22 | Define poisoning by overdose. |
| 95.23 | List the most common poisonings by overdose. |

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| 95.24 | Describe the pathophysiology of poisoning by overdose. |
| 95.25 | Recognize the signs and symptoms related to the most common poisonings by overdose. |
| 95.26 | Integrate pathophysiological principles and the assessment findings to formulate a field impression and implement a treatment plan for patients with the most common poisonings by overdose. |
| 95.27 | Define drug abuse. |
| 95.28 | Define the following terms:<br>95.28.01 Substance or drug abuse<br>95.28.02 Substance or drug dependence<br>95.28.03 Tolerance<br>95.28.04 Withdrawal<br>95.28.05 Addiction |
| 95.29 | List the most commonly abused drugs (both by chemical name and street names). |
| 95.30 | Recognize the signs and symptoms related to the most commonly abused drugs. |
| 95.31 | Integrate pathophysiological principles and the assessment findings to formulate a field impression and implement a treatment plan for patients using the most commonly abused drugs. |
| 95.32 | List the clinical uses, street names, pharmacology, assessment finding and management for patient who have taken the following drugs or been exposed to the following substances: Cocaine, marijuana and cannabis compounds, Amphetamines and amphetamine-like drugs, Barbiturates, Sedative-hypnotics, Cyanide, Narcotics/opiates, cardiac medications, Caustics, common household substances, Drugs abused for sexual purposes/sexual gratification, Carbon monoxide, Alcohols, Hydrocarbons, Psychiatric medications, Newer anti-depressants and serotonin syndromes, Lithium, MAO inhibitors, Non-prescription pain medications, Nonsteroidal anti-inflammatory agents, Salicylates, Acetaminophen, Theophylline, metals, plants, and mushrooms. |

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| | 95.33 Discuss the specific differences and considerations in the pathophysiology, assessment findings and treatment associated with a patient suffering from the following toxins and toxidromes:<br>95.33.01 Carbon Monoxide.<br>95.33.02 Cyanide.<br>95.33.03 Cardiac Medications<br>95.33.04 Organophosphates.<br>95.33.05 Caustic Substances.<br>95.33.06 Hydrocarbons.<br>95.33.07 Hydrofluoric Acid<br>95.33.08 Prescription Medications (pain relievers, psychiatric medications).<br>95.33.09 Alcohol, Alcoholism and withdrawal.<br>95.33.10 Tricyclic Antidepressants<br>95.33.11 Monoamine Oxidase Inhibitors<br>95.33.12 Newer Antidepressants and Serotonin Syndrome<br>95.33.13 Lithium<br>95.33.14 Salicylates<br>95.33.15 Acetaminophens.<br>95.33.16 NSAIDs<br>95.33.17 Theophylline<br>95.33.18 Metals (iron, lead, mercury).<br>95.33.19 Contaminated Food.<br>95.33.20 Poisonous plants and Mushrooms<br>95.33.21 Animal bites, Insect Stings<br>95.33.22 Commonly Abused Drugs |
| | 95.34 Discuss common causative agents, pharmacology, assessment findings and management for a patient with food poisoning. |
| | 95.35 Discuss common offending organisms, pharmacology, assessment findings and management for a patient with a bite or sting. |
| | 95.36 Develop a patient management plan based on field impression in the patient exposed to a toxic substance. |
| | 95.37 Describe the epidemiology of toxicologic disorders and substance abuse. |
| | 95.38 Explain the proper procedures for transporting a patient exposed to a toxic chemical to a receiving facility. |
| | 95.39 Demonstrate the steps for assessment and management of the suspected poisoning or overdose patient. |
| 96.0 | **Respiratory:** Demonstrate a complex depth, comprehensive breadth of the assessment and management of respiratory disorders/emergencies for all age groups. – The student will be able to: |
| | 96.01 Discuss the epidemiology, morbidity, and mortality of respiratory illness in the United States. |
| | 96.02 Define hypoventilation and hyperventilation, and outline the conditions with which they are often associated. |
| | 96.03 Review the anatomy, physiology and functions of the respiratory system. |

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| 96.04 | Explain how gas exchange occurs at the interface of the alveoli and the pulmonary capillary bed. |
| 96.05 | Describe the physiology of respiration including nervous, cardiovascular, muscular, chemical, renal respiratory control mechanisms and ventilation-perfusion mismatch. |
| 96.06 | Discuss those factors that contribute to the formation of a general impression and degree of respiratory distress. |
| 96.07 | Identify breathing patterns that are associated with respiratory distress and neurologic insults and their correlation with the signs of increased work of breathing. |
| 96.08 | Differentiate between normal and abnormal breath sounds and its physiologic significance. |
| 96.09 | Discuss abnormal assessment findings associated with pulmonary diseases and conditions. |
| 96.10 | Explain how to access the adequacy of the circulation of a patient with dyspnea. |
| 96.11 | Discuss the way transport decisions are made for patients with respiratory distress. |
| 96.12 | Describe the interventions available for treating patients with respiratory emergencies. |
| 96.13 | Describe those devices used to monitor patients with respiratory complaints. |
| 96.14 | Discuss those complications which cause the COPD patient to decompensate. |
| 96.15 | Explain the concepts of hypoxic drive and auto-PEEP as they relate to the COPD patient. |
| 96.16 | Discuss the pathophysiology and demonstrate the assessment, and management of patients with the following respiratory conditions:<br>96.16.01 pulmonary infections (upper and lower airway)<br>96.16.02 atelectasis<br>96.16.03 anatomic or foreign body obstruction<br>96.16.04 aspiration<br>96.16.05 asthma<br>96.16.06 emphysema<br>96.16.07 chronic bronchitis<br>96.16.08 spontaneous pneumothorax<br>96.16.09 pleural effusion<br>96.16.10 pulmonary embolism<br>96.16.11 cancer<br>96.16.12 toxic inhalations<br>96.16.13 pulmonary edema<br>96.16.14 acute respiratory distress syndrome (ARDS)<br>96.16.15 Pneumonia<br>96.16.16 Neoplasms of the lung<br>96.16.17 Hyperventilation syndrome |

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| | 96.17 Compare various airway and ventilation techniques used in the management of pulmonary diseases. |
| | 96.18 Review the pharmacological preparations that paramedics use for management of respiratory diseases and conditions. |
| | 96.19 Review the use of equipment used during the physical examination of patients with complaints associated with respiratory diseases and conditions. |
| | 96.20 Describe the variations of respiratory anatomy and the pathophysiology of respiratory disease across the life spans. |
| 97.0 | **Hematology:** Demonstrate a complex depth, foundational breadth of the assessment, and management of hematology disorders/ emergencies for all age groups. – The student will be able to: |
| | 97.01 Identify the role of heredity in the risk for hematologic disorders. |
| | 97.02 Review the anatomy of the hematopoietic system. |
| | 97.03 Describe volume and volume-control related to the hematopoietic system. |
| | 97.04 Describe normal red blood cell (RBC) production, function and destruction. |
| | 97.05 Explain the significance of the hematocrit with respect to red cell size and number. |
| | 97.06 Explain the correlation of the RBC count, hematocrit and hemoglobin values. |
| | 97.07 Define anemia. |
| | 97.08 Recognize medications used to decrease the risk of thrombosis. |
| | 97.09 Describe normal white blood cell (WBC) production, function and destruction. |
| | 97.10 Identify alterations in immunologic response. |
| | 97.11 List the leukocyte disorders. |
| | 97.12 Describe platelets with respect to normal function, life span and numbers. |
| | 97.13 Describe the components of the hemostatic mechanism. |
| | 97.14 Describe the function of coagulation factors, platelets and blood vessels necessary for normal coagulation. |
| | 97.15 Identify blood groups. |
| | 97.16 Identify the components of physical assessment as they relate to the hematologic system. |

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| | 97.17 Discuss the pathophysiology and demonstrate the assessment, and management of patients with the following conditions:<br>97.17.01 Anemia<br>97.17.02 Leukemia<br>97.17.03 Lymphomas<br>97.17.04 Polycythemia<br>97.17.05 Disseminated intravascular coagulopathy<br>97.17.06 Hemophilia<br>97.17.07 Sickle cell disease<br>97.17.08 Multiple myeloma<br>97.17.09 Leukopenia/neutropenia<br>97.17.10 Leukocytosis<br>97.17.11 Thrombocytosis<br>97.17.12 Thrombocytopenia |
| | 97.18 Integrate pathophysiological principles into the assessment of a patient with hematologic disease. |
| 98.0 | **Genitourinary/Renal:** Demonstrate a complex depth, comprehensive breadth of genitourinary and renal emergencies all age groups. – The student will be able to: |
| | 98.01 Describe the epidemiology, incidence, morbidity, mortality, and risk factors of urological emergencies. |
| | 98.02 Review the anatomy and physiology of the organs and structures related to urogenital diseases. |
| | 98.03 Define referred pain and visceral pain as it relates to urology. |
| | 98.04 Describe the technique for performing a comprehensive physical examination of a patient complaining of abdominal pain. |
| | 98.05 Discuss the pathophysiology and demonstrate the assessment, and management of patients of the following urologic and renal conditions:<br>98.05.01 Acute renal failure<br>98.05.02 Chronic renal failure<br>98.05.03 Complications related to hemodialysis and peritoneal dialysis.<br>98.05.04 Renal Calculi<br>98.05.05 Priapism<br>98.05.06 Testicular torsion<br>98.05.07 Urinary tract infection |
| | 98.06 Apply the epidemiology to develop prevention strategies for urological emergencies. |
| | 98.07 Integrate pathophysiological principles to the assessment of a patient with abdominal pain. |
| | 98.08 Synthesize assessment findings and patient history information to accurately differentiate between pain of a urogenital emergency and that of other origins. |
| | 98.09 Develop, execute, and evaluate a treatment plan based on the field impression made in the assessment. |

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| | 98.10 Adapt the scene size-up, primary assessment, patient history, secondary assessment, and use of monitoring technology to meet the needs of patients with complaints and presentations related to urologic and renal disorders. |
| 99.0 | **Gynecology:** Demonstrate a complex depth, comprehensive breadth of the assessment findings and the management of gynecology disorders/emergencies for all age groups. – The student will be able to: |
| | 99.01 Review the anatomic structures and physiology of the female reproductive system. |
| | 99.02 Identify the normal events of the menstrual and ovarian cycle including:<br>99.02.01 Proliferative phase<br>99.02.02 Secretory phase<br>99.02.03 Menstrual phase<br>99.02.04 Menopause |
| | 99.03 Explain how to recognize a gynecological emergency. |
| | 99.04 Discuss the pathophysiology and demonstrate the assessment, and management of patients with specific gynecological emergencies:<br>99.04.01 Infection (including Pelvic inflammatory disease, Bartholin's abscess, and vaginitis/ vulvovaginitis)<br>99.04.02 Ovarian cyst and ruptured ovarian cyst<br>99.04.03 Ovarian torsion<br>99.04.04 Endometriosis<br>99.04.05 Dysfunctional uterine bleeding<br>99.04.06 Prolapsed uterus<br>99.04.07 Vaginal foreign body<br>99.04.08 Vaginal Hemorrhage<br>99.04.09 Ectopic Pregnancy |
| | 99.05 Describe the importance of maintaining a patient's modesty and privacy while still being able to obtain necessary information. |
| | 99.06 Defend the need to provide care for a patient of sexual assault, while still preventing destruction of crime scene information. |
| | 99.07 Demonstrate how to assess a patient with a gynecological complaint. |
| | 99.08 Demonstrate how to provide care for a patient with:<br>99.08.01 Excessive vaginal bleeding<br>99.08.02 Abdominal pain<br>99.08.03 Sexual assault. |
| 100.0 | **Non-Traumatic Musculoskeletal Disorders:** Demonstrate a fundamental depth, foundation breadth of the assessment and management of non-traumatic fractures for all age groups. – The student will be able to: |
| | 100.01 Discuss the epidemiology of non-traumatic musculoskeletal disorders. |

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| 100.02 | Discuss various non-traumatic musculoskeletal disorders such as: |
| 100.02.01 | osteomyelitis and tumors |
| 100.02.02 | disc disorders, lower back pain (cauda equine syndrome, sprain, strain.) |
| 100.02.03 | joint abnormalities |
| 100.02.04 | muscle abnormalities |
| 100.02.05 | overuse syndrome |
| 100.02.06 | soft tissue infections |
| 101.0 | **Diseases of the Eyes, Ears, Nose , and Throat :** Demonstrate a fundamental depth, foundational breadth of the assessment and management of common or major diseases of the eyes, ears, nose and throat for all age groups. – The student will be able to: |
| 101.01 | Relate the anatomy and physiology of the eyes, ears, nose, and throat to the pathophysiology and assessment of patients with diseases of the eyes, ears, nose, and throat. |
| 101.02 | Discuss the pathophysiology and demonstrate the assessment, and management of patients with various eye diseases/injuries including: |
| 101.02.01 | Burns of eye and adnexa |
| 101.02.02 | Conjunctivitis |
| 101.02.03 | Corneal abrasions |
| 101.02.04 | Foreign body |
| 101.02.05 | Inflammation of the eyelid |
| 101.02.06 | Glaucoma |
| 101.02.07 | Hyphema |
| 101.02.08 | Iritis |
| 101.02.09 | Papilledema |
| 101.02.10 | Retinal detachment and defect |
| 101.02.11 | Cellulitis of orbit |
| 101.03 | Discuss the pathophysiology and demonstrate the assessment, and management of patients with various ear diseases/injuries including: |
| 101.03.01 | Foreign body |
| 101.03.02 | Impacted cerumen |
| 101.03.03 | Labyrinthitis |
| 101.03.04 | Meniere's disease |
| 101.03.05 | Otitis external and media |
| 101.03.06 | Perforated tympanic membrane |
| 101.04 | Discuss the pathophysiology and demonstrate the assessment, and management of patients with various nose diseases/injuries including: |
| 101.04.01 | Epistaxis |
| 101.04.02 | Foreign body intrusion |
| 101.04.03 | Rhinitis |
| 101.04.04 | Sinusitis |

101.05 Discuss the pathophysiology and demonstrate the assessment, and management of patients with oropharynx/throat diseases/injuries including:

- 101.05.01 Dentalgia and dental abscess
- 101.05.02 Diseases of oral soft tissue/ Ludwig's angina
- 101.05.03 Foreign body intrusion
- 101.05.04 Epiglottitis
- 101.05.05 Laryngitis
- 101.05.06 Tracheitis
- 101.05.07 Oral candidiasis
- 101.05.08 Peritonsillar abscess
- 101.05.09 Pharyngitis/tonsillitis
- 101.05.10 Temporomandibular joint disorders

102.0 **Shock and Resuscitation:** Demonstrate the integration of a comprehensive knowledge of causes and pathophysiology into the management of shock and respiratory failure. – The student will be able to:

102.01 Describe the epidemiology, including: premorbid and comorbid conditions and prevention strategies, for shock and hemorrhage.

102.02 Review the anatomy and physiology of the cardiovascular and respiratory systems.

102.03 Discuss the physiology of blood flow during normal states, peri-arrest, cardiac arrest and shock.

102.04 Discuss and demonstrate the assessment and management of shock.

102.05 Review and demonstrate the management of external hemorrhage.

102.06 Differentiate between the administration rate and amount of IV fluid in a patient with controlled versus uncontrolled hemorrhage.

102.07 Relate internal hemorrhage to the assessment findings of compensated and decompensated hemorrhagic shock.

102.08 Review the following for the cardiac arrest victim:

- 102.08.01 Epidemiology
- 102.08.02 Pathophysiology
- 102.08.03 Physiology of blood flow during external chest compressions
- 102.08.04 Resuscitation success/research

102.09 Review defibrillation and cardioversion to include manual techniques, automatic and semi-automated devices.

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| 102.10 | Discuss causes, pathophysiology and management of special arrest and peri-arrest conditions:<br>102.10.01 Electrolyte disorders<br>102.10.02 Toxic exposures<br>102.10.03 Drowning<br>102.10.04 Hypothermia<br>102.10.05 Near-Fatal Asthma<br>102.10.06 Anaphylaxis<br>102.10.07 Trauma<br>102.10.08 Pregnancy<br>102.10.09 Electrical Shock and lightning strikes |
| 102.11 | Review post resuscitative care include, temperature regulation, glucose/electrolyte management. |
| 102.12 | Discuss and demonstrate the assessment and management of internal hemorrhage. |
| 102.13 | Discuss the stages and classifications of hemorrhage. |
| 102.14 | Discuss the pathophysiology and demonstrate the assessment and management of the different types of shock. |
| 102.15 | Describe the effects of decreased perfusion at the capillary level. |
| 102.16 | Relate pulse pressure changes to perfusion status. |
| 102.17 | Relate orthostatic vital sign changes to perfusion status. |
| 102.18 | Define and differentiate between compensated and decompensated shock for all types of shock. |
| 102.19 | Discuss the complications of shock. |
| 102.20 | Discuss and differentiate the physiological manifestations of shock across the age continuum. |
| 102.21 | Differentiate between the normotensive, hypotensive, or profoundly hypotensive patient. |
| 102.22 | Differentiate between the administration of fluid in the normotensive, hypotensive, or profoundly hypotensive patient. |
| 102.23 | Develop, execute and evaluate a treatment plan based on the field impression for the hemorrhage or shock patient. |
| 102.24 | Discuss the destination decision for patients in varying types of shock. |
| 102.25 | Demonstrate how to manage a patient suffering from an abnormal heart rate or rhythm. |
| 103.0 | **Trauma Overview:** Demonstrate a complex depth, comprehensive breadth of pathophysiology, assessment and management of the trauma patient for all age groups. – The student will be able to: |
| 103.01 | Discuss the incidence, morbidity, and mortality of blast injuries. |
| 103.02 | Predict blast injuries based on mechanism of injury, including primary, secondary, and tertiary. |

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| | 103.03 Discuss the effects of an explosion within an enclosed space on a patient. |
| | 103.04 Defend the components of a comprehensive trauma system and the levels of trauma centers. |
| | 103.05 Describe the criteria for transport to a trauma center. |
| | 103.06 Explain the rational for utilizing air medic al transport in the trauma patient. |
| | 103.07 Review energy and force as they relate to trauma. |
| | 103.08 Explain laws of motion and energy and apply the kinetic energy equation. |
| | 103.09 Describe the pathophysiology of the head, spine, thorax, and abdomen that result from the above forces. |
| | 103.10 List suspected injuries from the different causes of trauma:<br>103.10.01 Motor vehicles (restrained and un-restrained)<br>103.10.02 Frontal/head on<br>103.10.03 Lateral or side impacts<br>103.10.04 Rear impacts<br>103.10.05 Rotational impacts<br>103.10.06 Rollovers<br>103.10.07 Motorcycles<br>103.10.08 Pedestrian (include the differences for pediatric patient)<br>103.10.09 Falls from heights<br>103.10.10 Penetrating<br>103.10.11 Blasts |
| | 103.11 Discuss and demonstrate the State of Florida's trauma scorecard methodologies as required by Florida Administrative Code and Florida Statute. |
| | 103.12 Explain the National Trauma Triage Protocol of Injured Patients. |
| 104.0 | **Bleeding:** Demonstrate a complex depth, comprehension breadth of pathophysiology, assessment and management of bleeding for all age groups. – The student will be able to: |
| | 104.01 Discuss the compensatory mechanism in hemorrhagic shock. |
| | 104.02 Discuss the administration of medications to assist in the maintenance of homeostasis. |
| | 104.03 Discuss the maintenance of tissue oxygenation in a bleeding patient. |
| | 104.04 Defend and differentiate the type and use of IV fluids for fluid resuscitation in hemorrhagic shock. |
| | 104.05 Demonstrate the different methods/modalities of controlling bleeding. |
| 105.0 | **Chest Trauma:** Demonstrate a complex depth, comprehensive breadth of pathophysiology, assessment, and management of chest trauma for all age groups. – The student will be able to: |

105.01 Review the anatomy and physiology of the organs and structures related to thoracic injuries.

105.02 Review the pathophysiology and Mechanism of Injury (MOI) of the following injuries, including:

- 105.02.01 Myocardial injuries
  - 105.02.01.1 pericardial tamponade
  - 105.02.01.2 myocardial contusion
  - 105.02.01.3 myocardial rupture
- 105.02.02 Vascular injury
  - 105.02.02.1.1 Aortic Dissection
  - 105.02.02.1.2 Pulmonary contusion
- 105.02.03 Hemothorax
- 105.02.04 Pneumothorax
- 105.02.05 Hemopneumothorax
- 105.02.06 Cardiac Tamponade
- 105.02.07 Commotio Cordis
- 105.02.08 Tracheobronchial disruption
- 105.02.09 Diaphragmatic rupture and injury
- 105.02.10 Tramatic asphyxia
- 105.02.11 Rib fracture
- 105.02.12 Flail segment
- 105.02.13 Sternal fracture

105.03 Discuss and demonstrate the assessment and management of the patient for each the following:

- 105.03.01 thoracic injuries.
- 105.03.02 chest wall injuries.
- 105.03.03 lung injuries.
- 105.03.04 myocardial injuries.
- 105.03.05 vascular injuries.
- 105.03.06 diaphragmatic injuries.
- 105.03.07 tracheo-bronchial injuries
- 105.03.08 traumatic asphyxia.

105.04 Identify the need for rapid intervention and transport of the patient for each of the following:

- 105.04.01 thoracic injuries.
- 105.04.02 chest wall injuries.
- 105.04.03 lung injuries.
- 105.04.04 myocardial injuries.
- 105.04.05 vascular injuries.
- 105.04.06 diaphragmatic injuries.
- 105.04.07 esophageal injuries
- 105.04.08 tracheo-bronchial injuries
- 105.04.09 traumatic asphyxia.

105.05 Assist with the insertion of a chest tube and when in place monitor and manage chest tube patency.

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| | 105.06 Discuss and demonstrate the assessment and management of. |
| | 105.07 Integrate the pathophysiological principles to the assessment of a patient with a thoracic injury. |
| | 105.08 Develop a patient management plan based on the field impression. |
| | 105.09 Recognize the need for the use of a thorough assessment to determine a differential diagnosis and treatment plan for thoracic trauma. |
| | 105.10 Demonstrate a clinical assessment for a patient with suspected thoracic trauma. |
| | 105.11 Demonstrate the following techniques of management for thoracic injuries: needle decompression, fracture stabilization, elective intubation, ECG monitoring , oxygenation and ventilation |
| 106.0 | **Abdominal and Genitourinary Trauma:** Demonstrate a complex depth, comprehensive breadth of pathophysiology, assessment, and management of abdominal and genitourinary trauma for all age groups. – The student will be able to: |
| | 106.01 Review the anatomy and physiology of organs and structures related to abdominal injuries. |
| | 106.02 Discuss the abdominal vascular structures. |
| | 106.03 Describe the mechanism of injury for and types of open and closed abdominal and retroperitoneal injuries involving seat belts, penetrating, blunt and evisceration. |
| | 106.04 Discuss and explain the pathophysiology for:<br>106.04.01 Pelvic fractures.<br>106.04.02 Solid organ injuries<br>106.04.03 Hollow organ injuries<br>106.04.04 Abdominal vascular injuries<br>106.04.05 Retroperitoneal space (kidneys)<br>106.04.06 Genitourinary system |
| | 106.05 Describe and demonstrate the assessment and management for:<br>106.05.01 Pelvic fractures.<br>106.05.02 Solid organ injuries<br>106.05.03 Hollow organ injuries<br>106.05.04 Abdominal vascular injuries<br>106.05.05 Retroperitoneal space (kidneys)<br>106.05.06 Genitourinary system |
| | 106.06 Develop a patient management plan for a patient with abdominal injuries, based upon field impression. |
| | 106.07 Describe the epidemiology, including the morbidity/mortality and prevention strategies for abdominal vascular injuries. |
| | 106.08 Integrate the pathophysiological principles to the assessment of a patient with abdominal injuries. |
| | 106.09 Develop and demonstrate the management of a patient with an impaled object, evisceration and shock. |

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| | 106.10 Discuss the variations in symptoms, signs and treatment of patients across the ages. |
| | 106.11 Discuss the emotional treatment associated with abdominal and genitourinary injuries. |
| 107.0 | **Orthopedic Trauma:** Demonstrate a fundamental depth, foundational breadth of pathophysiology, assessment, and management of orthopedic trauma for all age groups. – The student will be able to: |
| | 107.01 Review the anatomy and physiology of the musculoskeletal system, include the healing process. |
| | 107.02 Discuss types of musculoskeletal injuries:<br>107.02.01 fracture (open and closed – epiphyseal, greenstick, and torus)<br>107.02.02 dislocation/fracture,<br>107.02.03 sprain<br>107.02.04 strain |
| | 107.03 Discuss the pathophysiology and potential complications of orthopedic injuries. |
| | 107.04 Discuss and demonstrate the patient assessment techniques and findings for orthopedic injuries. |
| | 107.05 Explain the 6 “P” orthopedic injury assessment. |
| | 107.06 Discuss the general guidelines for management of orthopedic injuries:<br>107.06.01 Heat therapy<br>107.06.02 Cold therapy<br>107.06.03 Splinting<br>107.06.04 Medication administration (analgesics and anxiolytics) |
| | 107.07 Discuss the pathophysiology of open and closed fractures. |
| | 107.08 Discuss and demonstrate the assessment and management of specific orthopedic injuries:<br>107.08.01 Shoulder girdle<br>107.08.02 Humeral fractures<br>107.08.03 Elbow<br>107.08.04 Forearm<br>107.08.05 Wrist and Hand<br>107.08.06 Pelvis<br>107.08.07 Hip<br>107.08.08 Femoral shaft<br>107.08.09 Knee<br>107.08.10 Tibia and Fibula<br>107.08.11 Ankle<br>107.08.12 Calcaneus |

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| | 107.09 Discuss the pathophysiology and management of dislocations:<br>107.09.01 Shoulder girdle<br>107.09.02 Elbow<br>107.09.03 Wrist and hand<br>107.09.04 Hand<br>107.09.05 Hip<br>107.09.06 Knee |
| | 107.10 Discuss the out-of-hospital management of dislocation/fractures, including splinting and realignment. |
| | 107.11 Explain the importance of manipulating a knee dislocation/fracture with an absent distal pulse. |
| | 107.12 Define luxation and subluxation. |
| | 107.13 Discuss and demonstrate the assessment and management of sprains and strains. |
| | 107.14 Review the pathophysiology and mechanism of injury for compartment and crush syndrome. |
| | 107.15 Discuss and demonstrate the assessment and management of compartment and crush syndrome:<br>107.15.01 Destination decision<br>107.15.02 Rhabodomylysis |
| | 107.16 Discuss the pathophysiology, and demonstrate the assessment and management of a tendon injury to the knee (patellar), shoulder and Achilles. |
| | 107.17 Develop a patient management plan for the musculoskeletal injury based on the field impression. |
| | 107.18 Recognize the use of pain management in the treatment of musculoskeletal injuries. |
| 108.0 | **Soft Tissue Trauma:** Demonstrate a complex depth, comprehensive breadth of pathophysiology, assessment, and management of soft tissue trauma for all age groups. – The student will be able to: |
| | 108.01 Review anatomy and physiology and identify the major functions of the integumentary system. |
| | 108.02 Discuss the pathophysiology of soft tissue injuries and the healing process including:<br>108.02.01 Inflammation<br>108.02.02 Epithelialization<br>108.02.03 Neurovascularization<br>108.02.04 Collagen Synthesis<br>108.02.05 Alterations in would healing<br>108.02.06 Abnormal scar formation |
| | 108.03 Differentiate between the following types of closed soft tissue injuries: contusions, hematoma and crush injuries. |
| | 108.04 Review the assessment findings and management associated with closed soft tissue injuries. |
| | 108.05 Differentiate between the following types of open soft tissue injuries: abrasions, lacerations, major arterial lacerations, avulsions, impaled objects, amputations, incisions, crush injuries, blast injuries, and penetrations/punctures. |

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| 108.06 Review the pathophysiology of open wounds. |
| 108.07 Review between the various management techniques for hemorrhage control of open soft tissue injuries, including but not limited to: direct pressure, pressure dressing, and tourniquet application. |
| 108.08 Integrate pathophysiological principles to the assessment of a patient with a soft tissue injury and synthesize and demonstrate a treatment plan. |
| 108.09 Formulate treatment priorities for patients with soft tissue injuries in conjunction with airway/face/neck trauma, thoracic trauma (open/closed), and abdominal trauma. |
| 108.10 Defend the rationale explaining why immediate life-threats must take priority over wound closure. |
| 108.11 Demonstrate the proper use of any Morgan□type lens for irrigation of the eye. |
| 108.12 Describe the epidemiology, including incidence, mortality/ morbidity, risk factors, and prevention strategies for the patient with a burn injury. |
| 108.13 Describe the pathophysiologic complications and systemic complications of a burn injury. |
| 108.14 Review and describe types of burn injuries, including a thermal burn, an inhalation burn, a chemical burn, an electrical burn, and a radiation exposure. |
| 108.15 Review and describe the depth classifications of burn injuries, including a superficial burn, a partial-thickness burn, a full-thickness burn, and other depth classifications described by local protocol. |
| 108.16 Demonstrate the methods for determining body surface area percentage of a burn injury including the "rules of nines," the "rules of palms," and other methods described by local protocol. |
| 108.17 Review and describe the severity of a burn including a minor burn, a moderate burn, a severe burn, and other severity classifications described by local protocol. |
| 108.18 Describe special considerations for a pediatric patient with a burn injury. |
| 108.19 Discuss conditions associated with burn injuries, including:<br>108.19.01 Trauma<br>108.19.02 blast injuries<br>108.19.03 airway compromise<br>108.19.04 respiratory compromise<br>108.19.05 child abuse |
| 108.20 Describe the management of a burn injury, including airway and ventilation, circulation, pharmacological, non-pharmacological, transport considerations, psychological support/ communication strategies, and other management described by local protocol. |
| 108.21 Describe the pathophysiology of a thermal burn injury. |
| 108.22 Describe the pathophysiology and assessment findings of a burn from the following causes:<br>108.22.01 Inhalation<br>108.22.02 Chemicals<br>108.22.03 electricity |

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| | 108.23 Describe and demonstrate the assessment and management of a thermal, inhalation, electrical and chemical burn injury and radiation exposure, including:<br>108.23.01 airway and ventilation<br>108.23.02 circulation<br>108.23.03 pharmacological, non-pharmacological<br>108.23.04 transport considerations<br>108.23.05 psychological support/ communication strategies |
| | 108.24 Describe the types of chemicals and their burning processes and a chemical burn injury to the eye. |
| | 108.25 Describe the pathophysiology of a radiation exposure, including the types and characteristics of ionizing radiation. |
| | 108.26 Identify and describe the severity of a radiation exposure. |
| | 108.27 Develop, execute and evaluate a management plan based on the field impression for the patient with thermal, inhalation, chemical, electrical, and radiation burn injuries. |
| 109.0 | **Head, Face, Neck, and Spine:** Demonstrate a fundamental depth, foundational breadth of head, face, neck, and spine trauma for all age groups. – The student will be able to: |
| | 109.01 Differentiate between facial injuries based on the assessment and history. |
| | 109.02 Relate assessment findings associated with head, facial and neck injuries to pathophysiology. |
| | 109.03 Develop a patient management plan based on patient assessment and a field impression for injuries to the following areas:<br>109.03.01 Eye(s)<br>109.03.02 Nose<br>109.03.03 Throat/neck<br>109.03.04 Face<br>109.03.05 Mouth<br>109.03.06 Ear(s) |
| | 109.04 Formulate a field impression for a patient with an injury for the following areas based on the assessment findings:<br>109.04.01 Eye(s)<br>109.04.02 Nose<br>109.04.03 Throat/neck<br>109.04.04 Face<br>109.04.05 Mouth<br>109.04.06 Ear(s) |
| | 109.05 Distinguish between head injury and brain injury. |
| | 109.06 Define and explain the process involved with each of the levels of increasing ICP. |
| | 109.07 Identify the need for rapid intervention and transport of the patient with a head/brain injury. |
| | 109.08 Describe and demonstrate the assessment andgeneral management of the head/ brain injury patient, including pharmacological and non-pharmacological treatment. |

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| 109.09 Explain the pathophysiology of skull fracture and intracranial hemorrhage, including epidural, subdural, intracerebral, and subarachnoid. |
| 109.10 Develop a management plan for a patient for each of the following conditions:<br>109.10.01 skull fracture<br>109.10.02 cerebral contusion<br>109.10.03 intracranial hemorrhage<br>109.10.04 epidural, subdural, intracerebral, and subarachnoid |
| 109.11 Differentiate between traumatic and non-traumatic spinal injuries based on the assessment and history. |
| 109.12 Describe the pathophysiology of non-traumatic spinal injury, including but not limited to, low back pain, herniated intervertebral disk and spinal cord tumors. |
| 109.13 Describe and demonstrate the assessment and management of non- traumatic spinal injuries. |
| 109.14 Describe the pathophysiology of traumatic spinal injury related to:<br>109.14.01 spinal shock<br>109.14.02 spinal neurogenic shock<br>109.14.03 quadriplegia/paraplegia,<br>109.14.04 Incomplete cord injury/cord syndromes, including central cord syndrome, anterior cord syndrome and Brown-Sequard syndrome. |
| 109.15 Discuss and demonstrate the assessment and management of spine trauma including dislocations/subluxations, fractures, and sprains/strains. |
| 109.16 Develop a management plan for a patient with spine trauma including dislocations/subluxations, fractures, and sprains/strains. |
| 109.17 Develop a patient management plan for both a traumatic and a non-traumatic spinal injury based on the field impression. |
| 109.18 Demonstrate a clinical assessment to determine the proper management modality for a patient for both a suspected traumatic spinal injury and a non-traumatic spinal injury. |
| 109.19 Demonstrate spinal motion restriction of the urgent and non-urgent patient with assessment findings of spinal injury from the following presentations: supine, prone, semi-prone, sitting, standing |
| 109.19.01 Given a scenario, defend whether or not to remove a helmet prior to transport of a patient. |
| 109.20 Demonstrate various methods for stabilization and removal of a helmet. |
| 109.21 Discuss and demonstrate the assessment and management of each of the following:<br>109.21.01 Perforated tympanic membranes.<br>109.21.02 orbital fracture<br>109.21.03 mandibular fractures |
| 109.22 Develop a management plan for a patient for each of the following:<br>109.22.01 Perforated tympanic membranes.<br>109.22.02 orbital fracture<br>109.22.03 mandibular fractures |

110.0 **Nervous System Trauma:** Demonstrate a fundamental depth, foundational breadth of nervous system trauma for all age groups. – The student will be able to:

110.01 Review the anatomy and physiology of the central nervous system, brain, spinal cord, skull and spinal column.

110.02 Discuss pathophysiology of the following nervous system injury including:
- 110.02.01 Cauda Equine syndrome
- 110.02.02 Peripheral nerve injuries
- 110.02.03 Intracerebral hemorrhages
- 110.02.04 Cranial fractures
- 110.02.05 Brain tissue injuries
- 110.02.06 Spinal cord injuries

110.03 Discuss the mechanism of injury which would result in a nervous system injury.

110.04 Discuss the specific assessment (s) for nervous system injuries including:
- 110.04.01 Brown-Sequard syndrome
- 110.04.02 Cauda Equine syndrome
- 110.04.03 Anterior cord syndrome
- 110.04.04 Central cord syndrome
- 110.04.05 Intracerebral hemorrhage

110.05 Discuss the pathophysiology of a traumatic brain injury and spinal shock.

110.06 Develop a management plan for a patient with traumatic brain injury and spinal shock.

110.07 Synthesize and demonstrate the spinal motion restriction technique for the different spinal cord injuries.

110.08 Discuss the research involving the management of nervous system injuries and patient management.

111.0 **Special Considerations in Trauma:** Demonstrate a complex depth, comprehensive breadth of special considerations in trauma for all age groups. – The student will be able to:

111.01 All trauma objectives should integrate the assessment and management differences associated with the following special populations:
- 111.01.01 Pregnancy
- 111.01.02 Pediatric
- 111.01.03 Geriatric
- 111.01.04 Cognitively impaired

112.0 **Environmental Emergencies:** Demonstrate a complex depth, comprehensive breadth of environmental emergencies for all age groups. – The student will be able to:

112.01 Define "environmental emergency”.

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| 112.02 Discuss the pathophysiology and MOI of the following:<br>112.02.01 Drowning and water related incidents<br>112.02.02 temperature-related illness<br>112.02.03 bites and envenomation<br>112.02.04 dysbarism such as high-altitude edema<br>112.02.05 diving injuries<br>112.02.06 lightning (electrical) injury<br>112.02.07 high altitude illness |
| 112.03 Identify environmental factors that may cause illness, exacerbate preexisting illness and complicate treatment or transport decisions. |
| 112.04 Describe several methods of temperature monitoring. |
| 112.05 Identify the components of the body's thermoregulatory mechanism. |
| 112.06 Describe the general process of thermal regulation, including substances used and wastes generated. |
| 112.07 Describe the body's compensatory process for overheating. |
| 112.08 Discuss and list the common forms of heat and cold disorders. |
| 112.09 Discuss the pathophysiology of temperature related illness. |
| 112.10 Relate symptomatic findings to the commonly used terms: heat cramps, heat exhaustion, and heatstroke. |
| 112.11 Describe the contribution of dehydration to the development of heat disorders. |
| 112.12 Describe the differences between classical and exertional heatstroke. |
| 112.13 Define fever and discuss its pathophysiologic mechanism. |
| 112.14 Discuss the role of fluid therapy in the treatment of temperature related emergencies. |
| 112.15 Integrate the pathophysiological principles and the assessment findings to formulate a field impression and implement a treatment plan for the patient who has dehydration, heat exhaustion, or heatstroke. |
| 112.16 Identify differences between mild, severe, chronic and acute hypothermia. |
| 112.17 Integrate pathophysiological principles and the assessment findings to formulate a field impression and implement a treatment plan for the patient who has either mild or severe hypothermia. |
| 112.18 Define frostbite and superficial frostbite (frostnip). |
| 112.19 Integrate pathophysiological principles and the assessment findings to formulate a field impression and implement a treatment plan for the patient with superficial or deep frostbite. |
| 112.20 Define submersion. |

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| 112.21 List signs and symptoms of submersion. |
| 112.22 Describe the lack of significance of fresh versus saltwater immersion, as it relates to submersion. |
| 112.23 Discuss the incidence of "wet" versus "dry" drownings and the differences in their management. |
| 112.24 Integrate pathophysiological principles and assessment findings to formulate a field impression and implement a treatment plan for the submersion patient. |
| 112.25 Define self-contained underwater breathing apparatus (SCUBA). |
| 112.26 Discuss the pathophysiology of diving emergencies including:<br>112.26.01 decompression illness/sickness<br>112.26.02 Altitude Illnesses<br>112.26.03 Pulmonary Over Pressurization Syndrome (POPS)<br>112.26.04 Arterial Gas Embolism |
| 112.27 Relate the gas laws to the pathology of injury in a submersion emergency. |
| 112.28 List signs and symptoms of diving emergencies. |
| 112.29 Describe the function of the Divers Alert Network (DAN) and how its members may aid in the management of diving related illnesses. |
| 112.30 Differentiate among the various treatments and interventions for the management of diving accidents. |
| 112.31 Describe the specific function and benefit of hyperbaric oxygen therapy for the management of diving accidents. |
| 112.32 Integrate pathophysiological principles and assessment findings to formulate a field impression and implement a management plan for the patient who has had a diving accident. |
| 112.33 Develop a patient management plan based on the field impression of the patient affected by an environmental emergency. |
| 112.34 Discuss the pathophysiology of bites and envenomation including:<br>112.34.01 Hymenoptera<br>112.34.02 Snake bites<br>112.34.03 Spider Bites<br>112.34.04 Scorpion stings<br>112.34.05 Tick Bites |
| 112.35 Discuss and demonstrate the assessment and management of:<br>112.35.01 Hymenoptera<br>112.35.02 Snake bites<br>112.35.03 Spider Bites<br>112.35.04 Scorpion stings<br>112.35.05 Tick Bites |
| 112.36 Relate the assessment of bites and envenomation to the immune response and shock. |

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| 113.0 | **Multi-Systems Trauma:** Demonstrate a complex depth, comprehensive breadth of multi-system trauma and blast injuries. – The student will be able to: |
| | 113.01 Demonstrate the priority of care in the multisystem trauma patient |
| | 113.02 Explain which ALS interventions should occur prior to a transport decision and during transport |
| 114.0 | **Obstetrics:** Demonstrate a complex depth, comprehensive breadth of the management of the obstetric patient within the scope of practice of the paramedic. – The student will be able to: |
| | 114.01 Review the anatomic structures and physiology of the reproductive system. |
| | 114.02 Identify and describe the normal events of pregnancy. |
| | 114.03 Describe and demonstrate how to assess an obstetrical patient. |
| | 114.04 Identify and describe the stages of labor and the paramedic's role in each stage. |
| | 114.05 Differentiate between normal and abnormal delivery. |
| | 114.06 Identify and describe complications associated with pregnancy and delivery. |
| | 114.07 State indications of an imminent delivery. |
| | 114.08 Differentiate the management of a patient with predelivery emergencies from a normal delivery. |
| | 114.09 State the steps to assist in the delivery of a neonate including preparation of the mother. |
| | 114.10 Describe and demonstrate how to care for the neonate. |
| | 114.11 Describe how and when to cut the umbilical cord. |
| | 114.12 Discuss the steps in the delivery of the placenta. |
| | 114.13 Demonstrate how to prepare the obstetric patient for delivery. |
| | 114.14 Demonstrate how to assist in the normal cephalic delivery of the fetus. |
| | 114.15 Demonstrate how to deliver the placenta. |
| | 114.16 Describe and demonstrate the management of the mother post-delivery. |
| | 114.17 Describe and demonstrate the procedures for handling abnormal deliveries. |
| | 114.18 Describe and demonstrate the procedures for handling complications of pregnancy including excessive vaginal bleeding, abdominal pain and hypertensive crisis. |
| | 114.19 Describe and demonstrate the procedures for handling maternal complications of labor. |

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| | 114.20 Describe special considerations when meconium is present in amniotic fluid or during delivery. |
| | 114.21 Describe special considerations of a premature baby. |
| 115.0 | **Neonatal Care:** Demonstrate a complex depth, comprehensive breadth of the management of the neonatal patient within the scope of practice of the paramedic. – The student will be able to: |
| | 115.01 Define the term neonate. |
| | 115.02 Identify antepartum factors that can affect childbirth. |
| | 115.03 Identify intrapartum factors that can term the neonate “high risk”. |
| | 115.04 Identify the factors that lead to premature birth and low birth weight neonates. |
| | 115.05 Discuss pulmonary perfusion and asphyxia. |
| | 115.06 Calculate the APGAR score given various neonate situations. |
| | 115.07 Demonstrate appropriate assessment technique for examining a neonate. |
| | 115.08 Determine when ventilatory assistance is appropriate for a neonate. |
| | 115.09 Prepare appropriate ventilation equipment, adjuncts and technique for a neonate. |
| | 115.10 Determine when chest compressions are appropriate for a neonate. |
| | 115.11 Discuss and demonstrate appropriate chest compression techniques for a neonate. |
| | 115.12 Determine when endotracheal intubation is appropriate for a neonate. |
| | 115.13 Discuss and demonstrate appropriate endotracheal intubation techniques for a neonate. |
| | 115.14 Identify complications related to endotracheal intubation for a neonate. |
| | 115.15 Determine when vascular access is indicated for a neonate. |
| | 115.16 Discuss the routes of medication administration for a neonate. |
| | 115.17 Determine when blow-by oxygen delivery is appropriate for a neonate. |
| | 115.18 Demonstrate blow-by oxygen delivery for a neonate. |
| | 115.19 Determine when an orogastric tube should be inserted during positive-pressure ventilation. |
| | 115.20 Demonstrate insertion of an orogastric tube in a neonate. |

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| 115.21 Discuss the signs of hypovolemia in a neonate. |
| 115.22 Demonstrate preparation of a neonate resuscitation area. |
| 115.23 Discuss and demonstrate the initial steps in resuscitation of a neonate. |
| 115.24 Demonstrate appropriate assisted ventilations for a neonate. |
| 115.25 Demonstrate appropriate endotracheal intubation technique for a neonate. |
| 115.26 Demonstrate appropriate chest compression and ventilation technique for a neonate. |
| 115.27 Discuss the effects maternal narcotic usage has on the neonate. |
| 115.28 Discuss appropriate transport guidelines for a neonate. |
| 115.29 Determine appropriate receiving facilities for low and high risk neonates. |
| 115.30 Describe the epidemiology, including the incidence, morbidity/ mortality, risk factors and prevention strategies for meconium aspiration. |
| 115.31 Discuss and demonstrate the assessment and management of meconium aspiration. |
| 115.32 Discuss the pathophysiology of apnea in the neonate. |
| 115.33 Discuss and demonstrate the assessment and management for apnea in the neonate. |
| 115.34 Describe the epidemiology, including the incidence, morbidity/ mortality and risk factors for bradycardia in the neonate. |
| 115.35 Discuss and demonstrate the assessment and management for bradycardia in the neonate. |
| 115.36 Discuss the pathophysiology of premature infants. |
| 115.37 Discuss and demonstrate the assessment and management for premature infants. |
| 115.38 Discuss the pathophysiology of respiratory distress/ cyanosis in the neonate. |
| 115.39 Discuss and demonstrate the assessment and management for respiratory distress/cyanosis in the neonate. |
| 115.40 Discuss the pathophysiology of seizures in the neonate. |
| 115.41 Discuss and demonstrate the assessment and management for seizures in the neonate. |
| 115.42 Discuss the pathophysiology of fever in the neonate. |
| 115.43 Discuss and demonstrate the assessment and management for fever in the neonate. |

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| | 115.44 Discuss the pathophysiology of hypothermia in the neonate. |
| | 115.45 Discuss and demonstrate the assessment and management for hypothermia in the neonate. |
| | 115.46 Discuss the pathophysiology of hypoglycemia in the neonate. |
| | 115.47 Discuss and demonstrate the assessment and management plan for hypoglycemia in the neonate. |
| | 115.48 Discuss the pathophysiology of vomiting in the neonate. |
| | 115.49 Discuss and demonstrate the assessment and management for vomiting in the neonate. |
| | 115.50 Discuss the pathophysiology of common birth injuries in the neonate. |
| | 115.51 Discuss and demonstrate the assessment and management for common birth injuries in the neonate. |
| | 115.52 Discuss the pathophysiology of cardiac arrest in the neonate. |
| | 115.53 Discuss and demonstrate the assessment and management/treatment plan for cardiac arrest in the neonate. |
| | 115.54 Discuss the pathophysiology of post arrest management of the neonate. |
| | 115.55 Discuss and demonstrate the management to stabilize the post arrest neonate. |
| | 115.56 Demonstrate vascular access cannulation techniques for a newborn except umbilical vein/artery access. |
| 116.0 | **Pediatrics:** Demonstrate a complex depth, comprehensive breadth of the management of the pediatric patient within the scope of practice of the paramedic. – The student will be able to: |
| | 116.01 Review key growth and developmental characteristics of infants and children and their implications. |
| | 116.02 Identify key anatomical and physiological characteristics of infants and children and their implications. |
| | 116.03 Describe and demonstrate techniques for successful assessment and treatment of infants and children. |
| | 116.04 Outline differences in adult and childhood anatomy and physiology. |
| | 116.05 Identify "normal" age group related vital signs. |
| | 116.06 Determine appropriate airway adjuncts for infants and children. |
| | 116.07 Discuss complications of improper utilization of airway adjuncts with infants and children. |
| | 116.08 Discuss and demonstrate appropriate ventilation devices for infants and children. |
| | 116.09 Discuss complications of improper utilization of ventilation devices with infants and children. |

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| 116.10 Identify complications of improper endotracheal intubation procedure in infants and children. |
| 116.11 List the indications and methods for gastric decompression for infants and children. |
| 116.12 Differentiate between upper airway obstruction and lower airway disease. |
| 116.13 Describe the general approach to the treatment of children with respiratory distress, failure, or arrest from upper airway obstruction or lower airway disease. |
| 116.14 Discuss the common causes of hypoperfusion in infants and children. |
| 116.15 Identify the major causes of abnormal cardiac rhythmsin infants and pediatric. |
| 116.16 Discuss the primary etiologies of cardiopulmonary arrest in infants and children. |
| 116.17 Discuss the appropriate equipment for vascular access in infants and children. |
| 116.18 Identify complications of vascular access for infants and children. |
| 116.19 Describe the primary etiologies of altered level of consciousness in infants and children. |
| 116.20 Identify common lethal mechanisms of injury in infants and children. |
| 116.21 Identify infant and child trauma patients who require spinal immobilization. |
| 116.22 Discuss and demonstrate fluid management and shock treatment for infant and child trauma patient. |
| 116.23 Determine when pain management and sedation are appropriate for infants and children. |
| 116.24 Define child abuse and child neglect. |
| 116.25 Review mandatory reporting requirements for child abuse/neglect. |
| 116.26 Define children with special health care needs. |
| 116.27 Review basic cardiac life support (CPR) guidelines for infants and children. |
| 116.28 Integrate advanced life support skills with basic cardiac life support for infants and children. |
| 116.29 Discuss the indications, dosage, route of administration and special considerations for medication administration in infants and children. |
| 116.30 Discuss the pathophysiology of respiratory distress/failure in infants and children. |
| 116.31 Discuss and demonstrate the assessment and management for respiratory distress/failure in infants and children. |
| 116.32 Discuss the pathophysiology of hypoperfusion in infants and children. |

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| 116.33 Discuss and demonstrate the assessment and management for hypoperfusion in infants and children. |
| 116.34 Discuss the pathophysiology of cardiac dysrhythmias in infants and children. |
| 116.35 Discuss and demonstrate the assessment and management for cardiac dysrhythmias in infants and children. |
| 116.36 Discuss the pathophysiology of neurological emergencies in infants and children. |
| 116.37 Discuss and demonstrate the assessment and management for neurological emergencies in infants and children. |
| 116.38 Discuss the pathophysiology of trauma in infants and children. |
| 116.39 Discuss and demonstrate the assessment and management for trauma in infants and children. |
| 116.40 Discuss the pathophysiology of abuse and neglect in infants and children. |
| 116.41 Discuss and demonstrate the assessment and management for abuse and neglect in infants and children, including documentation and reporting. |
| 116.42 Discuss the pathophysiology of children with special health care needs including technology assisted children. |
| 116.43 Discuss and demonstrate the assessment and management for children with special health care needs including technology assisted children. |
| 116.44 Describe Sudden Unexplained Infant Death Syndrome (SUIDS), current theories, assessment and management, and the immediate needs of the family. |
| 116.45 Discuss the parent/caregiver responses to the death of an infant or child. |
| 116.46 Discuss the pathophysiology of SUIDS in infants. |
| 116.47 Discuss the assessment findings associated with SUIDS infants. |
| 116.48 Discuss the management/treatment plan for SUIDS in infants. |
| 116.49 Discuss and demonstrate the use of a length-based resuscitation device for determining equipment sizes, drug doses and other pertinent information for a pediatric patient. |
| 116.50 Demonstrate appropriate treatment/management of intubation complications for infants and children. |
| 116.51 Demonstrate appropriate needle cricothyrootomy in infants and children. |
| 116.52 Demonstrate proper placement of a gastric tube in infants and children. |
| 116.53 Demonstrate an appropriate technique for insertion of peripheral intravenous catheters for infants and children. |
| 116.54 Demonstrate an appropriate technique for administration of intramuscular, inhalation, subcutaneous, rectal, endotracheal and oral medication for infants and children. |
| 116.55 Demonstrate an appropriate technique for insertion of an intraosseous line for infants and children. |

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| | 116.56 Demonstrate proper technique for direct larnyngoscopy and foreign body retrieval in infants and children with a completely obstructed airway. |
| | 116.57 Demonstrate appropriate spinal motion restriction techniques for infant and child trauma patients. |
| | 116.58 Demonstrate treatment of infants and children with the following injuries:<br>116.58.01 Head injuries.<br>116.58.02 Chest injuries<br>116.58.03 Abdominal injuries<br>116.58.04 Extremity injuries<br>116.58.05 Burns |
| | 116.59 Demonstrate appropriate parent/caregiver interviewing techniques for infant and child death situations. |
| | 116.60 Demonstrate proper infant and child CPR integrating ALS as appropriate. |
| | 116.61 Demonstrate proper techniques for performing infant and child defibrillation and synchronized cardioversion. |
| 117.0 | **Geriatrics:** Demonstrate a complex depth, comprehensive breadth of the management of the geriatric patient within the scope of practice of the paramedic. – The student will be able to: |
| | 117.01 Discuss common emotional and psychological reactions to aging to include causes and manifestations. |
| | 117.02 Discuss the problems with mobility in the elderly and develop strategies to prevent falls. |
| | 117.03 Discuss factors that may complicate the assessment of the elderly patient. |
| | 117.04 Describe principles that should be employed when assessing and communicating with the elderly. |
| | 117.05 Discuss common complaints of elderly patients. |
| | 117.06 Discuss the impact of polypharmacy and medication non-compliance on patient assessment and management. |
| | 117.07 Discuss medication issues of the elderly including polypharmacy, dosing errors and increased drug sensitivity and toxicology. |
| | 117.08 Discuss and demonstrate the assessment and management of the elderly patient with pulmonary complaints, including:<br>117.08.01 pneumonia<br>117.08.02 chronic obstructive pulmonary diseases<br>117.08.03 pulmonary embolism. |
| | 117.09 Identify the need for intervention and transport of the elderly patient with pulmonary complaints. |

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| 117.10 | Discuss and demonstrate the assessment and management of the elderly patient with complaints related to the cardiovascular system, including:<br>117.10.01 myocardial infarction<br>117.10.02 heart failure<br>117.10.03 dysrhythmias<br>117.10.04 aneurism<br>117.10.05 hypertension. |
| 117.11 | Discuss and demonstrate the assessment and management of the elderly patient with complaints related to the nervous system, including:<br>117.11.01 cerebral vascular disease<br>117.11.02 delirium<br>117.11.03 dementia<br>117.11.04 Alzheimer's disease<br>117.11.05 Parkinson's disease. |
| 117.12 | Describe the epidemiology for endocrine diseases in the elderly, including incidence, morbidity/mortality, risk factors, and prevention strategies for patients with diabetes and thyroid diseases. |
| 117.13 | Discuss and demonstrate the assessment and management of the elderly patient with complaints related to the endocrine system, including diabetes and thyroid diseases. |
| 117.14 | Discuss and demonstrate the assessment and management of the elderly patient with the following:<br>117.14.01 gastrointestinal problems.<br>117.14.02 toxicological problems<br>117.14.03 orthopedic injuries, burns and head injuries<br>117.14.04 drug and alcohol abuse<br>117.14.05 environmental considerations<br>117.14.06 depression or suicide risk factors |
| 117.15 | Demonstrate the ability to adjust assessment to a geriatric patient. |
| 117.16 | Discuss the epidemiology of herpes zoster and inflammatory arthritis in the elderly. |
| 118.0 | **Patients with Special Challenges:** Demonstrate a complex depth, comprehensive breadth of management of the patient with special challenges within the scope of practice of the paramedic. – The student will be able to: |
| 118.01 | Discuss the incidence of abuse and assault. |
| 118.02 | Describe the categories of abuse. |
| 118.03 | Discuss examples of each of the following:<br>118.03.01 Domestic partner abuse<br>118.03.02 elder abuse<br>118.03.03 child abuse<br>118.03.04 sexual assault |

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| 118.04 Describe the characteristics associated with the profile of the typical abuser of:<br>118.04.01 domestic abuser<br>118.04.02 elder abuser<br>118.04.03 child abuser |
| 118.05 Describe the characteristics associated with the profile of the typical assailant of sexual assault. |
| 118.06 Identify the profile of the "at-risk" domestic partner, "at-risk" elder and "at-risk" child. |
| 118.07 Discuss the legal aspects associated with abuse situations including mandatory reporting. |
| 118.08 Discuss the documentation associated with abused and assaulted patient. |
| 118.09 Demonstrate the ability to assess and manage a domestic partner, elder or child abused patient. |
| 118.10 Demonstrate the ability to assess and manage a sexually assaulted patient. |
| 118.11 Recognize the patient with a hearing impairment. |
| 118.12 Anticipate accommodations that may be needed in order to properly manage the patient with a hearing impairment. |
| 118.13 Recognize the patient with a visual impairment. |
| 118.14 Anticipate accommodations that may be needed in order to properly manage the patient with a visual impairment. |
| 118.15 Describe the various etiologies and types of speech impairments. |
| 118.16 Recognize the patient with a speech impairment. |
| 118.17 Describe paraplegia/quadriplegia. |
| 118.18 Describe the various etiologies of mental illness. |
| 118.19 Recognize the presenting signs of the following:<br>118.19.01 mental illnesses<br>118.19.02 Developmental disability<br>118.19.03 Down’s syndrome |
| 118.20 Describe the various etiologies of emotional impairment. |
| 118.21 Recognize the patient with an emotional impairment. |

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| 118.22 Describe the following diseases/illnesses and identify each of their possible presenting signs:<br>118.22.01 Arthritis,<br>118.22.02 Cancer,<br>118.22.03 Cerebral palsy,<br>118.22.04 Cystic fibrosis<br>118.22.05 Multiple sclerosis,<br>118.22.06 Muscular dystrophy,<br>118.22.07 Myasthenia gravis,<br>118.22.08 Poliomyelitis,<br>118.22.09 Spina bifida,<br>118.22.10 patients with a previous head injury |
| 118.23 Identify a patient that is terminally ill. |
| 118.24 Recognize sign(s) of financial impairments. |
| 118.25 Identify the importance of home health care medicine as related to the ALS level of care. |
| 118.26 Differentiate between the role of EMS provider and the role of the home care provider. |
| 118.27 Discuss the aspects of home care that result in enhanced quality of care for a given patient. |
| 118.28 Discuss the aspects of home care that have a potential to become a detriment to the quality of care for a given patient. |
| 118.29 List complications commonly seen in the home care patients, which result in their hospitalization. |
| 118.30 Review hospice care, comfort care and DNR/DNAR as they relate to local practice, law and policy. |
| 118.31 List the stages of the grief process and relate them to an individual in hospice care. |
| 118.32 Given a series of home care scenarios, determine which patients should receive follow-up home care and which should be transported to an emergency care facility. |
| 118.33 Describe airway maintenance devices typically found in the home care environment. |
| 118.34 Describe devices that provide or enhance alveolar ventilation in the home care setting. |
| 118.35 Describe and access indwelling catheters, implanted central IV ports and central line monitoring. |
| 118.36 Describe complications of assessing each of the airway, vascular access, and GI/GU devices described above. |
| 118.37 Describe the indications and contraindications for urinary catheter insertion in an out-of-hospital setting. |
| 118.38 Identify failure of GI/GU devices found in the home care setting. |
| 118.39 Identify failure of ventilatory devices found in the home care setting. |

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| | 118.40 Identify failure of vascular access devices found in the home care setting. |
| | 118.41 Identify and describe the failure of wound drains. |
| | 118.42 Discuss the rights of the terminally ill. |
| | 118.43 Observe for an infected or otherwise complicated venous access point. |
| | 118.44 Demonstrate proper tracheotomy care. |
| | 118.45 Demonstrate the insertion of a new inner cannula and/or the use of an endotracheal tube to temporarily maintain an airway in a tracheostomy patient. |
| | 118.46 Demonstrate how to replace an ostomy tube. |
| 119.0 | **Principles of Safely Operating a Ground Ambulance:** Demonstrate a simple depth, foundational breadth of risks and responsibilities of transport. – The student will be able to: |
| | 119.01 Review the EMT standards and benchmarks for the Principles of Safely Operating a Ground Ambulance. |
| 120.0 | **Incident Management:** Demonstrate a complex depth, comprehensive breadth of establishing and working within the incident management system. – The student will be able to: |
| | 120.01 Review the EMT standards and benchmarks for Incident Management and apply a complex depth and comprehensive breadth of establishing and working within the incident management system. |
| 121.0 | **Multiple Casualty Incidents:** Demonstrate a simple depth, foundational breadth of responding to an emergency during a multiple casualty incident. – The student will be able to: |
| | 121.01 Review the EMT standards and benchmarks for Multiple Casualty Incidents. |
| 122.0 | **Air Medical:** Demonstrate a complex depth, comprehensive breadth of air medical transport risks, needs and advantages. – The student will be able to: |
| | 122.01 Describe the advantages and disadvantages of air medical transport. |
| | 122.02 Identify appropriate reasons for the use of air medical for emergency patient transport. |
| | 122.03 Describe the risks involved with the use of air medical transport. |
| | 122.04 Demonstrate the actions needed to ensure effective and safe ground operations involving air medical response. |
| | 122.05 Demonstrate appropriate communication of information needed for safe and effective interaction between the air medical crew and ground personnel. |
| 123.0 | **Vehicle Extrication:** Demonstrate a simple depth, simple breadth for safe vehicle extrication and use of simple hand tools. – The student will be able to: |
| | 123.01 Review the EMT standards and benchmarks for Vehicle Extrication. |
| 124.0 | **Hazardous Materials Awareness:** Demonstrate a simple depth, simple breadth of risks and responsibilities of operating in a cold zone at a hazardous material or other special incident. – The student will be able to: |

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| | 124.01 Review the EMT standards and benchmarks for Hazardous Materials Awareness. |
| 125.0 | **Mass Casualty Incidents due to Terrorism and Disasters:** Demonstrate a simple depth, simple breadth of risks and responsibilities of operating on the scene of a natural or man- made disaster. – The student will be able to: |
| | 125.01 Review the EMT standards and benchmarks for Mass Casualty Incidents. |
| **Management Option: This option (outcomes 126-136) prepares students for administrative and supervisory positions in the Emergency Medical Services field.** | |
| 126.0 | Demonstrate leadership and administrative skills basic to management emergency medical service systems. – The student will be able to: |
| | 126.01 Describe an emergency medical service system, its scope, national, state and local involvement, and the organizational climate that serves as the setting and framework for managing an emergency medical service system. |
| | 126.02 Identify current trends and perspectives related to the management of health care organizations in general, and emergency medical service systems in particular, and the means by which the application of sound management principles and behavior can facilitate change. |
| | 126.03 Interpret managerial principles, practices and processes and relate them to emergency medical service systems. |
| | 126.04 Identify the role, responsibilities and parameters for the various levels of management within emergency medical service systems. |
| | 126.05 State the control processes and techniques used to ensure that the objectives, strategies, and policies of the emergency medical service system are achieved effectively and efficiently. |
| | 126.06 Relate the various aspects of organizational dynamics (decision making, motivations, leadership, and communication) to the needs and problems of emergency medical service systems. |
| | 126.07 Relate personnel administration practices to the total scope of labor relations, including manpower acquisition, maintenance, and utilization. |
| 127.0 | Interpret federal, state and local laws as they apply to emergency medical service systems. – The student will be able to: |
| | 127.01 List and discuss federal, state and local laws, administrative rules, requirements and recommendations relating to emergency medical service systems. |
| | 127.02 List required standards and procedures for facility and staff. |
| | 127.03 Identify mandatory requirements regarding environmental health and safety standards. |
| | 127.04 Discuss the impact of legislative changes on emergency medical service systems. |
| 128.0 | Demonstrate knowledge of operational and organizational structures of emergency medical service systems. – The student will be able to: |
| | 128.01 Describe the functions and standards of departments in emergency medical service systems. |
| | 128.02 Contrast administrative roles and responsibilities in different types of emergency medical service systems. |
| | 128.03 Describe principles and philosophies of emergency medical service systems. |

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| | 128.04 Identify several basic principles of emergency medical care. |
| | 128.05 Describe communication techniques within health care systems. |
| | 128.06 Utilize state of the art language and terminology when communicating within the emergency medical service system. |
| 129.0 | Demonstrate knowledge of psychological problems and stressors in emergency medical service employees and find appropriate solutions. – The student will be able to: |
| | 129.01 Demonstrate knowledge of the worth and dignity of each employee. |
| | 129.02 Accommodate individual differences, characteristics, and behaviors. |
| | 129.03 Adjust employee schedules, personnel assignments, etc. to provide optimum performance. |
| 130.0 | Demonstrate knowledge of materials and supplies used in emergency medical service systems. – The student will be able to: |
| | 130.01 Evaluate current inventory. |
| | 130.02 Prepare purchase orders with knowledge of current financial status and budgetary constraints. |
| | 130.03 Demonstrate knowledge of optimum quality, price, and quantity. |
| 131.0 | Demonstrate knowledge of occupational safety and health. – The student will be able to: |
| | 131.01 Prepare a plan for employee safety in the event of emergency situations involving business or office facilities. |
| | 131.02 Identify hazardous materials and substances in the workplace. |
| | 131.03 Identify appropriate storage facilities for all substances. |
| | 131.04 Conduct in-service for employees. |
| | 131.05 Respond to employee inquiries and post notices as needed. |
| | 131.06 Implement appropriate Joint Commission patient safety goals. |
| 132.0 | Demonstrate knowledge of appropriate workloads for each employee. – The student will be able to: |
| | 132.01 Prepare job descriptions. |
| | 132.02 Prepare job advertisements and notices. |
| | 132.03 Compute man-hours required for each job position within the emergency medical service system. |
| | 132.04 Identify factors that alter the workload and man-hours computed for each position. |

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| 133.0 | Review, approve and monitor departmental capital and operational budgets. – The student will be able to: |
| 133.01 | Develop capital budget justification format. |
| 133.02 | Delegate capital budget preparation to key managers. |
| 133.03 | Analyze and approve appropriate capital budget items. |
| 133.04 | Develop an operational budget format. |
| 133.05 | Analyze and approve appropriate financial levels in each operational budget. |
| 134.0 | Identify and apply legal reimbursement systems. – The student will be able to: |
| 134.01 | Establish an item charge system that meets reimbursement system requirements. |
| 134.02 | Establish a mechanism for utilization review and quality assurance. |
| 134.03 | Develop an accounts receivable system which monitors and optimizes reimbursement. |
| 135.0 | Comply with accreditation standards of governmental or governmental-appointed agencies and organizations. – The student will be able to: |
| 135.01 | Describe and discuss procedures to meet required standards for emergency medical service systems. |
| 135.02 | Identify the required standards for health care personnel in general and emergency medical service personnel in particular. |
| 135.03 | Develop policies and operational procedures to meet required standards. |
| 135.04 | Establish liaison mechanisms with appropriate accrediting organizations. |
| 136.0 | Demonstrate computer literacy. – The student will be able to: |
| 136.01 | Describe and demonstrate function and operation of basic computer systems. |
| 136.02 | Describe and demonstrate various types of computer systems and their specific applications. |
| 136.03 | Describe and demonstrate general applications such as word processing, database management, spreadsheets, and communications. |
| 136.04 | Describe and discuss special applications such as computer-aided dispatch (CAD), quality assurance, and inventory control. |
| **Education Option: This option (outcomes 137-142) prepares students as trainers and/or instructors in the EMS field.** | |
| 137.0 | Demonstrate knowledge of basic teaching methods, learning and educational psychology. – The student will be able to: |
| 137.01 | Describe and demonstrate various methods of student learning. |

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| | 137.02 Describe and demonstrate various methods of teaching as they apply to student learning techniques. |
| | 137.03 Describe and demonstrate competency-based education (CBE). |
| | 137.04 Describe and demonstrate short-term and long-term memory and the implications of each on the student learning process. |
| | 137.05 Describe and demonstrate various educational psychologies. |
| 138.0 | Describe and discuss curriculum design and development. – The student will be able to: |
| | 138.01 Develop and discuss needs assessments. |
| | 138.02 Develop a task analysis. |
| | 138.03 Develop student behavioral objectives. |
| | 138.04 Design and develop competency-based curriculum. |
| | 138.05 Integrate curriculum with current occupational responsibilities. |
| | 138.06 Perform on-going curriculum review and development. |
| 139.0 | Demonstrate appropriate measurement and evaluation skills. – The student will be able to: |
| | 139.01 Construct appropriate objective tests commensurate with curriculum. |
| | 139.02 Develop effective measurement instruments for student performance in clinical settings. |
| | 139.03 Develop effective evaluation tools for evaluating student performance. |
| | 139.04 Record, monitor, and provide feedback to student regarding student progress. |
| 140.0 | Demonstrate mastery of required technical skills. – The student will be able to: |
| | 140.01 Demonstrate performance of basic life support instructor skills. |
| | 140.02 Demonstrate performance of advanced life support instructor skills. |
| | 140.03 Demonstrate performance of trauma life support instructor skills. |
| | 140.04 Demonstrate performance of other medical skills appropriate to the emergency medical services curriculum. |
| 141.0 | Demonstrate classroom management skills. – The student will be able to: |
| | 141.01 Demonstrate and apply effective leadership skills. |

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| 141.02 | Demonstrate and apply effective motivational skills. |
| 141.03 | Demonstrate and apply effective organizational skills. |
| 141.04 | Demonstrate and apply effective disciplinary skill. |
| 142.0 | Demonstrate computer literacy. – The student will be able to: |
| 142.01 | Describe and discuss various types of computer systems and their specific applications as they relate to Emergency Medical Services. |
| 142.02 | Describe and discuss applications such as word processing, database management, spreadsheets, communications, and computer-aided instruction (CAI) as they relate to Emergency Medical Services. |

## Additional Information

### Laboratory Activities

Laboratory investigations that include scientific inquiry, research, measurement, problem solving, emerging technologies, tools and equipment, as well as, experimental, quality, and safety procedures are an integral part of this career and technical program/course. Laboratory investigations benefit all students by developing an understanding of the complexity and ambiguity of empirical work, as well as the skills required to manage, operate, calibrate and troubleshoot equipment/tools used to make observations. Students understand measurement error; and have the skills to aggregate, interpret, and present the resulting data. Equipment and supplies should be provided to enhance hands-on experiences for students.

### Special Notes

The following ATD program has been approved by the Florida State Board of Education for statewide articulation credit into this degree program.

Emergency Medical Technician-ATD (0351090403/0351090404) – 11 credits (This program will be daggered beginning in 2016-2017 school year.)
Emergency Medical Technician –ATD (New) (0351090413/0351090408) – 12 credits

The following industry certifications have been approved by the Florida State Board of Education for statewide articulation credit into this degree program.

Emergency Medical Technician (NREMT001) – 9 credits

Through the use of common core courses and the addition of several optional courses, this program is designed to prepare students for employment in the following occupational areas:

Education Option: Field Training Officer, In-service Training Officer, or EMS Instructor, **SOC Code 25-1194 Vocational Education Teachers, Postsecondary** or to provide supplemental training for persons previously or currently employed in these occupations. The program must be approved by the Department of Health, Office of Emergency Medical Services (EMS); and the curriculum must adhere to the US Department of Transportation (DOT) National EMS Educational Standards for both the EMT and Paramedic.

Management Option: EMS Coordinator, EMS Supervisor, EMS Shift Supervisor, Operations Manager, EMS Manager, or Director of EMS Services. SOC Code 11-1021 (General and Operations Managers).

### Career and Technical Student Organization (CTSO)

HOSA: Future Health Professionals is the intercurricular career and technical student organization providing leadership training and reinforcing specific career and technical skills. Career and Technical Student Organizations provide activities for students as an integral part of the instruction offered.

## Accommodations

Federal and state legislation requires the provision of accommodations for students with disabilities to meet individual needs and ensure equal access. Postsecondary students with disabilities must self-identify, present documentation, request accommodations if needed, and develop a plan with their counselor and/or instructors. Accommodations received in postsecondary education may differ from those received in secondary education. Accommodations change the way the student is instructed. Students with disabilities may need accommodations in such areas as instructional methods and materials, assignments and assessments, time demands and schedules, learning environment, assistive technology and special communication systems. Documentation of the accommodations requested and provided should be maintained in a confidential file.

## Certificate Programs

A College Credit Certificate consists of a program of instruction of less than sixty (60) credits of college-level courses, which is part of an AS or AAS degree program and prepares students for entry into employment (Rule 6A-14.030, F.A.C.). This AS degree program includes the following College Credit Certificates:

Paramedic (0351090405) – 42 credit hours
Emergency Medical Technician (0351090400) – 11 credit hours (This program will be daggered beginning in 2016-2017 school year.)
Emergency Medical Technician (New) (0351090415) – 12 credit hours

Standards for the above certificate programs are contained in separate curriculum frameworks.

**Florida Department of Education**
**Curriculum Framework**

**Program Title:** **Nuclear Medicine Technology**
**Career Cluster:** **Health Science**

| AS | |
|---|---|
| CIP Number | 1351090502 |
| Program Type | College Credit |
| Standard Length | 75 credit hours |
| CTSO | HOSA: Future Health Professionals |
| SOC Codes (all applicable) | 29-2033 Nuclear Medicine Technologists |

## Purpose

This program offers a sequence of courses that provides coherent and rigorous content aligned with challenging academic standards and relevant technical knowledge and skills needed to prepare for further education and careers in the Health Science career cluster; provides technical skill proficiency, and includes competency-based applied learning that contributes to the academic knowledge, higher-order reasoning and problem-solving skills, work attitudes, general employability skills, technical skills, and occupation-specific skills, and knowledge of all aspects of Health Science career cluster.

This program is designed to prepare students for employment as radiologic technologists or nuclear medicine technologists, SOC Code-29-2033 (Nuclear Medicine Technologists) or to provide supplemental training for persons previously or currently employed in this occupation.

The content includes but is not limited to the utilization of radioactive materials for diagnostic and therapeutic procedures, patient care, administrative functions, health and safety including CPR.

**Additional Information** relevant to this Career and Technical Education (CTE) program is provided at the end of this document.

## Program Structure

This program is a planned sequence of instruction consisting of 75 credit hours.

## Regulated Programs

**The program must also be approved by the Department of Health Bureau of Radiation Control.**

The graduate is eligible to be licensed in Florida as a Certified Radiologic Technologist - Nuclear Medicine (i.e., a Nuclear Medicine Technologist). As specified in Chapter 468, Part IV and 64E-FAC. All accredited NMT programs which are recognized and accepted by either the American Registry of Radiologic Technologists (ARRT), or the Nuclear Medicine Technology Certification Board (NMTCB), are approved by the Department of Health.

Students who complete the program will be eligible to apply to the Department of Health for the required state Nuclear Medicine Technologist license. For further information contact:

Department of Health
MQA Radiologic Technology Program
4052 Bald Cypress Way, Bin #C85
Tallahassee, FL 32399
Phone: (850) 245-4910
Fax: (850) 921-6365

Students who complete the program will be eligible to make an application to take one or both of the National Registry examination. For further information contact:

American Registry of Radiologic Technologists (ARRT)
1255 Northland Drive
St. Paul, MN 55120-1155
(612) 687-0048

Or

Nuclear Medicine Technology Certification Board (NMTCB)
3558 Habersham at Northlake
Building I
Tucker, GA 30084
Toll Free: (800) 659-3953

**Standards**

After successfully completing this program, the student will be able to perform the following:

01.0 Demonstrate knowledge of the health care delivery system and health occupations.
02.0 Demonstrate the ability to communicate and use interpersonal skills effectively.
03.0 Demonstrate legal and ethical responsibilities.
04.0 Demonstrate an understanding of and apply wellness and disease concepts.
05.0 Recognize and practice safety and security procedures.
06.0 Recognize and respond to emergency situations.
07.0 Recognize and practice infection control procedures.
08.0 Demonstrate an understanding of information technology applications in healthcare.
09.0 Demonstrate employability skills.
10.0 Demonstrate knowledge of blood borne diseases, including HIV/AIDS.
11.0 Apply basic math and science skills.
12.0 Practice radiation safety.
13.0 Practice basic radio-pharmacy.
14.0 Calculate doses and administer radiopharmaceuticals and interventional pharmaceuticals.
15.0 Perform "in vitro"/"in vivo" non-imaging procedures.
16.0 Perform imaging procedures.
17.0 Practice quality control.

**Florida Department of Education**
**Student Performance Standards**

**Program Title:** **Nuclear Medicine Technology**
**CIP Number:** **1351090502**
**Program Length:** **75 credit hours**
**SOC Code(s):** **29-2033**

Standards 1-11 are referred to as the **Health Science Core** and are required standards in this program. Secondary and Postsecondary students completing the health science core will not have to repeat the core in any other health science program in which it is a part. When the recommended sequence is followed, the structure allows students to complete at specified points for employment or remain for advanced training or cross-training.

To ensure consistency whenever these courses are offered, the health science core standards (1-11) have been placed in a separate document.

| **Refer to Rule 6A-14.030 (4) F.A.C., for the minimum amount of general education coursework required in the Associate of Science (AS) degree. At the completion of this program, the student will be able to:** |
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| **Nuclear Medicine Technology: (12-17)** |
| 12.0 Practice radiation safety. – The student will be able to: |
| 12.01 Maintain compliance with local, state and federal regulations. |
| 12.02 Follow appropriate protection procedures for patients, coworkers, and public. |
| 12.03 Follow approved procedures for identifying and labeling radioactive material and radiopharmaceutical doses. |
| 12.04 Perform area surveys and wipe tests. |
| 12.05 Dispose of radioactive wastes appropriately and in accordance with local, state, and federal regulations. |
| 12.06 Apply and interpret proper personnel monitoring of radiation exposure. |
| 12.07 Perform decontamination procedures. |
| 12.08 Implement appropriate accrediting/regulatory agency guidelines. |
| 13.0 Practice basic radio-pharmacy. – The student will be able to: |
| 13.01 Maintain radiopharmaceutical laboratory records and materials. |

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| | 13.02 Perform generatoreluate. |
| | 13.03 Prepare radiopharmaceuticals including quality control tests. |
| | 13.04 Demonstrate understanding of ordering radiopharmaceuticals in appropriate dosage and effective time frame. |
| 14.0 | Calculate doses and administer radiopharmaceutical and interventional pharmaceuticals. – The student will be able to: |
| | 14.01 Perform dose calibrator quality control tests. |
| | 14.02 Calculate the activity and volume of dose. |
| | 14.03 Assay radiopharmaceuticals. |
| | 14.04 Properly administer dose using appropriate route. |
| | 14.05 Calculate, prepare, and administer radiopharmaceuticals and interventional pharmaceuticals. |
| | 14.06 Perform venipuncture accurately and efficiently. |
| | 14.07 Participate in the tagging of blood cells. |
| | 14.08 Maintain records of administrations/preparations. |
| | 14.09 Recognize and follow precautions and contraindications of medications including radiopharmaceuticals. |
| | 14.10 Evaluate patient history. |
| | 14.11 Evaluate patient status/needs and care for them accordingly, including treatment for adverse effects. |
| | 14.12 Document and maintain records according to facility protocol. |
| 15.0 | Perform "in vitro"/"in vivo" non-imaging procedures. – The student will be able to: |
| | 15.01 Operate laboratory equipment. |
| | 15.02 Accurately and efficiently collect specimens in accordance with facility protocol. |
| | 15.03 Operate radiation detection equipment. |
| | 15.04 Perform radioassays and calculations. |
| 16.0 | Perform imaging procedures. – The student will be able to: |
| | 16.01 Verify order, history, and protocol for patient prior to proceeding. |

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| 16.02 | Verify identity of patient in accordance with facility protocol. |
| 16.03 | Explain procedure and prepare patient for procedure. |
| 16.04 | Select proper acquisition parameters to obtain planar, SPECT/CT, and PET/CT images. |
| 16.05 | Appropriately perform planar, SPECT/CT, and PET/CT data processing using reconstruction techniques. |
| 16.06 | Properly prepare images to be sent to physician according to facility protocol. |
| 16.07 | Perform PACS procedures according to facility protocol. |
| 16.08 | Maintain appropriate records. |
| 17.0 | Practice quality control. – The student will be able to: |
| 17.01 | Perform scheduled quality control testing of laboratory and imaging equipment. |
| 17.02 | Operate scintillation detectors. |
| 17.03 | Operate and perform daily quality control on gas-filled detectors. |
| 17.04 | Maintain a quality assurance program according to accrediting and regulatory agencies. |

## Additional Information

### Laboratory Activities

Laboratory investigations that include scientific inquiry, research, measurement, problem solving, emerging technologies, tools and equipment, as well as, experimental, quality, and safety procedures are an integral part of this career and technical program/course. Laboratory investigations benefit all students by developing an understanding of the complexity and ambiguity of empirical work, as well as the skills required to manage, operate, calibrate and troubleshoot equipment/tools used to make observations. Students understand measurement error; and have the skills to aggregate, interpret, and present the resulting data. Equipment and supplies should be provided to enhance hands-on experiences for students.

### Special Notes

This program meets the Department of Health's education requirements for HIV/AIDS, Domestic Violence and Prevention of Medical Errors. Although not a requirement for initial licensure, it is a requirement for renewal, therefore the instructor may provide a certificate for renewal purposes to the student verifying these requirements have been met.

If students in this program are seeking a licensure, certificate or registration through the Department of Health, please refer to 456.0635 F.S. for more information on disqualification for a license, certificate, or registration through the Department of Health.

The program must be accredited by the:

Joint Review Committee on Educational Programs in Nuclear Medicine Technology
2000 W. Danforth Rd., Ste 130 #203
Edmond OK 73003
Tel: (405) 285-0546
Fax: (405) 285-0579

Or

Southern Association of Colleges and Schools (SACS)
2520 Northwinds Parkway
Suite 600
Alpharetta, GA 30009
888-41ED NOW (888-413-3669)

The nuclear medicine technologist performs patient care with understanding of patients' special needs, fears and concerns and recognizes changes in patient condition. Limiting the exposure of the patient and other health care workers to minimal levels of radiation is of paramount importance.

A fundamental knowledge and understanding of the physical and biological sciences, including radiation biology and protection, as well as radiopharmaceuticals "in vivo" and "in vitro", is essential: nuclear physics, biochemistry, immunology, physiology and an introduction to computer application/operation with data manipulation must be included.

Students are encouraged to become members of their appropriate professional organizations such as the Society of Nuclear Medicine – Technologist Section (SNM-TS), Florida Nuclear Medicine Technologists, Inc. (FNMT), the American Society of Radiologic Technologists (ASRT), Florida Society of Radiologic Technologists (FSRT) and its local affiliate.

Outcomes 01-11 are referred to as the Health Careers Core and do not have to be completed if the student has previously completed the Core in another health science program. The Core should be taken first or concurrently with the first course in the program. Following the successful completion of the core, the National Health Care Foundation Skill Standards Assessment with instructor approval and the completion of a portfolio.

**Career and Technical Student Organization (CTSO)**

HOSA: Future Health Professionals is the intercurricular career and technical student organization providing leadership training and reinforcing specific career and technical skills. Career and Technical Student Organizations provide activities for students as an integral part of the instruction offered.

**Accommodations**

Federal and state legislation requires the provision of accommodations for students with disabilities to meet individual needs and ensure equal access. Postsecondary students with disabilities must self-identify, present documentation, request accommodations if needed, and develop a plan with their counselor and/or instructors. Accommodations received in postsecondary education may differ from those received in secondary education. Accommodations change the way the student is instructed. Students with disabilities may need accommodations in such areas as instructional methods and materials, assignments and assessments, time demands and schedules, learning environment, assistive technology and special communication systems. Documentation of the accommodations requested and provided should be maintained in a confidential file.

**Certificate Programs**

A College Credit Certificate consists of a program of instruction of less than sixty (60) credits of college-level courses, which is part of an AS or AAS degree program and prepares students for entry into employment (Rule 6A-14.030, F.A.C.). This AS degree program includes the following College Credit Certificates:

Nuclear Medicine Technology Specialist (0351090503) – 48 credit hours

Standards for the above certificate programs are contained in separate curriculum frameworks.

**Florida Department of Education**
**Curriculum Framework**

**Program Title:** **Radiography**
**Career Cluster:** **Health Science**

| AS | |
|---|---|
| CIP Number | 1351090700 |
| Program Type | College Credit |
| Standard Length | 77 credit hours |
| CTSO | HOSA: Future Health Professionals |
| SOC Codes (all applicable) | 29-2034 Radiologic Technologists |

## Purpose

This program offers a sequence of courses that provides coherent and rigorous content aligned with challenging academic standards and relevant technical knowledge and skills needed to prepare for further education and careers in the Health Science career cluster; provides technical skill proficiency, and includes competency-based applied learning that contributes to the academic knowledge, higher-order reasoning and problem-solving skills, work attitudes, general employability skills, technical skills, and occupation-specific skills, and knowledge of all aspects of Health Science career cluster.

The purpose of this program is to prepare students for employment as Radiographers, Radiologic Technologists SOC Code 29-2034 (Radiologic Technologists/Technicians) or to provide supplemental training for persons previously or presently employed in these occupations.

The content includes but is not limited to introduction to radiography, medical ethics and law, medical terminology, methods of patient care, human structure and function, radiographic procedures, principles of radiographic exposure, imaging equipment, image processing, radiation physics, principles of radiation protection, principles of radiation biology, radiographic pathology, introduction to quality assurance, introduction to computer literacy, and clinical education. The curriculum includes a plan for well-structured competency based clinical education.

**Additional Information** relevant to this Career and Technical Education (CTE) program is provided at the end of this document.

## Program Structure

This program is a planned sequence of instruction consisting of 77 credit hours.

**Regulated Programs**

**The program must be approved by the Department of Health, Bureau of Radiation Control so that the graduate is eligible for licensure in Florida as a Certified Radiologic Technologist. As specified in Chapter 468 Part IV F.S. and Chapter 64E-3 F.A.C.**

The program must be accredited. by the Joint Review Committee on Education in Radiologic Technology (JRCERT), 20 North Wacker Drive, Suite 900, Chicago, Illinois 60606-2901, (312) 704-5300, or by the Southern Association of Colleges and Schools.

Program completers will be eligible to make an application to take the National Registry examination. For further information contact:

American Registry of Radiologic Technologists (ARRT)
1255 Northland Drive
St. Paul, MN 55120-1155
(612) 687-0048

**Standards**

After successfully completing this program, the student will be able to perform the following:

01.0 Demonstrate a functional knowledge of medical terminology required in radiologic science.
02.0 Convey an understanding of the ethics and laws that impact Radiologic Sciences at both the state and federal levels.
03.0 Demonstrate introductory knowledge of radiologic science and the health care system.
04.0 Demonstrate knowledge of and perform patient care procedures required in radiologic sciences.
05.0 Demonstrate an understanding of pharmacology and venipuncture procedures as it relates to radiologic science.
06.0 Demonstrate proficiency in the skills, techniques and knowledge required for image analysis.
07.0 Demonstrate proficiency in the skills, techniques and knowledge required to operate imaging equipment.
08.0 Convey an understanding of the principles of imaging and the various factors that contribute to accuracy including x-ray production, image formation, and factors related to radiographic quality.
09.0 Demonstrate an understanding of the structure and function of the human body with a focus on the muscular, endocrine, respiratory, urinary and appendicular skeletal systems.
10.0 Demonstrate proficiency in the skills, techniques and knowledge required to perform accurate radiographic procedures.
11.0 Demonstrate the proficiency in the skills and knowledge required of clinical practice.
12.0 Convey an understanding of the principles of imaging and the various factors that contribute to accuracy including image acquisition and processing, scatter radiation control, and image evaluation.
13.0 Demonstrate an understanding of the concepts and equipment required of digital image acquisition and display.
14.0 Demonstrate an understanding of the structure and function of the human body with a focus on the axial skeletal system.
15.0 Demonstrate an understanding of the structure and function of the human body with a focus on the circulatory/cardiovascular, digestive and reproductive systems.
16.0 Demonstrate proficiency in the skills, techniques and knowledge required to perform accurate fluoroscopic procedures.
17.0 Demonstrate an understanding of the structure and function of the human body with a focus on the nervous system.
18.0 Demonstrate introductory knowledge of computed tomography.
19.0 Demonstrate appropriate venipuncture technique.
20.0 Demonstrate an understanding of radiographic pathology.
21.0 Demonstrate an understanding of how radiation is produced and the characteristics of different classifications of radiation.
22.0 Demonstrate an understanding of the structure and function of the human body including the immune system and chemical composition of the body.
23.0 Demonstrate an understanding of the integral aspects of radiation biology required of a radiographer.
24.0 Convey the importance for proper radiation protection and the precautions radiographers should take to prevent unnecessary exposure to themselves and patients.

**Florida Department of Education**
**Student Performance Standards**

**Program Title:** **Radiography**
**CIP Number:** **1351090700**
**Program Length:** **77 credit hours**
**SOC Code(s):** **29-2034**



| **Refer to Rule 6A-14.030 (4) F.A.C., for the minimum amount of general education coursework required in the Associate of Science (AS) degree. At the completion of this program, the student will be able to:** | |
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| 01.0 | Demonstrate a functional knowledge of medical terminology required in radiologic science. – The student will be able to: |
| 01.01 | Apply the word-building process for medical terminology. |
| 01.02 | Interpret medical abbreviations and symbols. |
| 01.03 | Critique orders and requests. |
| 01.04 | Define medical imaging and radiation. |
| 01.05 | Translate medical terms, abbreviations and symbols into layman's terms. |
| 02.0 | Convey an understanding of the ethics and laws that impact Radiologic Sciences at both the state and federal levels. – The student will be able to: |
| 02.01 | Discuss the origins of medical ethics. |
| 02.02 | Apply medical/professional ethics in the context of a broader societal ethic. |
| 02.03 | Explain the role of ethical behavior in health care delivery. |
| 02.04 | Explain concepts of personal honesty, integrity, accountability, competence and compassion as ethical imperatives in health care. |
| 02.05 | Identify legal and professional standards and relate each to practice in health professions. |
| 02.06 | Identify specific situations and conditions that give rise to ethical dilemmas in health care. |
| 02.07 | Explain select concepts embodied in the principles of patients' rights, the doctrine of informed (patient) consent and other issues related to patients' rights. |

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| | 02.08 | Explain the legal implications of professional liability, malpractice, professional negligence, and other legal doctrines applicable to professional practice. |
| | 02.09 | Describe the importance of timely, accurate, and comprehensive methods of documentation as a legal and ethical imperative. |
| | 02.10 | Explore theoretical situations and questions relating to the ethics of health care delivery. |
| | 02.11 | Explain legal terms, principles, doctrines and laws specific to the radiologic sciences. |
| | 02.12 | Outline the conditions necessary for a valid malpractice claim in medical imaging. |
| | 02.13 | Describe institutional and professional liability protection typically available to the radiographer. |
| | 02.14 | Describe the components and implications of informed consent. |
| | 02.15 | Identify standards for informed consent and disclosure of protected health information (PHI). |
| | 02.16 | Describe how consent forms are used relative to specific radiographic procedures. |
| | 02.17 | Differentiate between civil and criminal liability. |
| | 02.18 | Define tort and explain the differences between intentional and unintentional torts. |
| 03.0 | Demonstrate introductory knowledge of radiologic science and the health care system. – The student will be able to: | |
| | 03.01 | Identify health science professions that participate in the total health care of the patient. |
| | 03.02 | Identify various settings involved in the delivery of health care. |
| | 03.03 | Discuss the reimbursement/payment options for health care services. |
| | 03.04 | Discuss the role and value of a mission statement to the operation of a healthcare institution. |
| | 03.05 | Describe relationships and interdependencies of departments within a health care institution. |
| | 03.06 | Discuss the responsibilities and relationships of all personnel in the radiology department. |
| | 03.07 | Differentiate between quality assurance (QA) and continuous quality improvement (CQI). |
| | 03.08 | Differentiate between accreditation types. |
| | 03.09 | Define credentialing, national certification, registration, and state licensure. |
| | 03.10 | Discuss career opportunities and advancement for the radiographer. |
| | 03.11 | Identify the benefits of continuing education as related to improved patient care and professional development. |

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| | 03.12 | Describe the types, purpose, and functions of professional organizations (ASRT). |
| | 03.13 | Identify educational and certifications requirements. |
| | 03.14 | Identify state and federal regulatory agencies. |
| 04.0 | Demonstrate knowledge of and perform patient care procedures required in radiologic sciences. – The student will be able to: | |
| | 04.01 | Identify the responsibilities of the health care facility and members of the health care team. |
| | 04.02 | List the general responsibilities of the radiographer. |
| | 04.03 | Describe the practice standards for the radiographer as defined by the ASRT and state licensure. |
| | 04.04 | Differentiate between culture and ethnicity. |
| | 04.05 | Explain perceptions of dying and death from the viewpoint of both patient and radiographer. |
| | 04.06 | Identify methods for determining the correct patient for a given procedure. |
| | 04.07 | Explain the use of various communication models. |
| | 04.08 | Explain specific aspects of a radiographic procedure to the patient. |
| | 04.09 | Demonstrate correct principles of body mechanics applicable to patient care. |
| | 04.10 | Demonstrate techniques for specific types of patient transfer. |
| | 04.11 | Demonstrate select procedures to turn patients who have various health conditions. |
| | 04.12 | Describe immobilization techniques for various types of procedures and patient conditions. |
| | 04.13 | Describe specific patient safety measures and concerns. |
| | 04.14 | Explain the purpose, legal considerations and procedures for incident reporting. |
| | 04.15 | Describe methods to evaluate patient physical status. |
| | 04.16 | List the information to be collected prior to a patient examination. |
| | 04.17 | Describe vital signs and lab values used to assess the condition of the patient, including sites for assessment and normal values. |
| | 04.18 | Define terms related to infection control. |
| | 04.19 | Describe the importance of standard precautions and isolation procedures, including sources and modes of transmission of infection and disease and institutional control procedures. |

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| 04.20 | Identify symptoms related to specific emergency situations. |
| 04.21 | Describe the institution's emergency medical code system and the role of the student during a medical emergency. |
| 04.22 | Explain the age-specific considerations necessary when performing radiographic procedures. |
| 04.23 | Describe appropriate procedures for management of various types of trauma situations. |
| 04.24 | Describe the symptoms and medical interventions for a patient with a contrast agent reaction. |
| 04.25 | Explain the role of the radiographer in patient education. |
| 04.26 | Describe the patient preparation for contrast studies. |
| 04.27 | Identify specific types of tubes, lines, catheters and collection devices. |
| 04.28 | Outline the steps in the operation and maintenance of suction equipment. |
| 04.29 | Outline the steps in the operation and maintenance of oxygen equipment and demonstrate proper use. |
| 04.30 | Demonstrate competency in basic life support (BLS). |
| 04.31 | Describe the steps in performing various mobile procedures. |
| 04.32 | Describe the special problems faced in performing procedures on a patient with a tracheotomy and specific tubes, drains, and catheters. |
| 04.33 | Describe the procedure for producing diagnostic images in the surgical suite. |
| 04.34 | Explain the appropriate radiation protection required when performing mobile/surgical radiography. |
| 05.0 | Demonstrate an understanding of pharmacology and venipuncture procedures as it relates to radiologic science. – The student will be able to: |
| 05.01 | Distinguish between the chemical, generic and trade names of various drugs. |
| 05.02 | Describe the pharmacokinetic, pharmacodynamics, and pharmacogenetic principles of drugs. |
| 05.03 | Explain the uses and impact on the patient of different categories of drugs. |
| 05.04 | Define the categories of contrast agents and give specific examples for each category. |
| 05.05 | Explain the pharmacology of contrast agents. |
| 05.06 | Describe methods and techniques for administering various types of contrast agents. |
| 05.07 | Identify and describe the routes of drug administration. |

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| 06.0 | Demonstrate proficiency in the skills, techniques and knowledge required for image analysis. – The student will be able to: |
| | 06.01 Discuss the elements of a radiographic image. |
| | 06.02 Identify anatomy on radiographic images. |
| | 06.03 Apply a problem-solving process used for image analysis. |
| | 06.04 Describe an effective image analysis method. |
| | 06.05 Describe the role of the radiographer in image analysis. |
| | 06.06 Apply the process for evaluating images for adequate image receptor exposure, exposure indicator, contrast/greyscale/spatial resolution, identification markers, and appropriate use of beam restriction. |
| | 06.07 Summarize the importance of proper positioning. |
| | 06.08 Discuss the impact of patient preparation on the resulting radiographic image. |
| | 06.09 Identify common equipment malfunctions that affect image quality, and corrective action. |
| | 06.10 Differentiate between technical factor problems, procedural factor problems and equipment malfunctions. |
| | 06.11 Critique images for appropriate technical, procedural and pathologic factors, and employ corrective actions if necessary. |
| | 06.12 Differentiate images produced by various modalities. |
| | 06.13 Apply a process for evaluating images for acceptable limits of distortion, image artifacts, radiation fog, noise, and gross exposure. |
| 07.0 | Demonstrate proficiency in the skills, techniques and knowledge required to operate imaging equipment. – The student will be able to: |
| | 07.01 Describe potential difference, current and resistance. |
| | 07.02 Describe the general components and functions of the tube and filament circuits. |
| | 07.03 Compare generators in terms of radiation produced and efficiency. |
| | 07.04 Discuss mobile and fixed radiographic equipment in terms of purpose, components, types and applications. |
| | 07.05 Demonstrate operation of various types of permanently fixed and mobile radiographic equipment. |
| | 07.06 Discuss fixed, fluoroscopy, and mobile equipment in terms of purpose, components, types, and applications. |
| | 07.07 Describe the components and function of automatic exposure control (AEC) devices. |
| | 07.08 Demonstrate proper use of AEC devices. |

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| | 07.09 Describe the components of diagnostic x-ray tubes. |
| | 07.10 Explain methods used to extend x-ray tube life. |
| | 07.11 Explain image-intensified, flat panel, and pulsed fluoroscopy. |
| | 07.12 Indicate the purpose, construction, and application of fluoroscopic monitor. |
| | 07.13 Differentiate between quality assurance (QA) and quality control (QC). |
| | 07.14 List the benefits of a quality control management to the patient and to the department. |
| | 07.15 Evaluate the results of standard QC tests. |
| | 07.16 Discuss the image appearance and basic principles of operation for equipment used in various imaging modalities. |
| | 07.17 Describe continuous quality improvement (CQI). |
| | 07.18 Describe the components of the various types of display monitors. |
| | 07.19 Compare monitor types (e.g. acquisition, display). |
| | 07.20 Discuss quality control (QC) for imaging equipment and accessories. |
| | 07.21 Discuss the appropriate use of electronic masking. |
| | 07.22 Recognize and compare basic equipment used in various imaging modalities. |
| 08.0 | Convey an understanding of the principles of imaging and the various factors that contribute to accuracy including x-ray production, image formation, and factors related to radiographic quality. – The student will be able to: |
| | 08.01 Discuss practical considerations in setting standards for acceptable image quality. |
| | 08.02 Assess radiographic exposure on radiographic images. |
| | 08.03 Analyze the relationships of factors that control and affect image exposure. |
| | 08.04 Critique the radiographic contrast within various radiographic images. |
| | 08.05 Analyze the relationship of factors that control and affect radiographic contrast. |
| | 08.06 Critique spatial resolution on various radiographic images. |
| | 08.07 Analyze the relationships of factors that control and affect spatial resolution. |
| | 08.08 Differentiate between size and shape distortion. |

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| | 08.09 Perform calculations to determine image magnification and percent magnification. |
| | 08.10 Summarize the relationship of factors that control and affect distortion. |
| | 08.11 Explain the rationale for using beam restriction. |
| | 08.12 Describe the operation and applications for different types of beam restriction devices. |
| | 08.13 Explain how beam filtration affects x-ray beam intensity, beam quality and patient exposure. |
| | 08.14 Describe the change in the half-value layer (HVL) when filtration is added or removed. |
| | 08.15 Describe the impact of sampling frequency on spatial resolution. |
| | 08.16 Define sampling frequency. |
| | 08.17 Describe the impact of detector element size on spatial resolution. |
| | 08.18 Describe the Nyquist-Shannon theorem as it relates to sampling frequency. |
| | 08.19 Describe the process of image stitching. |
| 09.0 | Demonstrate an understanding of the structure and function of the human body with a focus on the muscular, endocrine, respiratory, urinary and appendicular skeletal systems. – The student will be able to: |
| | 09.01 Discuss the basics of anatomical nomenclature. |
| | 09.02 Classify tissue types, describe the functional characteristics of each and give examples of their location within the human body. |
| | 09.03 Describe the composition and characteristics of bone. |
| | 09.04 Identify and locate the bones of the human skeleton. |
| | 09.05 Identify bony processes and depressions found on the human skeleton. |
| | 09.06 Summarize the functions of the skeletal system. |
| | 09.07 Label different types of articulations. |
| | 09.08 Compare the types, locations and movements permitted by the different types of articulations. |
| | 09.09 Examine how muscle is organized at the gross and microscopic levels. |
| | 09.10 Differentiate between the structures of each type of muscle tissue. |
| | 09.11 State the function of each type of muscle tissue. |

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| | 09.12 Name and locate the major muscles of the skeleton. |
| | 09.13 Define endocrine. |
| | 09.14 Describe the characteristics and functions of the components that comprise the endocrine system. |
| | 09.15 Differentiate between peritoneum, omentum, and mesentery. |
| | 09.16 Label the components of the respiratory system. |
| | 09.17 Describe the physiology and regulation of respiration. |
| | 09.18 Label the parts of the kidneys, ureters, bladder and urethra. |
| | 09.19 Describe the function of each organ of the urinary system. |
| | 09.20 Describe the composition and formation of urine. |
| | 09.21 Explain micturition. |
| | 09.22 Identify major sectional anatomical structures found within the head and neck, thorax, and abdomen. |
| 10.0 | Demonstrate proficiency in the skills, techniques and knowledge required to perform accurate radiographic procedures. – The student will be able to: |
| | 10.01 Describe standard positioning terms. |
| | 10.02 Demonstrate proper use of positioning aids. |
| | 10.03 Discuss general procedural considerations for radiographic exams. |
| | 10.04 Identify methods and barriers of communication and describe how each may be used or overcome effectively during patient education. |
| | 10.05 Explain radiographic procedures to patients/family members. |
| | 10.06 Modify directions to patients with various communication problems. |
| | 10.07 Develop an awareness of cultural factors that necessitate adapting standard exam protocols. |
| | 10.08 Adapt general procedural considerations to specific clinical settings. |
| | 10.09 Identify the structures demonstrated on routine radiographic images. |
| | 10.10 Adapt radiographic procedures for special considerations. |
| | 10.11 Simulate radiographic procedures on a person or phantom in a laboratory or clinical setting. |

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| 10.12 | Evaluate images for positioning, centering, appropriate anatomy and overall image quality. |
| 10.13 | Discuss equipment and supplies necessary to complete basic radiographic procedures. |
| 10.14 | Explain the routine and special positions and projections for all radiographic procedures. |
| 10.15 | Describe the general purpose of radiographic studies. |
| 10.16 | Apply general radiation safety and protection practices associated with radiographic examinations. |
| 10.17 | Define region of interest (ROI). |
| 10.18 | Define basic terms related to indications and contraindications related to imaging studies. |
| 11.0 | Demonstrate the proficiency in the skills and knowledge required of clinical practice. – The student will be able to: |
| 11.01 | Exercise the priorities required in daily clinical practice. |
| 11.02 | Execute medical imaging procedures under the appropriate level of supervision. |
| 11.03 | Adhere to team practice concepts that focus on organizational theories, roles of team members and conflict resolution. |
| 11.04 | Adapt to changes and varying clinical situations. |
| 11.05 | Describe the role of health care team members in responding/reacting to a local or national emergency. |
| 11.06 | Provide patient-centered, clinically effective care for all patients regardless of age, gender, disability, special needs, ethnicity, or culture. |
| 11.07 | Integrate the use of appropriate and effective written, oral and nonverbal communication with patients, the public and members of the health care team in the clinical setting. |
| 11.08 | Integrate appropriate personal and professional values into clinical practice. |
| 11.09 | Recognize the influence of professional values on patient care. |
| 11.10 | Explain how a person's cultural beliefs toward illness and health affect his or her health status. |
| 11.11 | Use patient and family education strategies appropriate to the comprehension level of the patient/family. |
| 11.12 | Provide desired psychosocial support to the patient and family. |
| 11.13 | Demonstrate competent assessment skills through effective management of the patient's physical and mental status. |
| 11.14 | Respond appropriately to medical emergencies. |
| 11.15 | Examine demographic factors that influence patient compliance with medical care. |

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| 11.16 | Adapt procedures to meet age-specific, disease-specific and cultural needs of patients. |
| 11.17 | Assess the patient and record clinical history. |
| 11.18 | Demonstrate basic life support procedures. |
| 11.19 | Use appropriate charting/electronic documentation methods. |
| 11.20 | Recognize life-threatening electrocardiogram (ECG) tracing. |
| 11.21 | Apply standard and transmission-based precautions. |
| 11.22 | Apply the appropriate medical asepsis and sterile technique. |
| 11.23 | Demonstrate competency in the principles of radiation protection standards. |
| 11.24 | Apply the principles of total quality management. |
| 11.25 | Report equipment malfunctions. |
| 11.26 | Examine procedure orders for accuracy and make corrective actions when applicable. |
| 11.27 | Demonstrate safe, ethical and legal practices. |
| 11.28 | Integrate the radiographer's practice standards into clinical practice setting. |
| 11.29 | Maintain patient confidentiality standards and meet HIPAA requirements. |
| 11.30 | Demonstrate the principles of transferring, positioning and immobilizing patients. |
| 11.31 | Comply with departmental and institutional response to emergencies, disasters and accidents. |
| 11.32 | Differentiate between emergency and non-emergency procedures. |
| 11.33 | Adhere to national, institutional and departmental standards, policies and procedures regarding care of patients, providing radiologic procedures and reducing medical errors. |
| 11.34 | Select technical factors to produce quality diagnostic images with the lowest radiation exposure possible. |
| 11.35 | Critique images for appropriate anatomy, image quality and patient identification. |
| 11.36 | Determine corrective measures to improve inadequate images. |
| 12.0 | Convey an understanding of the principles of imaging and the various factors that contribute to accuracy including image acquisition and processing, scatter radiation control, and image evaluation. – The student will be able to: |
| 12.01 | Summarize the relationship of factors affecting scattered radiation. |

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| 12.02 | Evaluate the effects of scattered radiation on the image. |
| 12.03 | Compare grid types. |
| 12.04 | Select the most appropriate grid for a given clinical situation. |
| 12.05 | Interpret grid efficiency in terms of grid ratio and frequency. |
| 12.06 | Summarize the factors that influence grid cutoff. |
| 12.07 | Evaluate grid artifacts. |
| 12.08 | Explain the use of radiographic technique charts. |
| 12.09 | Explain exposure factor considerations involved in selecting techniques. |
| 12.10 | Compare fixed kilovoltage peak (kVp) and variable kVp systems. |
| 12.11 | Apply the reciprocity law to clinical situations. |
| 12.12 | Apply conversion factors for changes in the following areas: distance, grid, image receptors, reciprocity law, and 15 percent rule. |
| 13.0 | Demonstrate an understanding of the concepts and equipment required of digital image acquisition and display. – The student will be able to: |
| 13.01 | Define terminology associated with digital imaging systems. |
| 13.02 | Describe the various types of digital receptors. |
| 13.03 | Describe the response of digital detectors to exposure variations. |
| 13.04 | Compare the advantages and limits of each receptor type. |
| 13.05 | Evaluate the spatial resolution of a digital imaging system. |
| 13.06 | Describe the histogram and the process or histogram analysis as it relates to automatic rescaling and determining an exposure indicator. |
| 13.07 | Relate the receptor exposure indicator values to technical factors, system calibration, part/beam/plate alignment and patient exposure. |
| 13.08 | Describe the response of PSP systems to background and scatter radiation. |
| 13.09 | Use appropriate means of scatter control. |
| 13.10 | Avoid grid use errors associated with grid cutoff and Moiré effect. |
| 13.11 | Identify common limitations and technical problems encountered when using PSP systems. |

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| 13.12 | Employ appropriate beam/part/receptor alignment to avoid histogram analysis errors. |
| 13.13 | Associate impact of image processing parameters to the image appearance. |
| 13.14 | Apply the fundamental principles of radiographic exposure to digital detectors. |
| 13.15 | Evaluate the effect of a given exposure change on histogram shape, data width, and image appearance. |
| 13.16 | Describe the conditions that cause quantum mottle in a digital image. |
| 13.17 | Formulate a procedure or process to minimize histogram analysis and rescaling errors. |
| 13.18 | Examine the potential impact of digital radiographic systems on patient exposure and methods of practicing the as low as reasonably achievable (ALARA) concept with digital systems. |
| 13.19 | Describe picture archival and communications system (PACS) and its function. |
| 13.20 | Identify components of a PACS. |
| 13.21 | Define digital imaging and communications in medicine (DICOM). |
| 13.22 | Describe HIPAA concerns with electronic information. |
| 13.23 | Identify common problems associated with retrieving/viewing images within a PACS. |
| 13.24 | Describe the calculation of the exposure indicator (AAPM Task Group 116). |
| 13.25 | Relate how the values of interest (VOI) impact image appearance. |
| 13.26 | Describe signal to noise (SNR) as it relates to digital radiography detectors. |
| 13.27 | Describe modulation transfer function (MTF) as it relates to digital radiography detectors. |
| 13.28 | Describe contrast to noise (CNR) as it relates to digital radiography detectors. |
| 13.29 | Describe detective quantum efficiency (DQE) for digital radiography detectors. |
| 13.30 | Describe display monitor aspect ratio and its impact on image display. |
| 13.31 | Identify critical components of the DICOM header. |
| 13.32 | Relate the location and size of the ROI to the appearance of the image and exposure indicator. |
| 13.33 | Discuss the impact of viewing angle, luminance, ambient lighting, and pixel size on image display. |
| 14.0 | Demonstrate an understanding of the structure and function of the human body with a focus on the axial skeletal system. – The student will be able to: |

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| | 14.01 Describe articulations of the axial skeleton. |
| | 14.02 Differentiate the primary and secondary curves of the spine. |
| | 14.03 Identify and locate the bones of the human axial skeleton. |
| | 14.04 Identify bony processes and depressions found on the human axial skeleton. |
| | 14.05 Summarize the functions of the axial skeletal system. |
| | 14.06 Label different types of articulations specific to the axial skeletal system. |
| 15.0 | Demonstrate an understanding of the structure and function of the human body with a focus on the circulatory/cardiovascular, digestive, and reproductive systems. – The student will be able to: |
| | 15.01 Describe the composition and characteristics of blood. |
| | 15.02 List the types of blood cells and state their functions. |
| | 15.03 Differentiate between blood plasma and serum. |
| | 15.04 Outline the clotting mechanism. |
| | 15.05 List the blood types. |
| | 15.06 Explain the term Rh factor. |
| | 15.07 Explain the antigen/antibody relationship and its use in blood typing. |
| | 15.08 Label the parts of the human heart. |
| | 15.09 Describe the flow of blood through the body and identify the main vessels. |
| | 15.10 Describe the structure and function of arteries, veins and capillaries. |
| | 15.11 Differentiate between arterial blood in systemic circulation and arterial blood in pulmonary circulation. |
| | 15.12 Outline the major pathways of lymphatic circulation. |
| | 15.13 Correlate cardiac electrophysiology to a normal ECG tracing. |
| | 15.14 Label the anatomy of the male and female reproductive organs. |
| | 15.15 Analyze the function of each of the male and female reproductive organs. |
| | 15.16 Describe the structures and functions of the components that comprise the human eye and ear. |

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| 15.17 | List the component body parts involved in the senses of smell and taste. |
| 15.18 | List the somatic senses. |
| 15.19 | Describe the hard and soft palates. |
| 15.20 | Describe the structure and function of the tongue. |
| 15.21 | Identify the structure, function and locations of the salivary glands. |
| 15.22 | List and label the accessory organs of the digestive system and describe their function. |
| 15.23 | Describe the composition and characteristics of the primary organs of the digestive system. |
| 15.24 | Describe the function(s) of each primary organ of the digestive system. |
| 15.25 | Differentiate between the layers of tissue that comprise the esophagus, stomach, small intestine, large intestine, and rectum. |
| 15.26 | Identify the secretions and function of each accessory organ of the digestive system. |
| 15.27 | Explain the purpose of digestion. |
| 15.28 | List the digestive processes that occur in the body. |
| 16.0 | Demonstrate proficiency in the skills, techniques and knowledge required to perform accurate fluoroscopic procedures. – The student will be able to: |
| 16.01 | Identify the structures demonstrated on routine fluoroscopic images. |
| 16.02 | Adapt fluoroscopic procedures for special considerations. |
| 16.03 | Simulate fluoroscopic procedures on a person or phantom in a laboratory setting. |
| 16.04 | Evaluate images for positioning, centering, appropriate anatomy and overall image quality. |
| 16.05 | Discuss equipment and supplies necessary to complete basic fluoroscopic procedures. |
| 16.06 | Explain the patient preparation necessary for various contrast and special studies. |
| 16.07 | Explain the routine and special positions/projections for all fluoroscopic procedures. |
| 16.08 | Explain the purpose for using contrast media. |
| 16.09 | Name the type, dosage and route of administration of contrast media commonly used to perform radiographic contrast and special studies. |
| 16.10 | Describe the general purpose of fluoroscopic studies. |

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| | 16.11 Apply general radiation safety and protection practices associated with fluoroscopic examinations. |
| 17.0 | Demonstrate an understanding of the structure and function of the human body with a focus on the nervous system. – The student will be able to: |
| | 17.01 Differentiate between the structure and function of different types of nerve cells. |
| | 17.02 State the structure of the brain and the relationship of its component parts. |
| | 17.03 Describe brain functions. |
| | 17.04 List the meninges and describe the function of each. |
| | 17.05 Outline how cerebrospinal fluid forms, circulates and functions. |
| | 17.06 Describe the structure and function of the spinal cord. |
| | 17.07 Determine the distribution and function of cranial and spinal nerves. |
| | 17.08 Summarize the structure and function of components that comprise the autonomic nervous system. |
| 18.0 | Demonstrate introductory knowledge of computed tomography. – The student will be able to: |
| | 18.01 Explain the difference between reconstructing and reformatting an image. |
| | 18.02 Cite the structures demonstrated on commonly performed CT images. |
| | 18.03 Describe commonly performed CT procedures. |
| | 18.04 Evaluate images for positioning, centering, appropriate anatomy and overall image quality. |
| | 18.05 Discuss equipment and supplies necessary to complete commonly performed CT procedures. |
| | 18.06 Explain the CT acquisition protocol for commonly performed head/neck, thorax, and abdomen procedures. |
| | 18.07 Explain the patient preparation necessary for commonly performed CT contrast studies. |
| | 18.08 Name the type, dosage purpose, and route of contrast administration for common CT procedures. |
| | 18.09 Describe the components of the CT imaging system. |
| | 18.10 Explain the functions of collimators in CT. |
| | 18.11 List the CT computer data processing steps. |
| | 18.12 Define algorithm and explain its impact on image scan factors and reconstruction. |

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| 18.13 | Define raw data and image data. |
| 18.14 | Describe the following terms in relation to the CT data acquisition process: |
| | a. Pixel. |
| | b. Matrix. |
| | c. Voxel. |
| | d. Linear attenuation coefficient. |
| | e. CT/Hounsfield number. |
| | f. Partial volume averaging. |
| | g. Window width (ww) and window level (wl). |
| | h. Spatial resolution. |
| | i. Contrast resolution. |
| | j. Noise. |
| | k. Annotation. |
| | l. Region of interest (ROI). |
| 18.15 | Name the common controls found on CT operator consoles and describe how and why each is used. |
| 18.16 | Identify the types and appearance of artifacts most commonly affecting CT images. |
| 18.17 | Name the radiation protection devices that can be used to reduce patient dose in CT and describe the correct application of each. |
| 18.18 | Describe the general purpose of commonly performed CT studies. |
| 18.19 | Discuss general radiation safety and protection practices associated with examinations in CT. |
| 19.0 | Demonstrate appropriate venipuncture technique. – The student will be able to: |
| 19.01 | Differentiate between the two major sites of intravenous drug administration. |
| 19.02 | Identify, describe and document complications associated with venipuncture and appropriate actions to resolve these complications. |
| 19.03 | Discuss the various elements of initiating and discontinuing intravenous access. |

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| | 19.04 Differentiate and document dose calculations for adult and pediatric patients. |
| | 19.05 Prepare for injection of contrast agents/intravenous medications using aseptic technique. |
| | 19.06 Explain the current legal status and professional liability issues of the radiographer's role in contrast and/or drug administration. |
| | 19.07 Simulate appropriate venipuncture technique. |
| 20.0 | Demonstrate an understanding of radiographic pathology. – The student will be able to: |
| | 20.01 Define basic terms related to pathology. |
| | 20.02 Describe the basic manifestations of pathological conditions and their relevance to radiologic procedures. |
| | 20.03 Discuss the classifications of trauma. |
| | 20.04 Describe imaging procedures used in diagnosing disease. |
| | 20.05 List the causes of tissue disruption. |
| | 20.06 Describe the healing process. |
| | 20.07 Identify complications connected with the repair and replacement of tissue. |
| | 20.08 Describe the various systemic classifications of disease in terms of etiology, types, common sites, complications, and prognosis. |
| | 20.09 Describe the radiographic appearance of diseases. |
| | 20.10 Identify imaging procedures and interventional techniques appropriate for diseases common to each body system. |
| | 20.11 Identify diseases caused by or connected to genetic factors. |
| 21.0 | Demonstrate an understanding of how radiation is produced and the characteristics of different classifications of radiation. – The student will be able to: |
| | 21.01 Describe fundamental atomic structure. |
| | 21.02 Describe the electromagnetic spectrum. |
| | 21.03 Describe wavelength and frequency and how they are related to velocity. |
| | 21.04 Explain the relationship of energy, wavelength and frequency. |
| | 21.05 Explain the wave-particle duality phenomena. |
| | 21.06 Identify the properties of x-rays. |

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| | 21.07 Describe the processes of ionization and excitation. |
| | 21.08 Describe particulate radiation. |
| | 21.09 Differentiate between ionizing and nonionizing radiation. |
| | 21.10 Describe radioactivity and radioactive decay in terms of alpha, beta and gamma emission. |
| | 21.11 Compare the production of bremsstrahlung and characteristic radiations. |
| | 21.12 Describe the conditions necessary to produce x-radiation. |
| | 21.13 Describe the x-ray emission spectrum. |
| | 21.14 Explain the factors that affect the x-ray emission spectrum. |
| | 21.15 Discuss various photon interactions with matter. |
| | 21.16 Discuss relationships of wavelength and frequency to beam characteristics. |
| | 21.17 Discuss the clinical significance of the photoelectric and modified scattering (Compton) interactions in diagnostic imaging. |
| | 21.18 Compare and contrast different types of radiation. |
| 22.0 | Demonstrate an understanding of the structure and function of the human body including the immune system and chemical composition of the body. – The student will be able to: |
| | 22.01 Describe the chemical composition of the human body. |
| | 22.02 Identify cell structure and elements of genetic control. |
| | 22.03 Explain the essentials of human metabolism. |
| | 22.04 Differentiate between nonspecific defenses and specific immunity. |
| | 22.05 Explain antibody production and function. |
| | 22.06 List the different types and functions of T- and B-cells and explain their functions. |
| 23.0 | Demonstrate an understanding of the integral aspects of radiation biology required of a radiographer. – The student will be able to: |
| | 23.01 Differentiate between ionic and covalent molecular bonds. |
| | 23.02 Describe principles of cellular biology. |
| | 23.03 Identify sources of electromagnetic and particulate ionizing radiations. |

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| | 23.04 Discriminate between the direct and indirect effects of radiation. |
| | 23.05 Identify sources of radiation exposure. |
| | 23.06 Describe radiation-induced chemical reactions and potential biologic damage. |
| | 23.07 Evaluate factors influencing radiobiologic/biophysical events at the cellular and subcellular level. |
| | 23.08 Identify methods to measure radiation response. |
| | 23.09 Describe physical, chemical and biologic factors influencing radiation response of cells and tissues. |
| | 23.10 Explain factors influencing radiosensitivity. |
| | 23.11 Recognize the clinical significance of lethal dose (LD). |
| | 23.12 Identify the radiosensitivity and radioresistency of specific cells. |
| | 23.13 Employ dose response curves to study the relationship between radiation dose levels and the degree of biologic response. |
| | 23.14 Examine effects of limited vs. total body exposure. |
| | 23.15 Relate short-term and long-term effects as a consequence of high and low radiation doses. |
| | 23.16 Differentiate between somatic and genetic radiation effects and discuss specific diseases or syndromes associated with them. |
| | 23.17 Discuss stochastic and deterministic effects. |
| | 23.18 Discuss embryonic and fetal effects of radiation exposure. |
| | 23.19 Discuss risk estimates for radiation-induced malignancies. |
| | 23.20 Discuss acute radiation syndromes. |
| | 23.21 Define basic terms related to dose differences. |
| 24.0 | Convey the importance for proper radiation protection and the precautions radiographers should take to prevent unnecessary exposure to themselves and patients. – The student will be able to: |
| | 24.01 Identify and justify the need to minimize unnecessary radiation exposure of humans. |
| | 24.02 Explain the objectives of a radiation protection program. |
| | 24.03 Define radiation and radioactivity units of measurement. |
| | 24.04 Identify effective dose limits (EDL) for occupational and non-occupational radiation exposure. |

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| 24.05 | Describe the ALARA concept. |
| 24.06 | Identify the basis for occupational exposure limits. |
| 24.07 | Distinguish between perceived risk and comparable risk. |
| 24.08 | Describe the concept of the negligible individual dose (NID). |
| 24.09 | Identify ionizing radiation sources from natural and man-made sources. |
| 24.10 | Comply with legal and ethical radiation protection responsibilities of radiation workers. |
| 24.11 | Describe the relationship between irradiated area and effective dose. |
| 24.12 | Describe the theory and operation of radiation detection devices. |
| 24.13 | Identify appropriate applications and limitations for each radiation detection device. |
| 24.14 | Describe how isoexposure curves are used for radiation protection. |
| 24.15 | Identify performance standards for beam-limiting devices. |
| 24.16 | Describe procedures used to verify performance standards for equipment. |
| 24.17 | Describe the operation of various interlocking systems for equipment. |
| 24.18 | Identify conditions and locations evaluated in an area survey for radiation protection. |
| 24.19 | Distinguish between controlled and non-controlled areas and list acceptable exposure levels. |
| 24.20 | Describe “Radiation Area” signs and identify appropriate placement sites. |
| 24.21 | Describe the function of federal, state and local regulations governing radiation protection practices. |
| 24.22 | Describe the qualifications and responsibilities of a radiation safety officer. |
| 24.23 | Express the need and importance of personnel monitoring for radiation workers. |
| 24.24 | Describe personnel monitoring devices, including applications, advantages and limitations for each device. |
| 24.25 | Interpret personnel monitoring reports. |
| 24.26 | Compare values for individual effective dose limits for occupational radiation exposures (annual and lifetime). |
| 24.27 | Identify effective dose limits for the embryo and fetus in occupationally exposed women. |

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| 24.28 | Distinguish between primary and secondary radiation barriers. |
| 24.29 | Demonstrate how the operation of various x-ray and ancillary equipment influences radiation safety and describe the potential consequences of equipment failure. |
| 24.30 | Perform calculations of exposure with varying time, distance and shielding. |
| 24.31 | Discuss the relationship between workload, energy, half-value layer (HVL), tenth-value layer (TVL), use factor and shielding design. |
| 24.32 | Identify emergency procedures to be followed during failures of x-ray equipment. |
| 24.33 | Demonstrate how time, distance and shielding can be manipulated to keep radiation exposures to a minimum. |
| 24.34 | Explain the relationship of beam-limiting devices to patient radiation protection. |
| 24.35 | Discuss added and inherent filtration in terms of the effect on patient dosage. |
| 24.36 | Explain the purpose and importance of patient shielding. |
| 24.37 | Identify various types of patient shielding and state the advantages and disadvantages of each type. |
| 24.38 | Use the appropriate method of shielding for a given radiographic or fluoroscopic procedure. |
| 24.39 | Explain the relationship of exposure factors to patient dosage. |
| 24.40 | Explain how patient position affects dose to radiosensitive organs. |
| 24.41 | Identify the appropriate image receptor that will result in an optimum diagnostic image with the minimum radiation exposure to the patient. |
| 24.42 | Select the immobilization techniques used to eliminate voluntary motion. |
| 24.43 | Describe the minimum source-to-tabletop distances for fixed and mobile fluoroscopic devices. |
| 24.44 | Apply safety factors for the patient, health care personnel and family members in the room during radiographic/fluoroscopic procedures. |

## Additional Information

### Laboratory Activities

Laboratory investigations that include scientific inquiry, research, measurement, problem solving, emerging technologies, tools and equipment, as well as, experimental, quality, and safety procedures are an integral part of this career and technical program/course. Laboratory investigations benefit all students by developing an understanding of the complexity and ambiguity of empirical work, as well as the skills required to manage, operate, calibrate and troubleshoot equipment/tools used to make observations. Students understand measurement error; and have the skills to aggregate, interpret, and present the resulting data. Equipment and supplies should be provided to enhance hands-on experiences for students.

### Special Notes

This program meets the Department of Health's education requirements for HIV/AIDS, Domestic Violence and Prevention of Medical Errors. Although not a requirement for initial licensure, it is a requirement for renewal, therefore the instructor may provide a certificate for renewal purposes to the student verifying these requirements have been met.

If students in this program are seeking a licensure, certificate or registration through the Department of Health, please refer to 456.0635 F.S. for more information on disqualification for a license, certificate, or registration through the Department of Health.

Radiographers provide patient services using imaging modalities, as directed by physicians qualified to order and/or perform radiologic procedures. Radiographers usually provide patient care essential to radiologic procedures, including exercising judgment when performing medical imaging procedures. When providing patient services, the radiographer adheres to the principles of radiation protection for the patient, self, and others.

Radiographers accurately demonstrate anatomical structures on various imaging receptors by knowledge of anatomy, positioning, radiographic technique, and radiation protection. Radiographers must also be able to recognize emergency patient conditions and initiate lifesaving first aid. Additional duties may include performing quality assurance, processing film, and keeping patient records. Radiographers may be required to perform some of these duties at the patient's bedside or in the operating room.

The policies and process by which students receive clinical education shall be published and made known to all concerned in order to avoid practices in which students are substituted for paid staff. Students shall not take the responsibility or the place of qualified staff. After demonstrating competency, students may be permitted to perform procedures with indirect supervision. Unsatisfactory radiographs shall be repeated only in the presence of a qualified radiographer.

Students are encouraged to become members of their appropriate professional organizations such as the American Society of Radiologic Technologists (ASRT), Florida Society of Radiologic Technologists (FSRT) and its' local affiliate.

## Career and Technical Student Organization (CTSO)

HOSA: Future Health Professionals is the intercurricular career and technical student organization providing leadership training and reinforcing specific career and technical skills. Career and Technical Student Organizations provide activities for students as an integral part of the instruction offered.

## Accommodations

Federal and state legislation requires the provision of accommodations for students with disabilities to meet individual needs and ensure equal access. Postsecondary students with disabilities must self-identify, present documentation, request accommodations if needed, and develop a plan with their counselor and/or instructors. Accommodations received in postsecondary education may differ from those received in secondary education. Accommodations change the way the student is instructed. Students with disabilities may need accommodations in such areas as instructional methods and materials, assignments and assessments, time demands and schedules, learning environment, assistive technology and special communication systems. Documentation of the accommodations requested and provided should be maintained in a confidential file.

**Florida Department of Education**
**Curriculum Framework**

**Program Title:** **Radiation Therapy**
**Career Cluster:** **Health Science**

| AS | |
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| CIP Number | 1351090701 |
| Program Type | College Credit |
| Standard Length | 77 credit hours |
| CTSO | HOSA: Future Health Professionals |
| SOC Codes (all applicable) | 29-1124 Radiation Therapists |

## Purpose

This program offers a sequence of courses that provides coherent and rigorous content aligned with challenging academic standards and relevant technical knowledge and skills needed to prepare for further education and careers in the Health Science career cluster; provides technical skill proficiency, and includes competency-based applied learning that contributes to the academic knowledge, higher-order reasoning and problem-solving skills, work attitudes, general employability skills, technical skills, and occupation-specific skills, and knowledge of all aspects of Health Science career cluster.

The purpose of this program is to prepare students for employment as Radiation Therapy Technologist SOC Code 29-1124 (Radiation Therapists) or to provide supplemental training for persons previously or presently employed in these occupations.

The content includes but is not limited to performing radiation therapy procedures with skill and understanding to practice the art and science of radiation therapy technology; to administer the prescribed radiation therapy treatments of the highest caliber, thereby providing the patient treatments of the highest quality and accuracy; to become members of the health care team that contributes to the physical and psychological comfort of the patient, to provide radiation protection to the patient, self and health care team; to work with the health care team to improve radiotherapeutic health care in the hospital and community; and to understand the importance of maintaining membership in the professional organizations and keeping abreast of the changes in the field of radiation therapy.

**Additional Information** relevant to this Career and Technical Education (CTE) program is provided at the end of this document.

## Program Structure

This program is a planned sequence of instruction consisting of 77 credit hours.

**Regulated Programs**

**This program is regulated by the Florida Department of Health; Bureau of Radiation Control.**

The program must be accredited by the Joint Review Committee on Education in Radiologic Technology (JRCERT), 20 North Wacker Drive, Suite 900, Chicago, Illinois 60606-2901 (312) 704-5300, or by the Southern Association of Colleges and Schools to enable graduates to become candidates for examination in Radiation Therapy Technology by the American Registry of Radiologic Technologists. It may also be approved by the Department of Health, Bureau of Radiation Control so that the graduate is eligible for licensure in Florida as a certified Radiation Therapy Technologists. As specified in Chapter 468 Part IV F.S. and Chapter 64E-3 F.A.C.

Students completing the program will be eligible to make application to take the National Registry examination. For further information contact:

American Registry of Radiologic Technologists (ARRT)
1255 Northland Drive
St. Paul, MN 55120-1155
(612/687-0048)

**Standards**

After successfully completing this program, the student will be able to perform the following:

01.0 Demonstrate the proficiency in the skills and knowledge required of clinical practice.
02.0 Convey an understanding of the ethics that impact radiation therapy at both the state and federal levels.
03.0 Demonstrate proficiency in imaging and processing in radiation oncology.
04.0 Demonstrate a basic understanding of laws related to radiation therapy at both the state and federal levels.
05.0 Demonstrate a functional knowledge of medical terminology required in radiation therapy.
06.0 Demonstrate knowledge of procedures and techniques related to the resolution of operational issues in radiation therapy.
07.0 Demonstrate knowledge of the foundational principles and practices of radiation therapy.
08.0 Demonstrate knowledge of essential concepts related to pathophysiology.
09.0 Demonstrate knowledge of the fundamental principles of radiation therapy.
10.0 Demonstrate knowledge of the principles of radiation therapy as it relates to the management of neoplastic disease.
11.0 Demonstrate the skills, procedures and knowledge required for effective quality management.
12.0 Demonstrate an understanding of the integral aspects of radiation biology required of a radiation therapist.
13.0 Demonstrate proficient knowledge of physics pertinent to the understanding of radiations used in the clinical setting.
14.0 Demonstrate the principles of radiation protection and safety for the radiation therapist.
15.0 Demonstrate knowledge of the foundational concepts and competencies in assessment and evaluation of the patient for service delivery.
16.0 Demonstrate an advanced understanding of the concepts and theories of radiation therapy physics.
17.0 Demonstrate proficiency in research methods and information literacy.
18.0 Demonstrate the skills, techniques and knowledge required for medical imaging methods to capture sectional anatomy.
19.0 Demonstrate the skills, techniques and knowledge required for the clinical planning of patient treatment.

**Florida Department of Education**
**Student Performance Standards**

**Program Title:** **Radiation Therapy**
**CIP Number:** **1351090701**
**Program Length:** **77 credit hours**
**SOC Code(s):** **29-1124**



| **Refer to Rule 6A-14.030 (4) F.A.C., for the minimum amount of general education coursework required in the Associate of Science (AS) degree. At the completion of this program, the student will be able to:** | |
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| 01.0 | Demonstrate the proficiency in the skills and knowledge required of clinical practice. -- The student will be able to: |
| 01.01 | Operate within the radiation therapy scope of practice. |
| 01.02 | Demonstrate values and attitudes congruent with the profession's standards and ethics. |
| 01.03 | Formulate priorities in daily clinical practice. |
| 01.04 | Apply concepts of teamwork. |
| 01.05 | Adapt to dynamic clinical situations. |
| 01.06 | Establish patient-centered, clinically effective service delivery strategies. |
| 01.07 | Deliver a prescribed course of treatment adhering to acceptable departmental, institutional, governmental and professional standards. |
| 01.08 | Assess the patient's status and condition in order to deliver a prescribed course of radiation therapy. |
| 01.09 | Use critical thinking for accurate treatment delivery by demonstrating knowledge of didactic concepts. |
| 01.10 | Demonstrate the principles of radiation protection. |
| 01.11 | Monitor tumor lethal dose and normal tissue tolerance dose. |
| 01.12 | Evaluate the patient's clinical response to treatment parameters as prescribed to determine if medical intervention by the doctor is necessary. |
| 01.13 | Apply the principles of total quality management. |

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| 01.14 | Detect equipment malfunctions and take appropriate action. |
| 01.15 | Construct and prepare immobilization, beam alignment and beam modification devices. |
| 01.16 | Design, evaluate and implement treatment plans. |
| 01.17 | Validate manual and computer dosimetric calculations. |
| 01.18 | Perform simulation, localization and therapeutic procedures as they pertain to radiation therapy in accordance with national patient safety standards. |
| 01.19 | Demonstrate appropriate and effective communication. |
| 01.20 | Demonstrate safe, ethical and legal practices. |
| 01.21 | Evaluate the significance of the patient's unique diagnosed cancerous pathology to formulate appropriate simulations and treatment actions. |
| 01.22 | Apply appropriate safety, transfer and immobilization principles. |
| 01.23 | Apply concepts of teaching and learning theories in design, implementation and evaluation in the education of patient, family, colleagues and the community. |
| 01.24 | Describe departmental resources that are designed to meet the health and wellness of patient needs. |
| 01.25 | Demonstrate appropriate interaction with patients and patients' family and friends. |
| 01.26 | Assess patient side effects and complications to create an interdisciplinary management strategy that fosters prevention, healing and comfort. |
| 01.27 | Document all aspects of patient care and management in the appropriate record. |
| 01.28 | Document and communicate errors and discrepancies in accordance with institutional and national quality management procedures. |
| 01.29 | Demonstrate knowledge of situations where life support procedures would be necessary. |
| 01.30 | Document knowledge of the institution's procedures in response to emergencies, disasters and accidents. |
| 01.31 | Apply strategies that ensure professional development at a level of clinical practice consistent with acceptable standards. |
| 01.32 | Demonstrate quality assurance procedures for all treatment delivery equipment and accessories. |
| 01.33 | Evaluate outcomes to continuously improve radiation therapy services. |
| 01.34 | Incorporate Health Insurance Portability and Accountability Act (HIPAA) requirements into clinical practice. |
| 01.35 | Interpret treatment planning prior to and during a course of treatment. |

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| 02.0 | Convey an understanding of the ethics that impact radiation therapy at both the state and federal levels. -- The student will be able to: |
| 02.01 | Identify theories and principles that guide ethical decision making for practice situations. |
| 02.02 | Define practice situations that carry high potential for dilemmas that require ethical scrutiny. |
| 02.03 | Discuss basic ethical duties of health care providers. |
| 02.04 | Demonstrate an awareness of and sensitivity to various cultural and ethnic differences among various client groups. |
| 02.05 | Discuss the concept of patient advocacy in support of patients' rights. |
| 02.06 | Discuss ethical theories and models. |
| 02.07 | Discuss the radiation therapy scope of practice, code of ethics and practice standards. |
| 02.08 | Examine concepts of personal honesty, integrity, accountability and professional compassion as ethical imperatives in professional practice. |
| 02.09 | Differentiate between distributive, compensatory and retributive justice. |
| 02.10 | Differentiate between provider and patient relationships. |
| 02.11 | Discuss the duty of the radiation therapist to take responsibility for actions and decisions. |
| 02.12 | Discuss the elements of an informed consent. |
| 02.13 | Discuss standards of disclosure. |
| 02.14 | Analyze issues related to the use and flow of patient information to determine confidentiality. |
| 02.15 | Explain ethical issues related to different age groups. |
| 02.16 | Identify current ethical issues in health care. |
| 02.17 | Demonstrate application of a system of examination, clarification, determination, the doctrine of informed consent and other issues related to patient rights. |
| 02.18 | Explain ethical issues related to the profession. |
| 02.19 | Discuss the relationship between ethics and health care policy. |
| 02.20 | Examine ethical issues arising daily in a radiation therapy department. |
| 03.0 | Demonstrate proficiency in imaging and processing in radiation oncology. -- The student will be able to: |
| 03.01 | Define terminology associated with digital imaging systems. |

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| 03.02 | Describe the various types of digital receptors. |
| 03.03 | Discuss the fundamentals of digital imaging. |
| 03.04 | Discuss image acquisition on the simulator and linear accelerator. |
| 03.05 | Describe the evaluative criteria for imaging detectors on the simulator and linear accelerator. |
| 03.06 | Describe the histogram and the process or histogram analysis as it relates to automatic rescaling and determining an exposure indicator. |
| 03.07 | Identify the exposure indices for digital imaging receptors on the simulator ad linear accelerator. |
| 03.08 | Discuss the response of digital imaging systems to background and scatter radiation on the simulator and linear accelerator. |
| 03.09 | Identify appropriate measures to control scatter in the simulator and linear accelerator rooms. |
| 03.10 | Explain methods to avoid histogram analysis errors. |
| 03.11 | Describe image processing employed for digital images. |
| 03.12 | Associate the impact of image processing parameters to the image appearance. |
| 03.13 | Associate the effects of inappropriate processing on image clarity or conspicuity. |
| 03.14 | Describe and apply the fundamental physical principles of exposure for digital detectors. |
| 03.15 | Describe the selection of technical factors to ensure appropriate receptor exposure levels for digital detectors. |
| 03.16 | Describe the conditions that cause quantum mottle in a digital image. |
| 03.17 | Explain methods to avoid poor quality images in simulation and treatment planning. |
| 03.18 | Examine the potential impact of digital imaging systems on patient exposure and methods of practicing the as low as reasonably achievable (ALARA) concept with digital systems. |
| 03.19 | Describe picture archiving and communications system (PACS) and its function. |
| 03.20 | Identify components of a PACS system. |
| 03.21 | Describe patient benefits gained through the use of telemedicine. |
| 03.22 | Identify modality types that may be incorporated into a PACS. |
| 03.23 | Define digital imaging and communications in medicine (DICOM). |
| 03.24 | Describe data flow for a DICOM image from an imaging modality to a PACS. |

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| 03.25 | Describe HIPAA concerns with electronic information. | |
| 03.26 | Identify common problems associated with retrieving/viewing images. | |
| 03.27 | Analyze relationships of factors affecting image contrast, density and resolution to determine optimal image quality. | |
| 03.28 | Apply techniques to enhance image details and reduce image distortion. | |
| 03.29 | Determine artifact types, cause and preventive measures. | |
| 03.30 | Explain the basic principles of image formation for each of the following modalities: magnetic resonance (MR), ultrasound imaging and nuclear medicine. | |
| 03.31 | Describe and explain functions of the components of the computed tomography (CT) imaging system. | |
| 03.32 | Differentiate between conventional and spiral/helical CT scanning. | |
| 03.33 | List the CT computer data processing steps. | |
| 03.34 | Name the functions of the array processor used for image reconstruction. | |
| 03.35 | Explain the difference between reconstructing and reformatting an image. | |
| 03.36 | Describe the application of the following terms to CT: | |
| | 03.36.01 | Pixel. |
| | 03.36.02 | Matrix. |
| | 03.36.03 | Voxel. |
| | 03.36.04 | Linear attenuation coefficient. |
| | 03.36.05 | CT/Hounsfield number. |
| | 03.36.06 | Partial volume averaging. |
| | 03.36.07 | Window width (ww) and window level (wl). |
| | 03.36.08 | Spatial resolution. |
| | 03.36.09 | Contrast resolution. |
| | 03.36.10 | Noise. |
| | 03.36.11 | Annotation. |

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| | 03.36.12 | Region of interest (ROI). |
| | 03.36.13 | Standard vs. volumetric data acquisition. |
| 03.37 | Identify the types and appearance of artifacts most commonly affecting CT images. | |
| 03.38 | Explain how artifacts can be reduced or eliminated. | |
| 03.39 | Describe current data storage techniques used in CT. | |
| 03.40 | Name the radiation protection devices that can be used to reduce patient dose in CT and describe the correct application of each. | |
| 04.0 | Demonstrate a basic understanding of laws related to radiation therapy at both the state and federal levels. -- The student will be able to: | |
| 04.01 | Apply concepts related to social, political, economic and historical issues to analyze the different sources of law. | |
| 04.02 | List the steps in a civil legal procedure and identify the potential role of a radiation therapist. | |
| 04.03 | Assess the role of effective communication skills in reducing legal action. | |
| 04.04 | Analyze negligence related to clinical practice issues of simulation, treatment delivery, patient assessment, patient education and quality assurance to determine if negligence is present. | |
| 04.05 | Examine the role of the radiation therapist in the informed consent process, patient rights and practice standards. | |
| 04.06 | Analyze safety programs to reduce patient injury. | |
| 04.07 | Examine the importance of documentation and maintenance of clinical practice records. | |
| 04.08 | Formulate a risk management program. | |
| 04.09 | Analyze the role of code of ethics, radiation therapy scope of practice and radiation therapy practice standards as guides to assess the appropriateness of professional actions. | |
| 04.10 | Discuss the practice of lifelong learning in maintaining professional competence. | |
| 05.0 | Demonstrate a functional knowledge of medical terminology required in radiation therapy. -- The student will be able to: | |
| 05.01 | Identify primary language sources from which medical terms are derived. | |
| 05.02 | Define medical terms according to basic elements. | |
| 05.03 | Interpret language, abbreviations and symbols in the medical record. | |
| 06.0 | Demonstrate knowledge of procedures and techniques related to the resolution of operational issues in radiation therapy. --The student will be able to: | |
| 06.01 | Identify CQI opportunities. | |

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| | 06.02 Explain the differences between CQI and QA. |
| | 06.03 Select appropriate CQI tools for specific situations. |
| | 06.04 Apply CQI principles to specific situations. |
| | 06.05 Discuss human resources' role in the work environment. |
| | 06.06 Discuss the need for organizational and departmental accreditation. |
| | 06.07 Recognize accreditation effects on radiation therapy operations. |
| | 06.08 Use appropriate current procedural terminology (CPT) codes for professional and technical charges. |
| | 06.09 Summarize the various types of insurance and the mechanisms necessary for approval of care. |
| | 06.10 Discuss reimbursement for radiation therapy services. |
| | 06.11 Compare the components and methods of developing and managing a departmental budget. |
| 07.0 | Demonstrate knowledge of the foundational principles and practices of radiation therapy. -- The student will be able to: |
| | 07.01 Discuss the policies and procedures of the educational program. |
| | 07.02 Discuss the policies and procedures of clinical education settings. |
| | 07.03 Identify the responsibilities of a radiation therapy student. |
| | 07.04 Use library/Internet resources pertinent to radiation oncology. |
| | 07.05 Discuss maintaining patient and student confidentiality. |
| | 07.06 Analyze the importance of multidisciplinary care of cancer patients. |
| | 07.07 Discuss the philosophy and mission of health care delivery systems and educational programs. |
| | 07.08 Incorporate key terms used in the principles and practice of radiation therapy. |
| | 07.09 Identify the contents/sections of the patient's records. |
| | 07.10 Explain radiation safety procedures for radiation therapy. |
| | 07.11 Explain health safety procedures for personnel and patients. |
| | 07.12 Differentiate between accreditation, credentialing, certification, registration, licensure, and regulations. |

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| | 07.13 | Explain the purposes, functions and activities of international, national, state and local professional organizations. |
| | 07.14 | Discuss the importance of professional and community commitment. |
| | 07.15 | Discuss the radiation therapist scope of practice, practice standards and professional code of ethics. |
| | 07.16 | Discuss the benefits of continuing education as related to improving the quality of patient care, professional development and personal enhancement. |
| | 07.17 | Discuss career advancement and opportunities for the radiation therapist. |
| 08.0 | Demonstrate knowledge of essential concepts related to pathophysiology. -- The student will be able to: | |
| | 08.01 | Describe the physiological response in inflammation and cell injury due to pathological insult. |
| | 08.02 | Assess the predictive factors, including genetics, lifestyles, age and environment as they influence the development of cancer and associated diseases. |
| | 08.03 | Compare the body's response to hereditary, lifestyle, age and environmental factors. |
| | 08.04 | Given a specific oncologic-related disease, determine probable diagnostic, prognostic, staging, grading and the rationale for the appropriate therapeutic pathway. |
| | 08.05 | Given the histology of a neoplasm, determine the tumor characteristics. |
| | 08.06 | Given a common disease, anticipate the effects of the disease on the oncologic patient. |
| 09.0 | Demonstrate knowledge of the fundamental principles of radiation therapy. -- The student will be able to: | |
| | 09.01 | Given diagnostic information about a particular cancer, determine the appropriateness of using radiation therapy as a primary treatment modality. |
| | 09.02 | Determine the medical and patient information necessary to develop a radiation therapy treatment plan. |
| | 09.03 | Determine the appropriate treatment energy for any given tumor type or location. |
| | 09.04 | Differentiate between beam modifiers and their uses with a variety of treatment energies. |
| | 09.05 | Determine the appropriate treatment setup aid, immobilization technique and beam modifier for a given treatment technique. |
| | 09.06 | Identify inconsistencies between treatment prescription and treatment plan. |
| | 09.07 | Develop a CT simulation plan for a particular tumor to include steps needed prior to, during and after the procedure. |
| | 09.08 | Critique treatment images in relation to simulation images. |
| | 09.09 | Discuss the radiation therapist scope of practice and practice standards. |
| 10.0 | Demonstrate knowledge of the principles of radiation therapy as it relates to the management of neoplastic disease. -- The student will be | |

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| | able to: |
| | 10.01 Distinguishes tumor histology to determine pathways associated with cancer and neoplastic disease. |
| | 10.02 Examine the role of surgical, radiation and medical oncology to include immunotherapy (biological therapy) and personalized medicine in the management of neoplastic disease. |
| | 10.03 Discuss multidisciplinary emerging approaches to neoplastic disease management. |
| | 10.04 Discuss the role of radiation therapy in the management of all patient populations with benign and malignant diseases. |
| | 10.05 Discuss epidemiologic and etiologic information pertinent to each neoplastic site. |
| | 10.06 Discuss the clinical presentation for each anatomic neoplastic site. |
| | 10.07 Discuss preventive methods/screening tools associated with each neoplastic site. |
| | 10.08 Explain detection, diagnosis, grading and staging systems for each neoplastic site. |
| | 10.09 Implement the principles and practice of simulation to prepare a patient for treatment. |
| | 10.10 Apply the parameters of treatment field design and arrangement used to treat neoplastic diseases. |
| | 10.11 Examine the role of radiation therapy in palliative disease management. |
| | 10.12 Identify the treatment regimens and fractionalization schemes used in palliative disease management. |
| | 10.13 Describe the role of radiation therapy in the management of oncology emergencies. |
| 11.0 | Demonstrate the skills, procedures and knowledge required for effective quality management. -- The student will be able to: |
| | 11.01 Discuss the components of a quality management (QM) program in developing a culture of safety in radiation oncology. |
| | 11.02 Discuss the purpose, function and member's role on a quality management team. |
| | 11.03 Explain federal, state and institutional accreditation standards and reporting regulations for quality management. |
| | 11.04 Examine outcomes of quality management in radiation oncology. |
| | 11.05 Explain the purpose, procedures and frequency for manual and electronic treatment documentation. |
| | 11.06 Identify errors in treatment documentation. |
| | 11.07 Describe the procedure for assuring accuracy of manual and electronic records. |
| | 11.08 Examine the purpose and function of record and verify systems. |

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| 11.09 | Examine the patient chart in terms of medical and legal issues. |
| 11.10 | Discuss the significance of treatment outcomes for patient care, education and research in radiation oncology. |
| 11.11 | Discuss the quality indicators to evaluate patient care areas. |
| 11.12 | Explain the purpose, procedure and frequency for all QA and QM procedures in a radiation therapy department. |
| 11.13 | Evaluate how the outcomes of QA and QM procedures impact patient care, education and research. |
| 11.14 | Examine statistical reporting available through quality assurance computerization. |
| 11.15 | Perform quality measures for computerized operation, data collection and reporting. |
| 11.16 | Determine sources of malfunction on the treatment and simulation/localization units. |
| 11.17 | Distinguish between safe and hazardous equipment operation. |
| 11.18 | Comply with acceptable quality limits for treatment operation. |
| 11.19 | Identify the source of error and determine the effect on treatment delivery, education and research. |
| 11.20 | Differentiate between quality management programs. |
| 11.21 | Discuss the importance of patient education in the quality management process. |
| 11.22 | Discuss the importance of proper patient identification and treatment field documentation. |
| 11.23 | Discuss aspects of clinical evaluation, therapeutic decision-making and informed. |
| 11.24 | Identify the key aspects of delivering a precise prescribed treatment dose. |
| 11.25 | Discuss quality control procedures and recommended tolerances for simulation equipment, megavoltage treatment units and treatment planning systems. |
| 11.26 | Discuss quality control procedures and recommended tolerances for the safe handling of brachytherapy sources and remote after loading equipment. |
| 11.27 | Defend the rational for near miss and error report. |
| 11.28 | Critique the safety in radiation oncology. |
| 12.0 | Demonstrate an understanding of the integral aspects of radiation biology required of a radiation therapist. -- The student will be able to: |
| 12.01 | Integrate laws and principles of radiation biology to the clinical practice of radiation therapy. |
| 12.02 | Identify radiosensitive components of the cell. |

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| 12.03 | Distinguish between units of radiation quantities and radiobiologic measures using SI units. |
| 12.04 | Differentiate between direct and indirect effects of ionizing radiation. |
| 12.05 | Explain factors affecting relative biological effectiveness (RBE). |
| 12.06 | Discuss the effects of electromagnetic and particulate radiations on cellular interactions. |
| 12.07 | Evaluate factors influencing radiobiologic/biophysical events at the cellular and subcellular level. |
| 12.08 | Determine biologic damage due to radiation-induced chemical reactions. |
| 12.09 | Discuss radiation effects on the cell cycle. |
| 12.10 | Compare somatic and genetic effects of radiation. |
| 12.11 | Describe factors influencing radiation response of cells and tissues. |
| 12.12 | Discuss the laws of Bergonié and Tribondeau. |
| 12.13 | Interpret cell survival curves to determine radiosensitivity under numerous conditions. |
| 12.14 | Discuss the relationship of radiation quality and dose to systemic responses. |
| 12.15 | Describe radiation syndromes and factors influencing response. |
| 12.16 | Differentiate between linear, nonlinear, and threshold and nonthreshold dose response curves. |
| 12.17 | Describe the 4 Rs of radiobiology. |
| 12.18 | Describe the clinical significance of TD5/5 and QUANTEC. |
| 12.19 | Compare the relationship of time, dose, fractionation, volume, distance and site to radiation effects. |
| 12.20 | Discuss the use of radiation response modifiers. |
| 12.21 | Describe the influence of chemotherapy and hyperthermia alone and in combination with radiation therapy. |
| 13.0 | Demonstrate proficient knowledge of physics pertinent to the understanding of radiations used in the clinical setting. -- The student will be able to: |
| 13.01 | Define the fundamental units of the English, metric and Système International d'Unites (SI) systems. |
| 13.02 | Calculate various unit conversions. |
| 13.03 | Demonstrate applications of the general principles that relate to inertia, work, energy and momentum. |

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| 13.04 Describe Bohr’s theory of atomic structure. |
| 13.05 Compare the characteristics and functions of a proton, neutron and electron. |
| 13.06 Discuss the energy levels of the atom. |
| 13.07 Define the terms relating to atomic nomenclature. |
| 13.08 Compare covalent bonding and ionic bonding. |
| 13.09 Describe the process of ionization. |
| 13.10 Differentiate between the characteristics of a mixture, substance and element. |
| 13.11 Classify the characteristics of an element using the periodic table. |
| 13.12 Compare the characteristics of a molecule and compound. |
| 13.13 Describe the nature of light. |
| 13.14 Explain the relationship between wavelength, frequency and velocity. |
| 13.15 Differentiate between the radiations of the electromagnetic (EM) spectrum. |
| 13.16 Explain the relationship of energy and frequency to Planck’s constant. |
| 13.17 Distinguish between electrical charge and electrical field. |
| 13.18 Describe the methods of electrification. |
| 13.19 Explain the laws of electrostatics and their application. |
| 13.20 Describe the properties and laws of magnetism. |
| 13.21 Explain the electronic spin of an element to its potential magnetic properties. |
| 13.22 Describe the principle of magnetic induction. |
| 13.23 Define potential difference, current, resistance, circuit and electric power. |
| 13.24 Compare the characteristics of direct and alternating currents. |
| 13.25 Compare electrical measuring devices. |
| 13.26 Discuss electrical protective devices. |

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| 13.27 | Discuss the interaction between electric and magnetic fields. |
| 13.28 | Describe the characteristics and functions of a cathode and rotating anode. |
| 13.29 | Describe the construction and function of tube housing. |
| 13.30 | Identify the parts of an x-ray tube. |
| 13.31 | Determine heat units and cooling characteristics of x-ray tube housings. |
| 13.32 | Propose methods to extend tube life. |
| 13.33 | Discuss application and components of automatic exposure devices. |
| 13.34 | State the principles of x-ray production. |
| 13.35 | Compare the production of bremsstrahlung with the production of characteristic radiations. |
| 13.36 | Compare various photon interactions in terms of description of interaction, relation to atomic number and applications. |
| 13.37 | Discuss relationships of wavelength and frequency to beam characteristics. |
| 13.38 | Define units of radiation measurement and provide an example of its application. |
| 14.0 | Demonstrate the principles of radiation protection and safety for the radiation therapist. -- The student will be able to: |
| 14.01 | Distinguish between somatic and genetic effects of radiation exposure. |
| 14.02 | Differentiate between stochastic and nonstochastic effects of radiation exposure. |
| 14.03 | Defend the concept of as low as reasonably achievable (ALARA). |
| 14.04 | Discuss the concept of negligible individual risk. |
| 14.05 | Describe the legal and ethical radiation protection responsibilities of radiation workers. |
| 14.06 | Use appropriate SI terminology and units when discussing radiation protection issues. |
| 14.07 | Select the correct SI units of radiation for exposure, absorbed dose, dose equivalence and radioactivity. |
| 14.08 | Discuss the interrelationship between relative biological effectiveness and quality factors. |
| 14.09 | Explain the theory, operation, applications and limitations of radiation detection devices. |
| 14.10 | State the authority, boundaries and regulations of the state and national regulatory agencies. |

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| 14.11 | Discuss the requirements and responsibilities of the radiation safety officer. |
| 14.12 | Compare the various methods used for personnel monitoring. |
| 14.13 | State the exposure limits for occupational and nonoccupational individuals. |
| 14.14 | Explain techniques used to reduce unnecessary dose to the patient. |
| 14.15 | Develop an emergency action plan for equipment failure. |
| 14.16 | Discuss the principles of radiation protection room design factors. |
| 14.17 | Describe the elements of a radiation protection survey for an inpatient undergoing brachytherapy. |
| 14.18 | Calculate exposure doses based on time, distance and type of radioactivity. |
| 14.19 | Describe the procedure for the wipe test. |
| 14.20 | Describe procedures to receive and ship radioactive materials. |
| 14.21 | Evaluate a record keeping system for radioactive sources to ensure inclusion of all required elements. |
| 15.0 | Demonstrate knowledge of the foundational concepts and competencies in assessment and evaluation of the patient for service delivery. -- The student will be able to: |
| 15.01 | Differentiate between the roles and responsibilities of health care team members treating cancer patients. |
| 15.02 | Demonstrate applications of professional self-care. |
| 15.03 | Examine different psychological aspects of dying. |
| 15.04 | Explain the dynamics of communicating with the cancer patient and family. |
| 15.05 | Recognize radiation side effects and complications and select the appropriate medical intervention. |
| 15.06 | Identify factors that influence a patient’s emotional responses. |
| 15.07 | Formulate content for answers to questions frequently asked by patients. |
| 15.08 | Assess the physical condition of the patient before, during and after treatment delivery. |
| 15.09 | Demonstrate application of the principles of health safety. |
| 15.10 | Discuss the principles of medication administration. |
| 15.11 | Recognize common medications and explain their actions and side effects. |

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| 15.12 | Evaluate a patient for an adverse reaction to medication. |
| 15.13 | Describe emergency response procedures. |
| 15.14 | Describe the proper care of patients with tubes. |
| 15.15 | Provide patient education for medical procedures. |
| 15.16 | Assess the patient before, during and after brachytherapy procedures. |
| 15.17 | Demonstrate the application of the principles of radiation protection during brachytherapy procedures. |
| 15.18 | Assess the nutritional status of the cancer patient to provide nutritional education or intervention. |
| 15.19 | Demonstrate proper use of the principles of patient safety and transfer. |
| 15.20 | Provide appropriate patient education following patient assessment. |
| 15.21 | Select patient education materials appropriate for patient needs. |
| 15.22 | Compare conventional and integrative medicine. |
| 16.0 | Demonstrate an advanced understanding of the concepts and theories of radiation therapy physics. -- The student will be able to: |
| 16.01 | Compare and contrast atomic structure and composition among the elements, including but not limited to particles (their location, energy level, and charge), atomic number and mass number. |
| 16.02 | Compare isotope, isotone, isobar and isomer. |
| 16.03 | Discuss nuclear stability and types of radioactive decay. |
| 16.04 | Categorize the four fundamental forces of nature. |
| 16.05 | Differentiate between electromagnetic (EM) radiation and their characteristics. |
| 16.06 | Describe the processes of ionization and excitation. |
| 16.07 | Calculate radioactivity, decay constant, activity and half-life, average life and attenuation requirements for commonly used isotopes in radiation therapy. |
| 16.08 | Differentiate between artificially produced and naturally occurring therapeutic nuclides. |
| 16.09 | Identify the radioactive series and the decay schemes for commonly used radiation therapy nuclides. |
| 16.10 | Explain the various forms of radioactive equilibrium. |
| 16.11 | Identify nuclear reactions by recognizing the projectile and radiation emitted. |

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| 16.12 | Define fission and fusion. |
| 16.13 | Discuss the activation of nuclides in terms of yield, probability, activity growth, and saturation activity. |
| 16.14 | Describe methods of artificial production of radionuclides. |
| 16.15 | Describe x-ray production for linear accelerators. |
| 16.16 | Compare and contrast the factors that influence x-ray production and output. |
| 16.17 | Compare and contrast the energy ranges and characteristics of the various radiation therapy modalities (Grenz-ray through megavoltage). |
| 16.18 | Discuss all components and function in a linear accelerator. |
| 16.19 | Discuss methods of x-ray production in alternate therapy units (e.g., tomotherapy, stereotactic radiosurgery, etc.) |
| 16.20 | Compare the characteristics of other radiation therapy beams (cyclotron and other accelerated particles). |
| 16.21 | State the gamma energies and average gamma energy of cobalt 60 (60Co). |
| 16.22 | Compare the characteristics of an isotope beam and an x-ray beam. |
| 16.23 | Explain linear energy transfer (LET). |
| 16.24 | Compare photon interactions with matter and classify radiations produced by direct and indirect ionization. |
| 16.25 | Explain major influencing factors of photon beam attenuation. |
| 16.26 | Describe the parameters of narrow beam geometry used in the measurement of attenuation. |
| 16.27 | Plot heteroenergetic and monoenergetic beam attenuation data. |
| 16.28 | Calculate half-value layer (HVL). |
| 16.29 | Calculate the homogeneity coefficient. |
| 16.30 | Calculate attenuation requirements for beam modification devices. |
| 16.31 | Discuss activation of clinical accessories and alternate shielding materials due to photodisentigration. |
| 16.32 | Explain charged particle interactions with matter, describing dose deposition, energy loss and shielding requirements. |
| 16.33 | Define mass stopping power. |
| 16.34 | Describe a Bragg curve. |

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| | 16.35 Discuss the purpose and importance of the National Institute of Standards and Technology (NIST). |
| | 16.36 Discuss the purpose and importance of the Accredited Dosimetry Calibration Labs (ADCL). |
| | 16.37 Demonstrate use of the appropriate type of radiation detector for given clinical applications. |
| | 16.38 Calculate correction factors for chamber calibration, temperature, pressure and other factors used to correct a chamber reading. |
| | 16.39 Discuss protocols used for external beam calibration. |
| | 16.40 Analyze spot check data to make appropriate judgment decisions regarding machine treatment parameters. Describe the quality of a gamma-ray (γ) beam in terms of HVL, γ energy or mean γ energy/nuclide of origin. |
| | 16.41 Describe beam filtration for the various external beam modalities, including but not limited to purpose, types of filters and their construction, energy considerations, inherent vs. added filtration and effect on HVL. |
| | 16.42 Calculate the approximate mean energy of a megavoltage beam. |
| | 16.43 Compare absorbed dose vs. exposure. |
| | 16.44 Discuss the relationship between kinetic energy released in the medium (KERMA), exposure and absorbed dose. |
| | 16.45 Calculate air dose to absorbed dose conversions in tissue, including but not limited to, energy considerations, applicable conversion factors, necessary instrumentation and methods. |
| | 16.46 Discuss the clinical importance of phantom material and size when applying the Bragg-Gray Cavity Theory. |
| | 16.47 Critique how dose distribution measured in a phantom is used to predict dose distribution in a patient. |
| | 16.48 Compare the characteristics and composition of various phantoms. |
| | 16.49 Compare source-skin distance (SSD) and isocentric methods of calibration. |
| 17.0 | Demonstrate proficiency in research methods and information literacy. -- The student will be able to: |
| | 17.01 Analyze research articles to determine the accuracy and validity of findings. |
| | 17.02 Integrate information literacy concepts into a research project. |
| | 17.03 Critique research projects to determine appropriateness and usefulness to the profession. |
| 18.0 | Demonstrate the skills, techniques and knowledge required for medical imaging methods to capture sectional anatomy. -- The student will be able to: |
| | 18.01 Relate the importance of imaging with computed tomography, magnetic resonance and PET-CT in radiation therapy. |
| | 18.02 Differentiate between sagittal, coronal and axial planes of the body. |
| | 18.03 Review the principles of imaging for imaging modalities using relevant terminology. |

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| 18.04 | Compare the imaging modalities for application to radiation therapy. |
| 18.05 | Identify normal anatomical structures on sectional images. |
| 18.06 | Identify topographic anatomy used to locate underlying internal structures. |
| 18.07 | Describe image formation and orientation for computed tomography, magnetic resonance, positron emission tomography, ultrasonography, and image fusion. |
| 19.0 | Demonstrate the skills, techniques and knowledge required for the clinical planning of patient treatment. -- The student will be able to: |
| 19.01 | Compare photon isodose curves for clinically relevant photon beams. |
| 19.02 | Describe the general influencing factors that distinguish various isodose curves. |
| 19.03 | Determine internal and external patient factors that influence a beam's distribution and apply isodose correction methods. |
| 19.04 | Describe methods of determining a patient's external contour, definition of internal structures and volumes of interest used in treatment planning. |
| 19.05 | Identify organs and tissues at risk and their dose limitations using published tolerance dose tables. |
| 19.06 | Describe how biologic effective dose is influenced by prescription and treatment variables. |
| 19.07 | Compare fractionation schemes. |
| 19.08 | Discuss the integral dose concept. |
| 19.09 | Use appropriate factors for treatment calculations. |
| 19.10 | Describe the interrelationships of the various factors used in treatment calculations. |
| 19.11 | Perform dose calculations for external photon and electron beam treatments for all clinical variations. |
| 19.12 | Calculate the absorbed dose to off-axis points of interest. |
| 19.13 | Compare absorbed doses within a treatment volume with beam variations. |
| 19.14 | Explain algorithms incorporated into treatment planning computers. |
| 19.15 | Describe the clinical applications for moving beam techniques. |
| 19.16 | Describe the past pointing technique. |
| 19.17 | Calculate equivalent squares using various methods and consider the limitations of each. |
| 19.18 | Describe the effect of asymmetric beam collimation on dose distribution. |

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| 19.19 | Describe methods for determining dose distribution at points outside the treatment field. |
| 19.20 | Calculate dose under a block. |
| 19.21 | Evaluate a variety of treatment plans for clinical use. |
| 19.22 | Identify all possible techniques that may be employed to clinically match adjacent fields. |
| 19.23 | Describe the multiple junction shift methods. |
| 19.24 | Examine hot and cold regions that occur with the various matching methods, and describe the methods used to eliminate them. |
| 19.25 | Describe procedures for permanent record and legal documentation of matching fields. |
| 19.26 | Analyze dose distributions to determine the need for beam modifiers. |
| 19.27 | Compare various methods of tissue compensation and the dosimetric impact. |
| 19.28 | Examine the fabrication of 2-D and 3-D compensators. |
| 19.29 | Construct manual and computerized isodose curves. |
| 19.30 | Differentiate between isodose distributions for all clinical variations. |
| 19.31 | Evaluate possible corrections for treatment errors to correct misadministration of prescribed dose. |
| 19.32 | Differentiate between the treatment planning terms: maximum, minimum, mean, modal and median dose. |
| 19.33 | Describe International Commission on Radiological Units (ICRU) recommendations on dose variance within a target volume and the effect that variances may have on cure rates, local control and tolerance. |
| 19.34 | Analyze dose volume histograms relative to treatment planning. |
| 19.35 | Evaluate patient changes to determine the integrity of a treatment plan. |
| 19.36 | Compare electron beam depth dose characteristics for various energies. |
| 19.37 | Identify clinical factors that would influence beam type and energy selection. |
| 19.38 | Differentiate between standard treatment distance and virtual distance. |
| 19.39 | Discuss why equivalent squares used with photon beams are inappropriate with electron beams. |
| 19.40 | Describe how inhomogeneities influence electron beam path. |
| 19.41 | Discuss the considerations of matching an electron field to other adjacent photon or electron fields. |

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| 19.42 | Analyze which shielding materials and thickness would be needed to attenuate electron beams to appropriate levels. |
| 19.43 | Describe how electron shielding materials should be arranged for external vs. internal shielding. |
| 19.44 | Discuss changes in dose rate and dose distribution with changes in blocking and electron energy. |
| 19.45 | Compare calculations of shielding thicknesses to measured data for electron beams. |
| 19.46 | Determine why specific isodose lines are prescribed for various clinical situations involving critical and noncritical structures. |
| 19.47 | Calculate percentage depth dose for 10%, 50%, 80% and 90% lines for various electron energies. |
| 19.48 | Describe the considerations in the clinical application of special electron treatments, including total skin irradiation and arc therapy. |
| 19.49 | Compare the general isodose pattern of particle beams. |
| 19.50 | Determine clinical usefulness of various beam types and the clinical implications involved. |
| 19.51 | Describe the various imaging modalities in tumor localization and planning. |
| 19.52 | Discuss planning techniques used to accommodate the treatment volume shape. |
| 19.53 | Discuss isocenter localization for radiosurgery. |
| 19.54 | Identify vital structures considered during treatment planning. |
| 19.55 | Compare single dose delivery to fractionated dose delivery schedules. |
| 19.56 | Discuss the need for specific equipment used to deliver radiation for conformal therapy. |
| 19.57 | Discuss the purpose and contents of the ICRU Report 62 and supplements. |
| 19.58 | Discuss the computer system features necessary for conformal therapy treatment planning. |
| 19.59 | Identify common sites amenable to conformal therapy and the typical doses employed for those sites. |
| 19.60 | Compare configurations of multileaf collimation systems. |
| 19.61 | Discuss considerations for multileaf collimators. |
| 19.62 | Review the differences between static and dynamic multileaf collimation systems. |
| 19.63 | Identify appropriate clinical applications for brachytherapy. |
| 19.64 | Compare and contrast brachytherapy delivery systems. |

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| 19.65 | Describe the techniques and applicators used for intracavitary, interstitial and endovascular brachytherapy procedures. |
| 19.66 | Explain how simulation and CT data is used for source localization. |
| 19.67 | Discuss the objective of treatment planning for brachytherapy procedures. |
| 19.68 | Summarize dose specification and prescription techniques for different types of implants. |
| 19.69 | Describe optimization techniques used in computer aided dose calculations. |
| 19.70 | Discuss record keeping requirements for radioactive material. |
| 19.71 | State radiation safety requirements for brachytherapy procedures. |
| 19.72 | Identify appropriate clinical applications for using intensity modulated radiation therapy (IMRT). |
| 19.73 | Describe the general flow of the IMRT process from patient immobilization through treatment delivery. |

## Additional Information

### Laboratory Activities

Laboratory investigations that include scientific inquiry, research, measurement, problem solving, emerging technologies, tools and equipment, as well as, experimental, quality, and safety procedures are an integral part of this career and technical program/course. Laboratory investigations benefit all students by developing an understanding of the complexity and ambiguity of empirical work, as well as the skills required to manage, operate, calibrate and troubleshoot equipment/tools used to make observations. Students understand measurement error; and have the skills to aggregate, interpret, and present the resulting data. Equipment and supplies should be provided to enhance hands-on experiences for students.

Clinical education has been established for the students in these programs. It is designed to permit accurate assessment of the knowledge, skills and abilities of students in the clinical education component of the program. After completion of the prerequisite practice of radiotherapeutic procedures, students indicate readiness for evaluation in a specific category to the clinical affiliate or faculty in the assigned clinical education center.

Clinical education and laboratory activities facilitate student rotations to provide them equitable opportunity to achieve the program clinical objective utilizing multiple affiliates. The resulting clinical rotation and laboratory practicum provides students with patient treatment techniques utilizing a variety of megavoltage equipment, radiation therapy patient care procedures, localization and treatment, radiation therapy physics including dosimetry, machine calibration, quality assurance, handling of sealed radioactive sources and protection, follow up, patient care and patient recordkeeping.

### Special Notes

The program is designed to provide the radiation therapy community with workers who, under the supervision of a Radiation Oncologist, uses ionizing radiation to treat disease. The curriculum provides students an opportunity to develop technical and social skills through experiences in the clinic, classroom, and laboratory.

This program meets the Department of Health's education requirements for HIV/AIDS, Domestic Violence and Prevention of Medical Errors. Although not a requirement for initial licensure, it is a requirement for renewal, therefore the instructor may provide a certificate for renewal purposes to the student verifying these requirements have been met.

If students in this program are seeking a licensure, certificate or registration through the Department of Health, please refer to 456.0635 F.S. for more information on disqualification for a license, certificate, or registration through the Department of Health.

Students are encouraged to become members of their appropriate professional organizations such as the American Society of Radiologic Technologists (ASRT), Florida Society of Radiologic Technologists (FSRT) and its' local affiliate.

## Career and Technical Student Organization (CTSO)

HOSA: Future Health Professionals is the intercurricular career and technical student organization providing leadership training and reinforcing specific career and technical skills. Career and Technical Student Organizations provide activities for students as an integral part of the instruction offered.

## Accommodations

Federal and state legislation requires the provision of accommodations for students with disabilities to meet individual needs and ensure equal access. Postsecondary students with disabilities must self-identify, present documentation, request accommodations if needed, and develop a plan with their counselor and/or instructors. Accommodations received in postsecondary education may differ from those received in secondary education. Accommodations change the way the student is instructed. Students with disabilities may need accommodations in such areas as instructional methods and materials, assignments and assessments, time demands and schedules, learning environment, assistive technology and special communication systems. Documentation of the accommodations requested and provided should be maintained in a confidential file.

## Certificate Programs

A College Credit Certificate consists of a program of instruction of less than sixty (60) credits of college-level courses, which is part of an AS or AAS degree program and prepares students for entry into employment (Rule 6A-14.030, F.A.C.). This AS degree program includes the following College Credit Certificates:

Radiation Therapy Specialist (0351090703) – 43 credit hours

Standards for the above certificate programs are contained in separate curriculum frameworks.

**Florida Department of Education**
**Curriculum Framework**

**Program Title:** **Respiratory Care**
**Career Cluster:** **Health Science**

| AS | |
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| CIP Number | 1351090800 |
| Program Type | College Credit |
| Standard Length | 76 credit hours |
| CTSO | HOSA: Future Health Professionals |
| SOC Codes (all applicable) | 29-1126 Respiratory Therapists |

## Purpose

This program offers a sequence of courses that provides coherent and rigorous content aligned with challenging academic standards and relevant technical knowledge and skills needed to prepare for further education and careers in the Health Science career cluster; provides technical skill proficiency, and includes competency-based applied learning that contributes to the academic knowledge, higher-order reasoning and problem-solving skills, work attitudes, general employability skills, technical skills, and occupation-specific skills, and knowledge of all aspects of Health Science career cluster.

This program trains students for the occupation of Respiratory Therapist (SOC Code 29-1126) or to provide supplemental training for persons previously or currently employed in these occupations. The respiratory therapist specializes in the application of scientific knowledge and theory to practical, clinical problems of respiratory care.

The content includes but is not limited to quality control of all units, intermittent positive pressure breathing (IPPB); humidity/aerosol therapy; medical gas administration; broncho-pulmonary drainage; mechanical ventilation; airway management; emergency care; pulmonary function testing; cardiopulmonary rehabilitation; measurement and reporting of cardiopulmonary sampling, infection control; cardiopulmonary drug administration, physiologic monitoring, and special advanced procedures.

**Additional Information** relevant to this Career and Technical Education (CTE) program is provided at the end of this document.

## Program Structure

This program is a planned sequence of instruction consisting of 76 credit hours.

## Regulated Programs

Graduates of this program are eligible to take the NBRC (National Board of Respiratory Care) examination(s) and become licensed with the State of Florida Department of Health, Division of Quality Assurance.

## Standards

After successfully completing this program, the student will be able to perform the following:

01.0 Recognize and practice safety and security procedures.
02.0 Recognize and practice infection control procedures.
03.0 Select, review, obtain and interpret data.
04.0 Select, assemble, and check equipment for proper function, operation and cleanliness.
05.0 Initiate, conduct, and modify prescribed therapeutic procedures.
06.0 Demonstrate knowledge of the health care delivery system, maintain records and communications.
07.0 Demonstrate legal and ethical responsibilities.
08.0 Demonstrate knowledge of employment requirements as a respiratory care professional.
09.0 Adapt appropriate respiratory care procedures to the home care environment.
10.0 Perform advanced respiratory care procedures.
11.0 Administer cardiopulmonary drugs.
12.0 Assist the physician with special respiratory therapy procedures.
13.0 Initiate and conduct patient and family education.

**Florida Department of Education**
**Student Performance Standards**

**Program Title:** **Respiratory Care**
**CIP Number:** **1351090800**
**Program Length:** **76 credit hours**
**SOC Code(s):** **29-1126**

| **Refer to Rule 6A-14.030 (4) F.A.C., for the minimum amount of general education coursework required in the Associate of Science (AS) degree. At the completion of this program, the student will be able to:** | |
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| 01.0 | Recognize and practice safety and security procedures. – The student will be able to: |
| 01.01 | Recognize safe and unsafe working conditions and report safety hazards. |
| 01.02 | Identify and describe methods in medical error reduction and prevention in the various healthcare settings. |
| 01.03 | Demonstrate personal safety procedures based on Occupations Safety and Health Administration (OSHA) and Centers for Disease Control (CDC) regulations including standard precautions. |
| 01.04 | Recognize Safety Data Sheets (SDS) and comply with safety signs, symbols and labels. |
| 01.05 | Demonstrate proper body mechanics and ergonomics. |
| 01.06 | Demonstrate the procedure for properly identifying patients. |
| 01.07 | Demonstrate procedures for the safe transport and transfer of patients. |
| 01.08 | Describe fire, safety, disaster and evacuation procedures. |
| 02.0 | Recognize and practice infection control procedures. – The student will be able to: |
| 02.01 | Define principles of infection control including standard and transmission based precautions. |
| 02.02 | Demonstrate knowledge of medical asepsis and practice procedures such as hand-washing and isolation. |
| 02.03 | Demonstrate knowledge of surgical asepsis. |
| 02.04 | Describe how to dispose correctly of biohazardous materials according to appropriate government guidelines such as OSHA. |
| 02.05 | Apply infection control techniques designed to prevent the spread of diseases caused by airborne and blood borne pathogens to the care of all patients following Centers for Disease Control (CDC) guidelines. |
| 03.0 | Select, review, obtain and interpret data. – The student will be able to: |

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| | 03.01 | Review existing data in patient record, and recommend diagnostic procedures based on all available patient information. |
| | | 03.01.01 Review existing data in patient record. |
| | | 03.01.02 Recommend procedures to obtain additional data. |
| | 03.02 | Collect and evaluate additional pertinent clinical information. |
| | | 03.02.01 Assess the patients overall cardiopulmonary status by inspection, percussion, palpation and auscultation. |
| | 03.03 | Perform procedures and interpret results. |
| | | 03.03.01 Perform and/or interpret results of bedside procedures. |
| | 03.04 | Determine the appropriateness of the prescribed respiratory care plan, recommend modifications where indicated, and participate in the development of the respiratory care plan. |
| | | 03.04.01 Review planned therapy to establish therapeutic goals. |
| | | 03.04.02 Determine appropriateness of prescribed therapy and goals for identified pathophysiological state. |
| | | 03.04.03 Recommend changes in therapeutic plan (based on data) if indicated. |
| | | 03.04.04 Participate in development of respiratory care plan. |
| 04.0 | Select, assemble, and check equipment for proper function, operation and cleanliness. – The student will be able to: | |
| | 04.01 | Select and obtain equipment, assure cleanliness of equipment, assemble, check for proper function, identity malfunctions of equipment, and take action to correct malfunctions of equipment appropriate to the respiratory care plan which includes the following: |
| | | 04.01.01 Oxygen administration devices |
| | | 04.01.02 High flow and heated high flow oxygen devices |
| | | 04.01.03 Humidifiers. |
| | | 04.01.04 Aerosol generators. |
| | | 04.01.05 Ventilators; invasive and non-invasive. |
| | | 04.01.06 Artificial airways. |
| | | 04.01.07 Laryngeal mask and supraglottic airways |
| | | 04.01.08 Suctioning devices. |
| | | 04.01.09 Gas delivery, metering, and clinical analyzing devices. |

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| | 04.01.10 | Manometers and gauges. |
| | 04.01.11 | Resuscitation devices. |
| | 04.01.12 | Hyperinflation/lung expansion devices. |
| | 04.01.13 | Patient breathing circuits. |
| | 04.01.14 | Metered dose inhalers (MDI) and spacers. |
| | 04.01.15 | Dry powder inhalers ( DPI) |
| | 04.01.16 | Airway Clearance devices. |
| | 04.01.17 | Specialty medical gases such asnitric oxide and heliox. |
| | 04.01.18 | Pleural drainage devices |
| | 04.01.19 | Bronchoscopy Devices |
| | 04.01.20 | Bronchoalveolar lavage (BAL) and related devices |
| | 04.01.21 | Noninvasive monitoring equipment |
| | 04.01.22 | Intubation equipment |
| | 04.01.23 | Intra-aortic balloon pump (IABP) |
| 05.0 | Initiate, conduct, and modify prescribed therapeutic procedures. – The student will be able to: | |
| | 05.01 | Explain planned therapy and goals to patients; maintain records and communication; and protect patient from nosocomial infection. |
| | 05.01.01 | Explain planned therapy and goals to patient in understandable terms to achieve optimal therapeutic outcome. |
| | 05.01.02 | Maintain records and communication. |
| | 05.01.03 | Protect patient from nosocomial infection by adherence to infection control policies and procedures (standard precautions, blood and body fluid precautions, etc.). |
| | 05.02 | Conduct therapeutic procedures to achieve maintenance of patent airway, including the care of artificial airways; and to achieve removal of bronchopulmonary secretions. |
| | 05.02.01 | Achieve maintenance of patient airway. |
| | 05.02.02 | Achieve removal of bronchopulmonary secretions. |
| | 05.02.03 | Understand function and achieve application of speaking valves. |

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| 05.03 | Conduct therapeutic procedures to achieve adequate spontaneous and artificial ventilation. | |
| | 05.03.01 | Instruct in proper breathing techniques. |
| | 05.03.02 | Instruct and monitor techniques of Hyperinflation/lung expansion. |
| | 05.03.03 | Instruct and monitor techniques of airway clearance devices. |
| | 05.03.04 | Administer/assist with directed cough (quad cough/huff cough). |
| | 05.03.05 | Administer prescribed aerosolized medications. |
| | 05.03.06 | Select appropriate ventilator including both conventional and non- conventional (i.e. high frequency ventilation). |
| | 05.03.07 | Select, initiate and adjust invasive ventilation device and properly manipulate settings based on patient response and data. |
| | 05.03.08 | Select, initiate and adjust non-invasive ventilation device and properly manipulate settings based on patient response and data. |
| | 05.03.09 | Manage liberation from mechanical ventilation. |
| | 05.03.10 | Manage Withdrawal of life support. |
| | 05.03.11 | Interpret invasive ventilator graphics and manipulate settings accordingly. |
| | 05.03.12 | Interpret non-invasive ventilator graphics and manipulate settings accordingly. |
| | 05.03.13 | Assist with the transport of a mechanically ventilated patient. |
| 05.04 | Conduct therapeutic procedures to achieve adequate arterial and tissue oxygenation. | |
| | 05.04.01 | Position patient to minimize hypoxia. |
| | 05.04.02 | Administer oxygen (on or off ventilator). |
| | 05.04.03 | Prevent procedure-associated hypoxia (e.g. oxygenated before and after suctioning and equipment change, etc.). |
| | 05.04.04 | Initiate and adjust CPAP/PEEP therapy. |
| | 05.04.05 | Initiate lung recruitment maneuvers. |
| 05.05 | Evaluate and monitor patient’s response to respiratory care. | |
| | 05.05.01 | Measure and record vital signs. |
| | 05.05.02 | Monitor cardiac rhythm. |

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| 05.05.03 | Non-Invasive monitors |
| 05.05.03.1 | Monitor pulse oximetry. |
| 05.05.03.2 | Monitor capnography. |
| 05.05.03.3 | Monitor Transcutaneous oxygenation |
| 05.05.04 | Auscultate chest and record changes. |
| 05.05.05 | Observe changes in sputum production and consistency. |
| 05.05.06 | Note patient's subjective response to therapy. |
| 05.05.07 | Measure FIO2 and or liter flow. |
| 05.05.08 | Perform bedside spirometry. |
| 05.05.09 | Perform peak flow. |
| 05.05.10 | Perform 6 minute walk test. |
| 05.05.11 | Perform FeNO measurement. |
| 05.05.12 | Perform arterial puncture. |
| 05.05.13 | Interpret results of arterial blood gas analysis. |
| 05.05.14 | Adjust and check alarm systems. |
| 05.05.15 | Note patient's response to mechanical ventilation. |
| 05.05.16 | Measure appropriate mechanical ventilation parameters. |
| 05.05.17 | Monitor endotracheal or tracheostomy tube cuff pressure. |
| 05.06 | Make necessary modifications in therapeutic procedures and recommend respiratory care plan modifications based on patient response. |
| 05.06.01 | Terminate treatment based on patient's adverse reaction to therapy being administered. |
| 05.06.02 | Modify bronchial hygiene. |
| 05.06.03 | Modify management of artificial airways. |
| 05.06.04 | Modify Hyperinflation/lung expansion devices. |

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| | 05.06.05 | Modify aerosol therapy. |
| | 05.06.06 | Modify oxygen therapy. |
| | 05.06.07 | Modify suctioning. |
| | 05.06.08 | Modify mechanical ventilation. |
| | 05.06.09 | Recommend modifications in the respiratory care plan based on the patient's response. |
| 05.07 | Initiate, conduct, or modify respiratory care techniques in an emergency setting as prescribed by the American Heart Association guidelines. | |
| 05.08 | Evaluate and respond to emergent loss of artificial airway. | |
| 05.09 | Demonstrate an understanding of special airway management situations, such as surgical alterations of the airway, and adjust response as appropriate. | |
| 06.0 | Demonstrate knowledge of the health care delivery system, maintain records and communications. – The student will be able to: | |
| 06.01 | Describe the various types of healthcare providers and the range of services available including resources to victims of abuse, neglect, and domestic violence. | |
| 06.02 | Identify the general roles and responsibilities of the individual members of the healthcare team. | |
| 06.03 | Use computer system to access and input patient data, when appropriate. | |
| 06.04 | Chart on medical record; record therapy and results using conventional terminology as required by hospital policy and regulatory agencies. | |
| 06.05 | Be familiar with and use departmental policy and procedure manual; actively participate in recommending updates. | |
| 06.06 | Consistently display a professional and positive attitude in all communications. | |
| 06.07 | Recognize the importance of courtesy and respect for patients and other healthcare workers and maintain good interpersonal relationships. | |
| 06.08 | Participate and communicate as part of the interdisciplinary team. | |
| 06.09 | Display respect for patients regardless of ethnicity, religion, cultural, creed, gender, sexual orientation, age, or diagnosis. | |
| 06.10 | Adapt communication skills to varied levels of understanding and cultural orientation including ethnicity, religion, cultural, creed, gender, sexual orientation, age, diagnosis, and preferred learning style. | |
| 06.11 | Recognize the steps in the grief process. | |
| 06.12 | Maintain confidentiality of all patient records and information. | |
| 06.13 | Distinguish between and report subjective and objective information. | |

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| 07.0 | Demonstrate legal and ethical responsibilities. – The student will be able to: |
| | 07.01 Explain practices that could result in malpractice, liability, negligence, abandonment, false imprisonment, and fraud. |
| | 07.02 Explain the “Patient’s Bill of Rights”. |
| | 07.03 Identify standards of the Health Insurance Portability and Accountability Act (HIPAA). |
| | 07.04 Describe advance directives. |
| | 07.05 Describe different forms of consent including implied, informed, and expressed. |
| | 07.06 Recognize and report illegal and/or unethical practices of healthcare workers. |
| | 07.07 Recognize and report abuse including domestic violence and neglect. |
| 08.0 | Demonstrate knowledge of employment requirements as a respiratory care professional. – The student will be able to: |
| | 08.01 Identify the requirements to become licensed in Florida and maintenance of the license. |
| | 08.02 Identify National Board of Respiratory Care continuing competencies and membership requirements to maintain credentials. |
| | 08.03 Identify the Laws and Rules related to the practice of respiratory care in Florida included in Chapter 468 Part V. |
| | 08.04 Discuss patient safety goals and any other applicable accrediting/regulatory agency guidelines. |
| 09.0 | Adapt appropriate respiratory care procedures to the home care environment. – The student will be able to: |
| | 09.01 Provide for oxygen administration, aerosol and bronchial hygiene therapy and hyperinflation/lung expansion therapy in the home. |
| | 09.02 Coordinate with the interdisciplinary team in arranging life support and monitoring (i.e. mechanical ventilation, apnea monitoring, nasal CPAP) in the home. |
| | 09.03 Instruct patient, family and other healthcare workers on the appropriate use, operation, cleaning, and maintenance of respiratory care equipment. |
| | 09.04 Perform patient monitoring and assessment in the home. |
| | 09.05 Recognize and report symptoms of abuse and neglect. |
| 10.0 | Perform advanced respiratory care procedures. – The student will be able to: |
| | 10.01 Assume primary clinical responsibility for all respiratory care modalities. |
| | 10.02 Check physicians’ orders or consult with physician. |
| | 10.03 Design and implement respiratory care plan as appropriate. |

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| | 10.04 Perform pulmonary artery sampling. |
| | 10.05 Perform cardiac output procedures. |
| | 10.06 Perform arterial line set up, insertion and monitoring. |
| | 10.07 Perform noninvasive monitoring techniques as appropriate. |
| | 10.08 Perform various advanced procedures, based on local practice. |
| | 10.09 Remove, clean and/or replace inner cannula tube and/or replace tracheostomy tube, as ordered. |
| | 10.10 Perform various mathematical computations dealing with cardiopulmonary assessment. |
| | 10.11 Evaluate and apply hemodynamic monitoring to enhance care of the patient. |
| | 10.12 Perform intubation. |
| | 10.13 Initiate infant mechanical ventilation with appropriate ventilator and parameter including CPAP and PEEP. |
| | 10.14 Monitor return to normal physiology; reestablish ventilation if necessary. |
| | 10.15 Monitor return to normal physiology, reintubation if necessary. |
| | 10.16 Monitor and assist in procedural sedation. |
| 11.0 | Administer cardiopulmonary drugs. – The student will be able to: |
| | 11.01 Demonstrate knowledge of drug classifications, actions and uses, route of administration and usual adult doses, mathematics needed to calculate divided or children's dosage, contraindications, drug interactions, adverse reactions, how supplied, mixing instructions, storage, laboratory test interferences. |
| | 11.02 Recognize the critical importance of this activity and follow directions. |
| | 11.03 Verify physicians' orders. |
| | 11.04 Prepare medication for administration. |
| | 11.05 Identify patient, introduce self. |
| | 11.06 Administer drug. |
| | 11.07 Perform endotracheal instillation of medication as appropriate. |
| | 11.08 Monitor Patient response to drug administration. |
| | 11.09 Document administering of drug in all appropriate records. |

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| | 11.10 Recognize the symptoms of drug idiosyncrasies. |
| | 11.11 Identify adverse drug reactions and take appropriate action. |
| | 11.12 Recognize anaphylactic shock. |
| 12.0 | Assist the physician with special respiratory therapy procedures. – The student will be able to: |
| | 12.01 Assist with insertion and maintenance of an umbilical arterial and/or venous catheter. |
| | 12.02 Assist with bronchoscopy, chest tubes, and cardiac catheterizations. |
| | 12.03 Assist with pulmonary artery catherization and other invasive monitoring. |
| | 12.04 Assist with thoracentesis, chest tube insertion, tracheostomy, intubation and cardioversion. |
| | 12.05 Assist with cardiopulmonary stress testing. |
| 13.0 | Initiate and conduct patient and family education. – The student will be able to: |
| | 13.01 Demonstrate knowledge of smoking cessation products, techniques and programs. |
| | 13.02 Educate the patient and family in relevant safety and infection control procedures and techniques. |
| | 13.03 Educate the patient and family on the importance of pulmonary rehabilitation and their role. |
| | 13.04 Educate the patient and family in disease management techniques for the following disorders/ diseases:<br>13.04.01 Asthma<br>13.04.02 COPD<br>13.04.03 Sleep disorders |

## Additional Information

### Laboratory Activities

Laboratory investigations that include scientific inquiry, research, measurement, problem solving, emerging technologies, tools and equipment, as well as, experimental, quality, and safety procedures are an integral part of this career and technical program/course. Laboratory investigations benefit all students by developing an understanding of the complexity and ambiguity of empirical work, as well as the skills required to manage, operate, calibrate and troubleshoot equipment/tools used to make observations. Students understand measurement error; and have the skills to aggregate, interpret, and present the resulting data. Equipment and supplies should be provided to enhance hands-on experiences for students.

### Special Notes

This program meets the Department of Health's education requirements for HIV/AIDS, Domestic Violence and Prevention of Medical Errors. Although not a requirement for initial licensure, it is a requirement for renewal, therefore the instructor may provide a certificate for renewal purposes to the student verifying these requirements have been met.

If students in this program are seeking a licensure, certificate or registration through the Department of Health, please refer to 456.0635 F.S. for more information on disqualification for a license, certificate, or registration through the Department of Health.

The respiratory therapist may be required to exercise considerable independent, clinical judgment in the respiratory care of patients under the direct or indirect supervision of a physician. Further, the therapist is capable of serving as a technical resource person to the physician with regard to current practices in respiratory care, and to the hospital staff as to effective and safe methods for administering respiratory therapy.

Outcomes 01-11 are referred to as the Health Careers Core and do not have to be completed if the student has previously completed the Core in another health science program. The CORE should be taken first or concurrently with the first course in the program. Following the successful completion of the core, the student is eligible to take the National Health Care Foundation Skill Standards Assessment with instructor approval and the completion of a portfolio.

### Career and Technical Student Organization (CTSO)

HOSA: Future Health Professionals is the intercurricular career and technical student organization providing leadership training and reinforcing specific career and technical skills. Career and Technical Student Organizations provide activities for students as an integral part of the instruction offered.

### Accommodations

Federal and state legislation requires the provision of accommodations for students with disabilities to meet individual needs and ensure equal access. Postsecondary students with disabilities must self-identify, present documentation, request accommodations if needed, and develop a plan with their counselor and/or instructors. Accommodations received in postsecondary education may differ from those received in secondary education. Accommodations change the way the student is instructed. Students with disabilities may need accommodations in such areas as

instructional methods and materials, assignments and assessments, time demands and schedules, learning environment, assistive technology and special communication systems. Documentation of the accommodations requested and provided should be maintained in a confidential file.

**Florida Department of Education**
**Curriculum Framework**

**Program Title:** **Surgical First Assisting**
**Career Cluster:** **Health Science**

| AS | |
|---|---|
| CIP Number | 1351090900 |
| Program Type | College Credit |
| Standard Length | 74 credit hours |
| CTSO | HOSA: Future Health Professionals |
| SOC Codes (all applicable) | 29-2055 Surgical Technologists |

## Purpose

This program offers a sequence of courses that provides coherent and rigorous content aligned with challenging academic standards and relevant technical knowledge and skills needed to prepare for further education and careers in the Health Science career cluster; provides technical skill proficiency, and includes competency-based applied learning that contributes to the academic knowledge, higher-order reasoning and problem-solving skills, work attitudes, general employability skills, technical skills, and occupation-specific skills, and knowledge of all aspects of Health Science career cluster.

The program is designed to prepare students for employment as a Surgical First Assistant Expanded Function (Surgical technologists is SOC 29-2055).

The content includes, but is not limited to, communication and interpersonal skills, legal and ethical responsibilities, anatomy, physiology, pathophysiology, microbiology, aseptic techniques, patient care procedures, surgical procedures, patient safety, use and care of equipment and supplies, CPR, Heartsaver, employability skills, basic computer literacy and surgical first assistant skills such as preoperative duties, aid in exposure, hemostasis, closure, intraoperative technical functions, and postoperative duties under the direction and supervision of the surgeon.

**Additional Information** relevant to this Career and Technical Education (CTE) program is provided at the end of this document.

## Program Structure

This program is a planned sequence of instruction consisting of 74 credit hours.

**Standards**

After successfully completing this program, the student will be able to perform the following:

01.0 Demonstrate knowledge of the health care delivery system and health occupations.
02.0 Demonstrate the ability to communicate and use interpersonal skills effectively.
03.0 Demonstrate legal and ethical responsibilities.
04.0 Demonstrate an understanding of and apply wellness and disease concepts.
05.0 Recognize and practice safety and security procedures.
06.0 Recognize and respond to emergency situations.
07.0 Recognize and practice infection control procedures.
08.0 Demonstrate an understanding of information technology applications in healthcare.
09.0 Demonstrate employability skills.
10.0 Demonstrate knowledge of blood borne diseases, including HIV/AIDS.
11.0 Apply basic math and science skills.
12.0 Demonstrate central sterile processing skills.
13.0 Demonstrate competencies in the core components of the surgical first assistant related to communication and interpersonal skills
14.0 Demonstrate an understanding of the basic sciences related to surgical first assisting.
15.0 Describe and practice safety measures in the surgical environment.
16.0 Perform patient care procedures related to the surgical environment and describe methods for meeting patient's needs.
17.0 Demonstrate knowledge of pharmacology and math calculation principles related to the surgical environment.
18.0 Demonstrate knowledge of the basic surgical skills necessary to function safely and effectively.
19.0 Demonstrate competencies in the core components of the surgical first assistant related to knowledge and skills.
20.0 Demonstrate competencies in the core components of the surgical first assistant related to legal and ethical responsibilities.

**Florida Department of Education**
**Student Performance Standards**

**Program Title:** **Surgical First Assisting**
**CIP Number:** **1351090900**
**Program Length:** **74 credit hours**
**SOC Code(s):** **29-2055**

Standards 1-11 are referred to as the **Health Science Core** and are required standards in this program. Secondary and Postsecondary students completing the health science core will not have to repeat the core in any other health science program in which it is a part. When the recommended sequence is followed, the structure allows students to complete at specified points for employment or remain for advanced training or cross-training.

To ensure consistency whenever these courses are offered, the health science core standards (1-11) have been placed in a separate document.

| **Refer to Rule 6A-14.030 (4) F.A.C., for the minimum amount of general education coursework required in the Associate of Science (AS) degree. At the completion of this program, the student will be able to:** | |
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| **Students completing intended outcomes 12-19 will meet the requirements of the Surgical First Assistant –CCC Program (SOC Code 29-2055).** | |
| 12.0 | Demonstrate central sterile processing skills. -- The student will be able to: |
| 12.01 | Apply the principles of medical/surgical asepsis including attire, environmental control and traffic patterns to control and manage dirty, clean and sterile areas of the operating room and central supply. |
| 12.02 | Identify relevant federal, state and local guidelines, standards and regulations. |
| 12.03 | Apply ergonomic considerations and appropriate body mechanics for lifting, turning, pulling, pushing, reaching, and other work related activities. |
| 12.04 | Describe the methods of disinfection and sterilization. |
| 12.05 | Describe the importance of following device, equipment, instrument or supply manufacturer's instructions for decontamination, processing, operation, and troubleshooting. |
| 12.06 | Demonstrate correctly decontamination techniques for instruments, equipment and the environment used during surgical procedures. |
| 12.07 | Demonstrate appropriate techniques for inspection, testing and sending out for repair instruments, equipment and supplies regarding condition, quantity and quality. |
| 12.08 | Describe clean and sterile transportation, restocking, and storage principles for instruments. |
| 12.09 | Analyze the results of sterilization process monitors used in sterilization units, sterilizations cycles and ensures documentation meets the safe parameters for each prior to use of an item. |

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| | 12.10 Describe clean and sterile transportation, restocking, and storage principles for supplies in the facility (receivables, sterile, clean, or contaminated). |
| | 12.11 Demonstrates the ability to identify and select appropriate instruments, equipment and supplies for any surgical procedure. |
| | 12.12 Demonstrate the ability to prepare and label items for high level disinfection and sterilization as required. |
| | 12.13 Demonstrate the techniques of high level disinfection and sterilization for immediate use items. |
| | 12.14 Describe various supply distribution and inventory control methods. |
| | 12.15 Demonstrate case cart preparation and management. |
| 13.0 | Demonstrate competencies in the core components of the surgical first assistant related to communication and interpersonal skills -- The student will be able to: |
| | 13.01 Demonstrate proper use of communication systems. |
| | 13.02 Use various forms of communication in the role of Surgical First Assistant to communicate relevant, accurate and complete information in a concise and clear manner. |
| | 13.03 Collaborate with the patient, surgeon, and other members of the Healthcare team to assess, plan, implement, and evaluate the patient's surgical care to promote positive outcomes including the use of preoperative checklists and preoperative assessment and evaluations methods. |
| | 13.04 Demonstrate patient interviewing techniques. |
| | 13.05 Demonstrate the ability to analyze and communicate specific patient care factors or needs and the surgeon's preferences to the surgical team including suture needs, specialty supplies and instrumentation, and equipment. |
| | 13.06 Describe the concepts of conflict resolution, assertive behavior and the principles of teamwork as a patient advocate and assistant to the surgeon. |
| | 13.07 Demonstrate competency regarding reporting and documentation responsibilities in the clinical setting. |
| | 13.08 Employ leadership skills to accomplish organizations goals and objectives. |
| | 13.09 Establish and maintain effective working relationships with others, in order to accomplish objectives and tasks. |
| | 13.10 Conduct and participate in meetings to accomplish work tasks. |
| | 13.11 Employ mentoring skills to inspire and teach others. |
| 14.0 | Demonstrate an understanding of the basic sciences related to surgical first assisting.--The student will be able to: |
| | 14.01 Apply knowledge of the microbial environment to the surgical care of the patient. |
| | 14.02 Analyze patient defense mechanisms, the chain of infection and the infectious process as related to surgical practice and the prevention of surgical site infections. |
| | 14.03 Correlate wound classifications and wound healing principles with wound management guidelines and complications. |

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| | 14.04 Demonstrate infection and disease transmission control techniques following the Center for Disease Control (CDC) and Occupational Safety and Health Administration (OSHA) guidelines for surgery. |
| | 14.05 Describe the causes, clinical signs and symptoms and prevention measures for surgical infections. |
| | 14.06 Describe the basic composition, principles, clinical signs and symptoms regarding electrolytes and fluid balance including the mechanism of hypovolemic, septic, hemorrhagic and cardiogenic shock. |
| | 14.07 Correlates the principles and disorders of hematology, hemostasis, types of blood components, and coagulation with hemostasis in surgery. |
| | 14.08 Discuss the principles of information technology, electricity, and robotics as they relate to surgery. |
| 15.0 | Describe and practice safety measures in the surgical environment.--The student will be able to: |
| | 15.01 Inspect emergency equipment and supplies for condition and quantity. |
| | 15.02 Implement appropriate Joint Commission patient safety goals. |
| | 15.03 Demonstrate appropriate safety measures to prevent operating room fires and electrical shock from equipment. |
| | 15.04 Apply knowledge of surgical hazards to safe patient care. |
| | 15.05 Demonstrate the safe inspection and utilization of laser, electrical, endoscopic, and robotic equipment. |
| | 15.06 Describe and practice appropriate safety measures for laser, electrical, endoscopy and robotic surgery. |
| | 15.07 Describe the role preventive maintenance, prevention, correction, and documentation plays in patient and personnel safety and the prevention of medical errors in the surgical setting. |
| | 15.08 Explain the purpose of Florida’s “Right to Know” law and its provisions. |
| | 15.09 Describe the role of the surgical technologist and surgical first assistant in an emergency patient situation. |
| | 15.10 Describe the protocol for personal injury including the completion of incident/occupancy reports and follow up. |
| | 15.11 Describe the preparation and planning, detection and communication, incident management and support systems, safety and security, clinical/public health assessment and intervention, contingency, continuity and recovery and the public health law and ethics of All-Hazards Preparation for disasters. |
| | 15.12 Conduct technical research to gather information for decision-making. |
| | 15.13 List and describe quality control systems and/or practices common to the workplace. |
| | 15.14 Employ critical thinking skills independently and in teams to solve problems, resolve conflicts, and make decisions. |
| 16.0 | Perform patient care procedures related to the surgical environment and describe methods for meeting patient's needs.--The student will be able to: |
| | 16.01 Identify the roles of the members of the surgical team during each phase of surgery. |

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| | 16.02 | Assist surgeon with the perioperative care of the surgical patient. |
| | 16.03 | Correlate the preoperative examination and preparation process for both surgery and anesthesia with the identification of potential patient factors that may inhibit positive outcomes. |
| | 16.04 | Describe appropriate review and identification of patient factors regarding the chart including preoperative identification, preoperative checklists, diagnostic tests, lab values and surgical consent. |
| | 16.05 | Demonstrate safe patient transfer/transportation techniques used in the perioperative setting. |
| | 16.06 | Monitor OR traffic, placement of sterile tables and ensure steps are taken to reduce microbial fallout. |
| | 16.07 | Correlate anesthesia monitoring devices, patient complications and interventions with maintaining patient homeostasis. |
| | 16.08 | Demonstrate the principles of safe positioning, application of safety devices, and restraining patient for surgery correlating the prevention of potential complications with the need for patient stability. |
| | 16.09 | Demonstrate the selection of the appropriate solution and preparation of the operative site for the surgical procedure. |
| | 16.10 | Perform steps for Foley catheter insertion and connection to drainage. |
| | 16.11 | Describe the safe usage of critical instruments, equipment and supplies utilized intraoperatively including the electrosurgical unit, Lasers, Ultrasonic equipment, endoscopy equipment, robotics, insufflators, light sources, microscopes, power tools, suction, tourniquets, etc. |
| | 16.12 | Demonstrate correctly the connection and operation of essential instruments, equipment and supplies for the surgical procedure. |
| | 16.13 | Demonstrate correct mathematical skills related to dosage available versus dosage needing when drawing up or administering medications. |
| | 16.14 | Demonstrate correctly the techniques for injection of local anesthetics. |
| | 16.15 | Demonstrate knowledge of wound management techniques, including suturing techniques in the operating room, perioperative care of special needs patients, and perioperative assessment of the skin. |
| | 16.16 | Demonstrate applicable wound management principles including the placement and security of catheters, wound drainage systems, sterile dressings and cast applications. |
| | 16.17 | Discuss relevant and unique factors regarding postoperative care specific to the procedure. |
| 17.0 | Demonstrate knowledge of pharmacology and math calculation principles related to the surgical environment.--The student will be able to: | |
| | 17.01 | Analyze the terminology the basic concepts of pharmacology and drug administration including pharmacokinetics and pharmacodynamics. |
| | 17.02 | Describe pharmacological concepts relative to the administration of all anesthesia methods, agents, and techniques including the role of the anesthetist, the first assistant and the circulator during induction and extubation. |
| | 17.03 | Identify the classification, actions, effects and precautions of common drugs used at the field, and within the surgical environment. |
| | 17.04 | Apply knowledge of the pharmacologic agents used in the treatment of the surgical patient. |

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| 17.05 | Describe potential anesthesia and operative complications and interventions for each. |
| 17.06 | Demonstrate the application of the six rights of medication administration. |
| 17.07 | Identify the correct medication form and method of application. |
| 17.08 | Analyze and assemble correctly all medication supplies, for each drug to be used on the sterile field. |
| 17.09 | Pour or receive, measure, prepare and manage sterile solutions accurately within the sterile field. |
| 17.10 | Demonstrate the appropriate methods of transferring and accepting medications onto the sterile field. |
| 17.11 | Label properly all fluids and medications used within the sterile field. |
| 17.12 | Demonstrates ability to correctly calculate common medication conversions and dosages. |
| 17.13 | Apply correct unit of measure for each medication. |
| 17.14 | Demonstrates preparation and passing of medication mixtures using ratio and proportions correctly. |
| 17.15 | Maintains an accurate account of the amount of each medication and/or solution used at the field and notifies circulator as appropriate to the situation to ensure accurate documentation. |
| 17.16 | Describe the adverse effects of local and topical anesthetics. |
| 18.0 | Demonstrate knowledge of the basic surgical skills necessary to function safely and effectively.--The student will be able to: |
| 18.01 | Demonstrate an understanding of advanced anatomy, physiology, the disease processes and the relationship of the processes to the specific types of pathologies according to body systems. |
| 18.02 | Correlate the preoperative diagnosis, diagnostic interventions, common complications, and operative pathophysiology relative to specific surgical procedures. |
| 18.03 | Correlate the preoperative diagnosis, operative anatomy, physiology and pathology, usual incision, wound closure techniques, medications utilized, common complications, and the usual sequence as related to specific surgical procedures. |
| 18.04 | Select and verify required instrumentation, equipment and supplies, including any implants needed for specific surgical procedures using core knowledge and the applicable surgeon preference/procedure cards. |
| 18.05 | Demonstrate an understanding of diagnostic images as related to surgical anatomy. |
| 18.06 | Demonstrate application of aseptic and sterile technique principles including the appropriate corrective action for common breaks in sterile technique that may occur. |
| 18.07 | Demonstrate the surgical scrub and donning of sterile gown and gloves. |
| 18.08 | Demonstrate the principles of sterile draping. |
| 18.09 | Demonstrate the set up and management of the sterile mayo stand and/or instrument table(s). |

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| | 18.10 | Demonstrate the set up and management of the sterile mayo stand and/or instrument table(s). |
| | 18.11 | Prepare, pass, utilize, and monitor sharps, sutures, ligatures, ties and staples correctly. |
| | 18.12 | Prepare, pass, utilize, and monitor amount given for medications and solutions utilized on the sterile field. |
| | 18.13 | Demonstrate assisted gowning/gloving for others. |
| | 18.14 | Participate in the surgical time out to prevent wrong site surgery and delays in the surgical procedure. |
| | 18.15 | Select, prepare, pass, and utilize instruments, equipment, tissue replacement materials, implants and supplies efficiently. |
| | 18.16 | Monitor the surgical site regarding counted items, stage of surgery, tissue appearance and patient's body fluids, e.g. blanching, desiccation, color of blood, blood loss, bile leaks, ascites, etc. |
| | 18.17 | Demonstrate correctly the initiation and completion of counts regarding sponges, sharps, instruments and miscellaneous items used within the patient's wound to prevent foreign body retention. |
| | 18.18 | Describe the types of incisions, methods of wound closure, and mechanisms of wound management. |
| | 18.19 | Describe the usual sequence of a common surgical procedure. (I.e. incision into the anatomy, dissection of the anatomy, operative steps of the procedure, and closing of the anatomy). |
| | 18.20 | Selects the appropriate instrument, equipment, or supply for each step of the procedure. |
| | 18.21 | Demonstrate ability to prepare, validate, handle and preserve specimen accurately for laboratory analysis. |
| | 18.22 | Demonstrates knowledge of and assists with surgical procedures while functioning in the roles of scrub and assistant circulator. |
| | 18.23 | Demonstrate effective perioperative case management ensuring cost control and time/motion economy methods are utilized to maximize the efficiency of the OR team. |
| 19.0 | Demonstrate competencies in the core components of the surgical first assistant related to knowledge and skills.-- The student will be able to: | |
| | 19.01 | Prioritize care or actions to be taken in a given circumstance to expedite the operative procedure or emergency situation. |
| | 19.02 | Describe preoperative diagnosis, common complications, operative pathophysiology and postoperative care related to the specific surgical procedures performed. |
| | 19.03 | Analyze common patient assessments including skin and chart review relating relevant diagnostic and monitoring results to the surgeon as applicable to the surgical specialty. |
| | 19.04 | Demonstrate preoperative preparation of the patient to facilitate proper patient care including but not limited to positioning, application of tourniquet, surgical skin preparation, catherization, draping, and sterile setup preparation. |
| | 19.05 | Demonstrate and describe types of incisions and insertion of trocars. |
| | 19.06 | Identify types of tissue, organs, and gross anatomical structures correctly during surgical procedures. |
| | 19.07 | Demonstrate appropriate tissue handling techniques including the care of the surgical specimens. |

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| 19.08 | Provide appropriate exposure and visualization of the operative field for the surgeon. |
| 19.09 | Describe the appropriate sequence for common surgical procedures. |
| 19.10 | Utilize appropriate techniques to assist with hemostasis. |
| 19.11 | Demonstrate appropriate safe surgical techniques when the case involves either thermal, radiological, laparoscopic, environmental, or other known surgical hazard. |
| 19.12 | Participate in volume replacement or autotransfusion techniques and medication administration as appropriate. |
| 19.13 | Select appropriate instruments and supplies for the type of tissue. |
| 19.14 | Demonstrate competence with technology, the use of instruments, equipment supplies and medications for the surgical procedure. |
| 19.15 | Use surgical instruments skillfully in ways consistent with their design and purpose. |
| 19.16 | Utilize appropriate techniques to assist with the closure of body planes. |
| 19.17 | Select and apply appropriate wound dressings. |
| 19.18 | Assist surgeon in securing drainage systems to tissue. |
| 19.19 | Evaluate patient and report appropriately any abnormal condition found post-op related to positioning. |
| 19.20 | Assist surgeon with postoperative care of the patient to facilitate proper patient care. |
| 19.21 | Demonstrate appropriate response to emergency situations including respiratory/cardiac arrest situations, sudden hypoxia, hemorrhage, shock, surgical misadventures, contamination, perforation of viscous or cavity, critical equipment failure, and exposure, retraction and compression injuries. |
| 19.22 | Facilitate the continuity of care within and across the healthcare settings to access available resources and services. |
| 20.0 | Demonstrate competencies in the core components of the surgical first assistant related to legal and ethical responsibilities. --The student will be able to: |
| 20.01 | State methods, standards and aids that assist a surgical first assistant with interpreting and following legal responsibilities. |
| 20.02 | Describe the importance of maintaining credentials and following the appropriate credentialing policy in accordance with hospital policy and appropriate laws and regulations. |
| 20.03 | Explain the job requirements. |
| 20.04 | Describe the key elements related to the development of a surgical conscience. |
| 20.05 | Demonstrate an understanding of the legal, ethical, moral, and professional responsibilities of working as a surgical assistant, and the professional skills necessary to fulfill the role. |
| 20.06 | Provide health care within the ethical/legal framework of the job description including role responsibilities and limitations. |

20.07 Describe the principles of problem solving and confidentiality in ethical decision making and risk management.

## Additional Information

### Laboratory Activities

Laboratory investigations that include scientific inquiry, research, measurement, problem solving, emerging technologies, tools and equipment, as well as, experimental, quality, and safety procedures are an integral part of this career and technical program/course. Laboratory investigations benefit all students by developing an understanding of the complexity and ambiguity of empirical work, as well as the skills required to manage, operate, calibrate and troubleshoot equipment/tools used to make observations. Students understand measurement error; and have the skills to aggregate, interpret, and present the resulting data. Equipment and supplies should be provided to enhance hands-on experiences for students.

The Human Patient Simulator (HPS) or other accepted simulation scenarios may be used for a limited number of clinical hours. A low teacher-student ratio in the lab and clinical area is strongly recommended. The recommended maximum ratio is 1:8.

### Special Notes

This program focuses on broad, transferable skills and stresses understanding and demonstration of the following elements of the health care industry; planning, management, finance, technical and production skills, underlying principles of technology, labor issues, community issues and health, safety, and environmental issues.

This program meets the Department of Health's education requirements for HIV/AIDS, Domestic Violence and Prevention of Medical Errors. Although not a requirement for initial licensure, it is a requirement for renewal, therefore the instructor may provide a certificate for renewal purposes to the student verifying these requirements have been met.

If students in this program are seeking a licensure, certificate or registration through the Department of Health, please refer to 456.0635 F.S. for more information on disqualification for a license, certificate, or registration through the Department of Health

The Surgical First Assistant Core Curriculum should be taught by qualified staff as outlined in the most recent approved Commission on Accreditation on Allied Health Education programs (CAAHEP) accreditation standards and guidelines.

Entering students who have successfully completed the program 0351090905 or 0351090904, Surgical Technology or are currently Nationally Certified as a CST (Certified Surgical Technologist) or SA-C (Surgical Assistant-Certified) should be given appropriate advanced standing.

After successful completion of a Commission on Accreditation on Allied Health Education programs (CAAHEP) accredited surgical first assistant program, students are eligible to take the National Board of Surgical Technology and Surgical Assisting First Assistant exam as approved.

The standard length for the AS degree program is 74 college credits.

Outcomes 01-11 are referred to as the Health Careers Core and do not have to be completed if the student has previously completed the Core in another health science program. The CORE should be taken first or concurrently with the first course in the program. Following the successful completion of the core, the student is eligible to take the National Health Care Foundation Skill Standards Assessment with instructor approval and the completion of a portfolio.

## Career and Technical Student Organization (CTSO)

HOSA: Future Health Professionals is the intercurricular career and technical student organization providing leadership training and reinforcing specific career and technical skills. Career and Technical Student Organizations provide activities for students as an integral part of the instruction offered.

## Accommodations

Federal and state legislation requires the provision of accommodations for students with disabilities to meet individual needs and ensure equal access. Postsecondary students with disabilities must self-identify, present documentation, request accommodations if needed, and develop a plan with their counselor and/or instructors. Accommodations received in postsecondary education may differ from those received in secondary education. Accommodations change the way the student is instructed. Students with disabilities may need accommodations in such areas as instructional methods and materials, assignments and assessments, time demands and schedules, learning environment, assistive technology and special communication systems. Documentation of the accommodations requested and provided should be maintained in a confidential file.

## Certificate Programs

A College Credit Certificate consists of a program of instruction of less than sixty (60) credits of college-level courses, which is part of an AS or AAS degree program and prepares students for entry into employment (Rule 6A-14.030, F.A.C.). This AS degree program includes the following College Credit Certificates:

Surgical First Assisting (0351090908) – 59 Credits

Standards for the above certificate programs are contained in separate curriculum frameworks.

**Florida Department of Education**
**Curriculum Framework**

**Program Title:** **Diagnostic Medical Sonography Technology**
**Career Cluster:** **Health Science**

| | AS |
|---|---|
| CIP Number | 1351091004 |
| Program Type | College Credit |
| Standard Length | 77 credit hours |
| CTSO | HOSA: Future Health Professionals |
| SOC Codes (all applicable) | 29-2032 Diagnostic Medical Sonographers |

## Purpose

This program offers a sequence of courses that provides coherent and rigorous content aligned with challenging academic standards and relevant technical knowledge and skills needed to prepare for further education and careers in the Health Science career cluster; provides technical skill proficiency, and includes competency-based applied learning that contributes to the academic knowledge, higher-order reasoning and problem-solving skills, work attitudes, general employability skills, technical skills, and occupation-specific skills, and knowledge of all aspects of Health Science career cluster.

The program is designed to prepare students for employment as diagnostic medical sonographers SOC Code 29-2032 (Diagnostic Medical Sonographers) or to provide supplemental training for persons previously or currently employed in this occupation.

The content includes but is not limited to anatomy, physiology and pathology of the abdominal, pelvic, and urogenital structures; physics; instrumentation; equipment standards; biological effect of ultrasound; patient care; clinical medicine; applications and limitations of ultrasound; related diagnostic procedures; image evaluation; administration; first aid and cardiopulmonary resuscitation; employability skills; leadership and human relations skills; health and safety.

**Additional Information** relevant to this Career and Technical Education (CTE) program is provided at the end of this document.

## Program Structure

This program is a planned sequence of instruction consisting of 77 credit hours.

**Standards**

After successfully completing this program, the student will be able to perform the following:

01.0 Demonstrate knowledge of the health care delivery system and health occupations.
02.0 Demonstrate the ability to communicate and use interpersonal skills effectively.
03.0 Demonstrate legal and ethical responsibilities.
04.0 Demonstrate an understanding of and apply wellness and disease concepts.
05.0 Recognize and practice safety and security procedures.
06.0 Recognize and respond to emergency situations.
07.0 Recognize and practice infection control procedures.
08.0 Demonstrate an understanding of information technology applications in healthcare.
09.0 Demonstrate employability skills.
10.0 Demonstrate knowledge of blood borne diseases, including HIV/AIDS.
11.0 Apply basic math and science skills.
12.0 Demonstrate an understanding of the role and responsibilities of the sonographer in regards to ultrasound imaging and patient care.
13.0 Demonstrate an awareness of the basic principles of ultrasound physics, emphasizing practical relationships of physics to optimizing images for more accurate diagnosis.
14.0 Demonstrate knowledge of the basic principles of instrumentation common to the field of ultrasound.
15.0 Demonstrate knowledge of the principles of Doppler.
16.0 Apply knowledge gained in instrumentation lecture as it applied to various ultrasound systems in the clinical setting.
17.0 Apply knowledge of the anatomy and scanning techniques related to retroperitoneal structures and upper abdominal organs and systems.
18.0 Apply knowledge of the anatomy and scanning techniques related to superficial structures.
19.0 Apply knowledge of anatomy, pathology, and scanning techniques to the urinary system and adrenal glands.
20.0 Apply knowledge of anatomy, pathology, and scanning techniques used in Sonography of the female pelvis.
21.0 Apply knowledge of anatomy, pathology and scanning techniques related to obstetrics.
22.0 Develop a continuous awareness of the disease processes.
23.0 Apply accumulated knowledge to the process of creating diagnostic sonograms.
24.0 Apply skills needed to complete diagnostic images of high quality from a variety of scanning units.

**Florida Department of Education**
**Student Performance Standards**

**Program Title:** **Diagnostic Medical Sonography Technology**
**CIP Number:** **1351091004**
**Program Length:** **77 credit hours**
**SOC Code(s):** **29-2032**

Standards 1-11 are referred to as the **Health Science Core** and are required standards in this program. Secondary and Postsecondary students completing the health science core will not have to repeat the core in any other health science program in which it is a part. When the recommended sequence is followed, the structure allows students to complete at specified points for employment or remain for advanced training or cross-training.

To ensure consistency whenever these courses are offered, the health science core standards (1-11) have been placed in a separate document.

| **Refer to Rule 6A-14.030 (4) F.A.C., for the minimum amount of general education coursework required in the Associate of Science (AS) degree. At the completion of this program, the student will be able to:** | |
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| **Diagnostic Medical Sonography Technology: The intended outcomes (12-24) complete the occupational completion point of Diagnostic Medical Sonography Technology.** | |
| 12.0 | Demonstrate an understanding of the role and responsibilities of the sonographer in regards to ultrasound imaging and patient care. – The student will be able to: |
| 12.01 | Explain the role of the sonographer. |
| 12.02 | Describe the relationship of ultrasound to other imaging modalities. |
| 12.03 | Describe and demonstrate the proper uses of orientation and standard labeling of ultrasound images. |
| 12.04 | Explain the basic concepts of ultrasound equipment available and demonstrate safety in their use and basic techniques of scanning. |
| 12.05 | Explain and demonstrate the criteria for image evaluation and specifically of special sonographic parameters. |
| 12.06 | Demonstrate and describe proper body mechanics to avoid work related musculoskeletal disorders when performing sonographic examinations. |
| 12.07 | Describe special problems encountered and methods related to medical ethics and law in sonography. |
| 12.08 | Describe the organizational structure common to most hospitals with special emphasis placed on the role of the ultrasound department. |
| 12.09 | Describe the relationship of the sonographer to the patients and their special needs. |

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| | 12.10 Demonstrate professional communication skills required on a daily basis in the health care setting. |
| | 12.11 Explain and demonstrate the methods of patient preparation and care before and during a sonogram. |
| | 12.12 Demonstrate proper body mechanics when transporting and assisting patients. |
| | 12.13 Discuss current trends in sonographic technology and techniques. |
| | 12.14 Demonstrate proper universal precautions and sterile techniques when preparing for a sonographic procedure. |
| 13.0 | Demonstrate an awareness of the basic principles of ultrasound physics, emphasizing practical relationships of physics to optimizing images for more accurate diagnosis. – The student will be able to: |
| | 13.01 Explain what sound is and its characteristics. |
| | 13.02 Compare the difference between pulsed and continuous wave ultrasound. |
| | 13.03 Explain amplitude and intensity of sound as it applies to sonography. |
| | 13.04 Describe the causes and effects of attenuation and acoustic impedance on ultrasound. |
| | 13.05 Identify the causes and effects of incidence, scattering and refraction of ultrasound. |
| | 13.06 Explain the Doppler Effect as it relates to ultrasound. |
| | 13.07 Describe the factors of attenuation versus depth penetration of ultrasound in human tissue. |
| | 13.08 Identify resolution and controlling factors of resolution as applied to sonography. |
| | 13.09 Discuss and demonstrate the basic principles governing sound and sound interaction in various types of tissue. |
| | 13.10 Describe and demonstrate the conditions affecting sound transmission such as attenuating factors. |
| | 13.11 Relate mathematical formulas to the interaction of sound with various mediums. |
| | 13.12 Describe resolution and its effect on the final image. |
| | 13.13 Describe and demonstrate the factors that control and determine axial, elevational and lateral resolution. |
| 14.0 | Demonstrate knowledge of the basic principles of instrumentation common to the field of ultrasound. – The student will be able to: |
| | 14.01 Describe piezoelectric effects. |
| | 14.02 Describe transducer construction. |
| | 14.03 Discuss historical perspectives related to the development of the ultrasound system. |

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| | 14.04 Explain and describe how signal processing affects image production and presentations. |
| | 14.05 Discuss basic system operation in the form of block diagrams for real-time and Doppler image production. |
| | 14.06 Describe the purpose and use of typical controls located on ultrasound systems. |
| | 14.07 Identify methods of determining and assuring quality control both sonographically and photographically. |
| | 14.08 Discuss common processing techniques including but not limited to harmonics, persistence, spatial compounding, panoramic imaging, and RES. |
| | 14.09 Discuss causes, detection and control of factors that may create biologic effects in human tissue with insonation at the diagnostic medical sonography exposure level. |
| 15.0 | Demonstrate knowledge of the principles of Doppler. – The student will be able to: |
| | 15.01 Explain the general principles of Doppler techniques and the Doppler formula. |
| | 15.02 Describe how pulse wave Doppler is processed and displayed. |
| | 15.03 Describe how color-flow Doppler is processed and displayed. |
| | 15.04 Describe how power Doppler is processed and displayed. |
| | 15.05 Identify normal and abnormal Doppler wave forms. |
| | 15.06 Discuss the advantages and disadvantages of the various Doppler methods. |
| | 15.07 Describe the purpose and use of typical controls used to optimize Doppler acquisition and display. |
| | 15.08 Demonstrate skills required on a daily basis in the typical Sonography setting for obtaining and displaying Doppler. |
| 16.0 | Apply knowledge gained in instrumentation lecture as it applied to various ultrasound systems in the clinical setting. – The student will be able to: |
| | 16.01 Utilize patient information systems. |
| | 16.02 Demonstrate appropriate transducer selection for specific sonographic application. |
| | 16.03 Utilize amplification in all its forms to produce a diagnostic quality sonogram. |
| | 16.04 Utilize power to produce a diagnostic quality sonogram while maintaining the ALARA principle. |
| | 16.05 Utilize the various forms of processing to produce a diagnostic quality sonogram. |
| | 16.06 Utilize the various types of scanning techniques and patient positioning required to produce diagnostic quality sonograms. |
| | 16.07 To explain and recognize typical artifacts as found in sonographic imaging. |

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| | 16.08 Utilize test objects and phantoms. |
| 17.0 | Apply knowledge of the anatomy and scanning techniques related to retroperitoneal structures and upper abdominal organs and systems. – The student will be able to: |
| | 17.01 Identify gross abdominal structures as demonstrated by ultrasound such as: the liver, gall bladder, aorta, inferior vena cava, stomach, pancreas, bowel, spleen, lymph nodes, retroperitoneum, and peritoneal cavity. |
| | 17.02 Identify the gross upper abdominal organs in two planes. |
| | 17.03 Identify the gross retroperitoneal organs, bowel and peritoneum in two planes. |
| | 17.04 Explain the physiology of the upper abdominal organs and the related laboratory results. |
| | 17.05 Explain the physiology of the retroperitoneal organs, bowel and peritoneum. |
| | 17.06 Explain and demonstrate the protocol for sonographic examination of the upper abdominal organs. |
| | 17.07 Explain and demonstrate the protocol for sonographic examination of the retroperitoneal organs, bowel and peritoneum. |
| | 17.08 Explain the common pathologies related to the upper abdomen including the sonographic appearance of these pathologies corresponding lab values, patient history and symptoms. |
| | 17.09 Explain the common pathologies related to the retroperitoneal organs, bowel and peritoneum including the sonographic appearance of these pathologies and corresponding lab values, patient history and symptoms. |
| | 17.10 Explain screen orientation and its relationship to the upper abdomen and retroperitoneal structures. |
| | 17.11 Describe and perform procedures of a complete ultrasound examination of the upper abdomen from preparation to reporting. |
| | 17.12 Describe and perform procedures of a complete ultrasound examination of the bowel, lymph nodes, retroperitoneum, and peritoneal cavity from preparation to reporting. |
| 18.0 | Apply knowledge of the anatomy and scanning techniques related to superficial structures. – The student will be able to: |
| | 18.01 Identify gross superficial structures as demonstrated by ultrasound including but not limited to: the thyroid, scrotum (testicular), abdominal wall, neck, breast, prostate and musculoskeletal. |
| | 18.02 Identify superficial structures in two planes. |
| | 18.03 Explain the physiology of the superficial structures and the related laboratory results. |
| | 18.04 Explain and demonstrate the protocol for the sonographic examination of superficial structures. |
| | 18.05 Explain the common pathology related to the superficial structures including the sonographic appearance of these pathologies and corresponding lab values, patient history and symptoms. |
| | 18.06 Describe and perform procedures of a complete ultrasound examination of each of the superficial structures from preparation to reporting. |
| 19.0 | Apply knowledge of anatomy, pathology, and scanning techniques to the urinary system and adrenal glands. – The student will be able to: |

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| | 19.01 | Identify the gross structures of the urinary system as demonstrated by ultrasound including but not limited to the kidney, ureters and urinary bladder. |
| | 19.02 | Identify the gross organs of the urinary system in two planes. |
| | 19.03 | Identify the gross adrenals in two planes. |
| | 19.04 | Explain the physiology of the urinary system organs and the related laboratory results. |
| | 19.05 | Explain the physiology of the adrenals and the related laboratory results. |
| | 19.06 | Explain and demonstrate the protocol for sonographic examination of the urinary system organs. |
| | 19.07 | Explain and demonstrate the protocol for sonographic examination of the adrenals. |
| | 19.08 | Explain the common pathologies related to the urinary system organs including the sonographic appearance of these pathologies corresponding lab values, patient history and symptoms. |
| | 19.09 | Explain the common pathologies related to the adrenals including the sonographic appearance of these pathologies corresponding lab values, patient history and symptoms. |
| | 19.10 | Explain screen orientation and its relationship to the urinary system structures and the adrenals. |
| | 19.11 | Describe and perform procedures of a complete ultrasound examination of the urinary system from preparation to reporting. |
| | 19.12 | Describe and perform procedures of a complete ultrasound examination of the adrenals from preparation to reporting. |
| 20.0 | Apply knowledge of anatomy, pathology, and scanning techniques used in Sonography of the female pelvis. – The student will be able to: | |
| | 20.01 | Identify the gross female pelvic structures as demonstrated by ultrasound including but not limited to the female reproductive organs and urinary bladder. |
| | 20.02 | Identify the gross female pelvic organs in two planes. |
| | 20.03 | Explain the physiology of the female pelvic organs and the related laboratory results. |
| | 20.04 | Explain and demonstrate the protocol for sonographic examination of the female pelvic organs. |
| | 20.05 | Explain the common pathologies related to the female pelvis including the sonographic appearance of these pathologies corresponding lab values, patient history and symptoms. |
| | 20.06 | Explain screen orientation and its relationship to the female pelvic structures. |
| | 20.07 | Describe and perform procedures of a complete ultrasound examination of the female pelvis from preparation to reporting. |
| | 20.08 | Explain the protocol for both transabdominal, translabial, and transvaginal pelvic ultrasound. |
| 21.0 | Apply knowledge of anatomy, pathology and scanning techniques related to obstetrics. – The student will be able to: | |
| | 21.01 | Identify gross obstetrical structures as demonstrated by ultrasound including but not limited to the uterus and adnexa in both the |

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| | pregnant and postpartum state. |
| 21.02 | Discuss anatomy and physiology of the various stages of fetal development as related to ultrasound. |
| 21.03 | Discuss anatomy and physiology of the placenta at all stages of development. |
| 21.04 | Describe the basic stages of embryology and sonographic relationships. |
| 21.05 | Describe events occurring in the first trimester and their relationship to ultrasound. |
| 21.06 | Explain the physiology of organs related to obstetrics. |
| 21.07 | Explain and demonstrate the protocol for sonographic examinations used in obstetrics. |
| 21.08 | Explain the common pathologies related to obstetrics including the sonographic appearance of these pathologies corresponding lab values, patient history and symptoms. |
| 21.09 | Explain screen orientation and its relationship to the organs related to obstetrics. |
| 21.10 | Describe and perform methods for determining gestational age and fetal growth by ultrasound using appropriate biometrics. |
| 21.11 | Explain the effects of specific diseases common to the gestational period. |
| 21.12 | Compare normal and abnormal states of embryology in the human as demonstrated by ultrasound. |
| 21.13 | Perform a biophysical profile to determine fetal well-being. |
| 21.14 | Compare the normal and pathologic appearance of the fetus and the fetal environment. |
| 21.15 | Demonstrate special techniques of ultrasound scanning and collateral processes during pregnancy. |
| 21.16 | Explain the protocol and AIUM guidelines for obstetrical ultrasound. |
| 21.17 | Explain and demonstrate the special safety precautions required during an obstetrical ultrasound with a focus on AIUM guidelines. |
| 21.18 | Describe and perform procedures of a complete obstetrical ultrasound examination from preparation to reporting. |
| 21.19 | Describe and perform Doppler applications for evaluation of a pregnancy (i.e. umbilical artery, etc.). |
| 22.0 | Develop a continuous awareness of the disease processes. – The student will be able to: |
| 22.01 | Discuss basic concepts of the causes of disease. |
| 22.02 | Discuss common urogenital pathology. |
| 22.03 | Discuss gastrointestinal diseases. |

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| 22.04 | Discuss common pathology found in obstetrics and gynecology. |
| 22.05 | Discuss common pathology found in the cardiovascular system. |
| 22.06 | Discuss common pathology found in hepatobiliary system to include: liver, gallbladder, pancreas, and spleen. |
| 22.07 | Discuss post-surgical changes and its effects on images. |
| 22.08 | Demonstrate knowledge and understanding of the role of the sonographer in performing interventional/invasive procedures. |
| 23.0 | Apply accumulated knowledge to the process of creating diagnostic sonograms. – The student will be able to: |
| 23.01 | Complete in all aspects a diagnostic sonogram with emphasis on: |
| 23.01.01 | patient identification |
| 23.01.02 | patient interaction |
| 23.01.03 | professionalism |
| 23.01.04 | creation of an optimized sonogram |
| 23.01.05 | appropriate image annotation |
| 23.01.06 | safety |
| 23.01.07 | recognition of anatomy, both normal and pathologic. |
| 23.02 | Complete routine documentation associated with a typical ultrasound department. |
| 23.03 | Present a sonographic exam to the interpreting physician in completed form. |
| 24.0 | Apply skills needed to complete diagnostic images of high quality from a variety of scanning units. – The student will be able to: |
| 24.01 | Perform complete and diagnostic examinations of the abdomen, superficial structures, pelvis and obstetrical patient using real-time and Doppler techniques using a variety of ultrasound machines. |
| 24.02 | Present completed examinations in detail with justification of all techniques, methods and procedures used to obtain data. |
| 24.03 | Identify gross pathology of the abdomen, pelvis and obstetrical patient, both on sonograms and related imaging modalities. |
| 24.04 | Perform all preliminary procedures leading to actual examination by Sonography and all procedures necessary post examination. |
| 24.05 | Demonstrate skills needed to relate with tact and diplomacy with patients, physicians, nurses, other imaging personnel and the general hospital population. |
| 24.06 | Demonstrate those characteristics that reflect the high degree of professionalism associated with the field of ultrasound. |

## Additional Information

### Laboratory Activities

Laboratory investigations that include scientific inquiry, research, measurement, problem solving, emerging technologies, tools and equipment, as well as, experimental, quality, and safety procedures are an integral part of this career and technical program/course. Laboratory investigations benefit all students by developing an understanding of the complexity and ambiguity of empirical work, as well as the skills required to manage, operate, calibrate and troubleshoot equipment/tools used to make observations. Students understand measurement error; and have the skills to aggregate, interpret, and present the resulting data. Equipment and supplies should be provided to enhance hands-on experiences for students.

### Special Notes

This program meets the Department of Health's education requirements for HIV/AIDS, Domestic Violence and Prevention of Medical Errors. Although not a requirement for initial licensure, it is a requirement for renewal, therefore the instructor may provide a certificate for renewal purposes to the student verifying these requirements have been met.

If students in this program are seeking a licensure, certificate or registration through the Department of Health, please refer to 456.0635 F.S. for more information on disqualification for a license, certificate, or registration through the Department of Health.

The program should meet the requirements of:

Commission on Accreditation of Allied Health Education Programs (CAAHEP)
361 Park St.
Clearwater, FL 33756
(727) 210-2350

Written clinical affiliation agreements must be maintained with each health care facility. Health care facilities must be accredited by The Joint Commission.

Students completing this program may apply to take one or both of the national registry examinations to obtain certification, for further information contact:

American Registry of Diagnostic
Medical Sonographers (ARDMS)
51 Monroe St., Plaza East 1
Rockville, Maryland 20850-2400
(301) 738-8401

Or

American Registry of Radiologic Technologists (ARRT)
1255 Northland Drive
St. Paul, MN 55120-1155
(612) 687-0048

Outcomes 01-11 are referred to as the Health Careers Core and do not have to be completed if the student has previously completed the Core in another health science program. The Core should be taken first or concurrently with the first course in the program. Following the successful completion of the core, the student is eligible to take the National Health Care Foundation Skill Standards Assessment with instructor approval and the completion of a portfolio.

**Career and Technical Student Organization (CTSO)**

HOSA: Future Health Professionals is the intercurricular career and technical student organization providing leadership training and reinforcing specific career and technical skills. Career and Technical Student Organizations provide activities for students as an integral part of the instruction offered.

**Accommodations**

Federal and state legislation requires the provision of accommodations for students with disabilities to meet individual needs and ensure equal access. Postsecondary students with disabilities must self-identify, present documentation, request accommodations if needed, and develop a plan with their counselor and/or instructors. Accommodations received in postsecondary education may differ from those received in secondary education. Accommodations change the way the student is instructed. Students with disabilities may need accommodations in such areas as instructional methods and materials, assignments and assessments, time demands and schedules, learning environment, assistive technology and special communication systems. Documentation of the accommodations requested and provided should be maintained in a confidential file.

**Certificate Programs**

A College Credit Certificate consists of a program of instruction of less than sixty (60) credits of college-level courses, which is part of an AS or AAS degree program and prepares students for entry into employment (Rule 6A-14.030, F.A.C.). This AS degree program includes the following College Credit Certificates:

Diagnostic Medical Sonography Specialist (New) (0351091005) – 47 credit hours

Standards for the above certificate programs are contained in separate curriculum frameworks.

**Florida Department of Education**
**Curriculum Framework**

**Program Title:** **Medical Laboratory Technology**
**Career Cluster:** **Health Science**

| AS | |
|---|---|
| CIP Number | 1351100405 |
| Program Type | College Credit |
| Standard Length | 76 credit hours |
| CTSO | HOSA: Future Health Professionals |
| SOC Codes (all applicable) | 29-2011 Medical and Clinical Laboratory Technologists |

## Purpose

This program offers a sequence of courses that provides coherent and rigorous content aligned with challenging academic standards and relevant technical knowledge and skills needed to prepare for further education and careers in the Health Science career cluster; provides technical skill proficiency, and includes competency-based applied learning that contributes to the academic knowledge, higher-order reasoning and problem-solving skills, work attitudes, general employability skills, technical skills, and occupation-specific skills, and knowledge of all aspects of Health Science career cluster.

The purpose of this program is to prepare students for employment as medical/clinical laboratory technologist SOC Code 29-2011 (medical clinical laboratory technologist) or medical laboratory technologists (associate degree) or to provide supplemental training for persons previously or currently employed in these occupations.

The content includes but is not limited to specific techniques and instruments, identification of factors directly affecting procedures and results, confirmation of results and monitoring quality control programs within pre-determined parameters, and correction of errors using pre-set standards. A clinical component is a necessary element of this program.

**Additional Information** relevant to this Career and Technical Education (CTE) program is provided at the end of this document.

## Program Structure

This program is a planned sequence of instruction consisting of 76 credit hours.

## Regulated Programs

**This program is regulated by the Florida Board of Clinical Laboratory Personnel.**

## Standards

After successfully completing this program, the student will be able to perform the following:

01.0 Demonstrate knowledge of the healthcare delivery system and health occupations.
02.0 Demonstrate the ability to communicate and use interpersonal skills effectively.
03.0 Demonstrate legal and ethical responsibilities.
04.0 Demonstrate an understanding of and apply wellness and disease concepts.
05.0 Recognize and practice safety and security procedures.
06.0 Recognize and respond to emergency situations.
07.0 Recognize and practice infection control procedures.
08.0 Demonstrate an understanding of information technology applications in healthcare.
09.0 Demonstrate employability skills.
10.0 Demonstrate knowledge of blood borne diseases, including HIV/AIDS.
11.0 Apply basic math and science skills.
12.0 Demonstrate accepted professional, communication and interpersonal skills.
13.0 Discuss phlebotomy in relation to the health care setting.
14.0 Identify the anatomic structure and function of body systems in relation to services performed by phlebotomist.
15.0 Recognize and identify collection reagents supplies, equipment and interfering chemical substances.
16.0 Demonstrate skills and knowledge necessary to perform phlebotomy.
17.0 Practice infection control following standard precautions.
18.0 Practice accepted procedures of transporting, accessioning and processing specimens.
19.0 Practice quality assurance and safety.
20.0 Demonstrate knowledge and use of basic laboratory equipment and techniques.
21.0 Demonstrate basic knowledge of and perform clinical laboratory Point of Care (POC) testing (Waived).
22.0 Demonstrate basic knowledge of and perform Point of Care (POC) Testing using CLIA approved Waived instrumentation.
23.0 Discuss the general responsibilities and functions encountered by a medical technician.
24.0 Apply quality assurance principles and safety protocols.
25.0 Demonstrate knowledge of the operation of computer systems.
26.0 Demonstrate an understanding of the basic principles of molecular diagnostics.
27.0 Demonstrate knowledge of urinalysis and body fluids principles and procedures.
28.0 Demonstrate knowledge of hematological principles and procedures.
29.0 Demonstrate knowledge of hemostasis and related diagnostic principles and procedures.
30.0 Demonstrate knowledge of immunology principles and procedures.
31.0 Demonstrate knowledge of clinical chemistry principles and procedures.
32.0 Demonstrate knowledge of immunohematology principles and procedures.
33.0 Demonstrate knowledge of microbiological principles and procedures.

34.0 Demonstrate knowledge of advanced hematological principles and procedures.
35.0 Demonstrate knowledge of advanced hemostasis testing.
36.0 Demonstrate knowledge of advanced microbiological principles and procedures.
37.0 Demonstrate knowledge of advanced clinical chemistry principles and procedures.
38.0 Demonstrate knowledge of advanced immunological procedures.
39.0 Demonstrate knowledge of advanced immunohematology principles and procedures.
40.0 Demonstrate and understanding of advanced principles of molecular diagnostics.

**Florida Department of Education**
**Student Performance Standards**

**Program Title:** **Medical Laboratory Technology**
**CIP Number:** **1351100405**
**Program Length:** **76 credit hours**
**SOC Code(s):** **29-2011**

Standards 1-11 are referred to as the **Health Science Core** and are required standards in this program. Secondary and Postsecondary students completing the health science core will not have to repeat the core in any other health science program in which it is a part. When the recommended sequence is followed, the structure allows students to complete at specified points for employment or remain for advanced training or cross-training.

To ensure consistency whenever these courses are offered, the health science core standards (1-11) have been placed in a separate document.

| **Refer to Rule 6A-14.030 (4) F.A.C., for the minimum amount of general education coursework required in the Associate of Science (AS) degree. At the completion of this program, the student will be able to:** | |
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| **Phlebotomy: (12-19)** | |
| 12.0 | Demonstrate accepted professional, communication, and interpersonal skills. – The student will be able to: |
| 12.01 | Demonstrate the appropriate professional behavior of a phlebotomist. |
| 12.02 | Explain to the patient the procedure to be used in specimen collection. |
| 12.03 | Explain in detail the importance of identifying patients correctly when drawing blood. |
| 12.04 | Describe the scope of practice (job skills and duties) for a phlebotomist. |
| 12.05 | List and describe professional organizations that provide accreditation for phlebotomy programs and provide certification for phlebotomists. |
| 12.06 | Explain the importance of continuing education in relation to certification to maintain competency and skills. |
| 13.0 | Discuss phlebotomy in relation to the health care setting. – The student will be able to: |
| 13.01 | List, classify and discuss various departments and services within the health care setting in which the phlebotomist must interact with to obtain laboratory specimens from patients. |
| 13.02 | Identify the major departments/sections with the clinical laboratory, the major types of procedures run in each department/section, and their specimen requirements. |

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| | 13.03 Describe roles of the major classifications of clinical laboratory personnel (i.e., pathologist, chief/administrative technologist, CLS, MLS, MLT, MT, phlebotomist, lab assistant, etc.). |
| 14.0 | Identify the anatomic structure and function of body systems in relation to services performed by phlebotomist. – The student will be able to: |
| | 14.01 Describe and define major body systems with emphasis on the circulatory system. |
| | 14.02 List and describe the main superficial veins used in performing venipuncture. |
| | 14.03 Locate the most appropriate sites(s) for capillary and venipuncture. |
| | 14.04 Describe the function of the following blood components: erythrocytes, thrombocytes, leukocytes, and plasma. |
| | 14.05 Compare and contrast between serum and plasma as it relates to blood collection. |
| | 14.06 Discuss hemostasis as it relates to blood collection. |
| 15.0 | Recognize and identify collection reagents supplies, equipment, and interfering chemical substances. – The student will be able to: |
| | 15.01 Identify and discuss proper use of appropriate types of equipment needed to collect various clinical laboratory blood specimens by venipuncture. |
| | 15.02 Explain the special precautions and types of equipment needed to collect blood from the pediatric patient. |
| | 15.03 Identify and discuss proper use of supplies used in collecting micro-specimens. |
| | 15.04 Identify and discuss the proper use of the various types of anticoagulants, preservatives and gels used in blood collection and the vacuum tube color-codes for these additives. |
| | 15.05 Describe the types of patient's specimens that are analyzed in the clinical laboratory and the phlebotomist's role in collecting and/or transporting these specimens to the laboratory. |
| | 15.06 Describe substances potentially encountered during phlebotomy which can interfere in analysis of blood constituents. |
| | 15.07 Define and utilize correct medical terminology and metric measurement needed for specimen collection. |
| 16.0 | Demonstrate skills and knowledge necessary to perform phlebotomy. – The student will be able to: |
| | 16.01 Follow approved procedure for completing a laboratory requisition form. |
| | 16.02 Recognize a properly completed requisition and apply established protocol for patient and specimen identification for transport to a reference lab. |
| | 16.03 Demonstrate knowledge of established protocol for patient and specimen identification. |
| | 16.04 Discuss appropriate methods for facilitating and preparing the patient for capillary and venipuncture collection. |
| | 16.05 List appropriate antiseptic agents useful in preparing sites for capillary and venipuncture. |

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| 16.06 | Know how to perform venipuncture by evacuated tube, butterfly and syringe systems. |
| 16.07 | Describe the correct order of draw according to CLSI guidelines. |
| 16.08 | Describe the use of barcoding systems used for positive patient identification and specimen identification. |
| 16.09 | Convey an understanding of capillary puncture using appropriate supplies and techniques for both adults and pediatric patients. |
| 16.10 | Describe the most common complications associated with capillary and venipuncture, their causes, prevention and treatment. |
| 16.11 | Recognize and respond to possible adverse patient reactions such as allergies, convulsions, syncope and light headedness. |
| 16.12 | Perform appropriate procedures for disposing of used or contaminated capillary and venipuncture supplies. |
| 16.13 | Perform appropriate techniques for making a peripheral blood smear for hematologic evaluation. |
| 16.14 | Demonstrate the proper procedure for collecting blood cultures. |
| 16.15 | Discuss the effects of hemolysis and methods of prevention. |
| 16.16 | Demonstrate a working understanding of how age and weight of patients impacts the maximum amount of blood that can be safely drawn. |
| 17.0 | Practice infection control following standard precautions. – The student will be able to: |
| 17.01 | Define the term "hospital acquired infection”. |
| 17.02 | Demonstrate proper hand hygiene. |
| 17.03 | Comply with universal/standard precautions. |
| 17.04 | Identify potential routes of infection and their complications. |
| 18.0 | Practice accepted procedures of transporting, accessioning and processing specimens. – The student will be able to: |
| 18.01 | Follow the approved procedure for preparation and processing (e.g. - centrifugation, separation, aliquoting, labeling, and storage) of serum, plasma, urine, sputum, stool, and wound culture specimens. |
| 18.02 | Demonstrate knowledge of accessioning procedures. |
| 18.03 | Describe the significance of time constraints for specimen collection, transporting and delivery. |
| 18.04 | Describe routine procedures for transporting and processing specimens including DOT packaging requirements. |
| 19.0 | Practice quality assurance and safety. – The student will be able to: |
| 19.01 | Distinguish and perform procedures which ensure reliability of test results when collecting blood specimens. |

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| 19.02 | Demonstrate knowledge of and practice appropriate patient safety. |
| 19.03 | Practice safety in accordance with OSHA (State & Federal guidelines) for chemical, biological, and PPE established procedures including proper disposal of sharps. |
| 19.04 | Follow documentation procedures for work related accidents. |
| 19.05 | Understand Joint Commission patient safety goals and other accrediting/regulatory agency guidelines. |
| **Medical Laboratory Technician: (20-33)** | |
| 20.0 | Demonstrate knowledge and use of basic laboratory equipment and techniques. -- The student will be able to: |
| 20.01 | Identify the parts of the microscope and explain the function of each. |
| 20.02 | Demonstrate the proper technique for operation of the microscope. |
| 20.03 | Demonstrate use of standard laboratory equipment including glassware, pipettes and centrifuge. |
| 20.04 | Perform basic laboratory math calculations. |
| 20.05 | Understand the principles of quality assurance to correct problems encountered in monitoring daily quality control. |
| 20.06 | Evaluate laboratory findings to confirm results according to standard operating procedure. |
| 20.07 | Demonstrate knowledge of principles and operation of laboratory instruments. |
| 21.0 | Demonstrate the basic knowledge of and perform clinical laboratory Point of Care (POC) testing (Waived). -- The student will be able to: |
| 21.01 | Demonstrate the ability to interpret instructions of point of care testing including , but not limited to the following: |
| 21.01.01 | Test principle |
| 21.01.02 | Storage & Stability |
| 21.01.03 | Internal vs. External Quality Control |
| 21.01.04 | Specimen collection & preparation |
| 21.01.05 | Directions for use |
| 21.01.06 | Interpretation of results |
| 21.01.07 | Interfering substances |
| 21.02 | Demonstrate and discuss knowledge of lot numbers use and importance in regard to both kits and reagents. |

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| | 21.03 Demonstrate knowledge of the frequency in which quality control procedures should be performed. |
| | 21.04 Explain the CLIA 88 classification of laboratory testing into waived, moderate, and highly complex including the personnel qualified to perform each. |
| 22.0 | Demonstrate basic knowledge of and perform point of care (POC) testing using CLIA approved waived instrumentation. -- The student will be able to: |
| | 22.01 Demonstrate and perform POC testing specific to microbiology, hematology, urinalysis, and clinical chemistry. |
| | 22.02 Perform instrument maintenance. |
| | 22.03 Demonstrate knowledge of quality control and calibrations involved within the POC instruments. |
| | 22.04 Identify normal limits and associate abnormal results with disease or disorders. |
| | 22.05 Discuss the significance of reporting critical values as it applies to point of care testing. |
| 23.0 | Discuss the general responsibilities and functions encountered by a medical technician.– The students will be able to: |
| | 23.01 Ask appropriate scientific questions and recognize what is involved in experimental approaches to the solutions of such questions. |
| | 23.02 Communicate laboratory results to healthcare professionals. |
| | 23.03 Demonstrate ability to evaluate laboratory results. |
| | 23.04 Demonstrate ability to report laboratory results in written or oral form. |
| | 23.05 Discuss the licensure and certification requirements of the major classifications of clinical laboratory personnel. |
| 24.0 | Apply quality assurance principles and safety protocols–The student will be able to: |
| | 24.01 Assess specimen acceptability using standard operating procedure including rejection/recollection criteria. |
| | 24.02 Describe procedures for transporting and processing specimens. |
| | 24.03 Describe clinical laboratory role in providing quality assurance in laboratory testing, reporting, and use and maintenance of equipment. |
| | 24.04 Understand the need for calibration of laboratory equipment. |
| | 24.05 Demonstrate and record quality control procedures required for the tests performed and recognize unacceptable results. |
| | 24.06 Report identified problems encountered in daily quality control according to standard operating procedures. |
| | 24.07 Comply with current OSHA regulations regarding laboratory hazards. |
| 25.0 | Demonstrate knowledge of the operation of computer systems. – The student will be able to: |

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| | 25.01 Discuss the role of computer systems in laboratory data management. |
| | 25.02 Demonstrate knowledge of common computer terminology. |
| | 25.03 Demonstrate entry level computer operations for specimen accessioning, data reporting, and quality control recording. |
| | 25.04 Demonstrate entry level operational skills in the use of computer-interfaced analytical instrumentation. |
| 26.0 | Demonstrate an understanding of the basic principles of molecular diagnostics. -- The student will be able to: |
| | 26.01 Discuss the principles and major steps of the polymerase chain reaction (PCR). |
| | 26.02 Label the organelles and important parts of a eukaryotic animal cell. |
| | 26.03 Describe the function of the organelles and important parts of a eukaryotic animal cell. |
| | 26.04 Discuss the structure, function, and components of DNA and RNA. |
| | 26.05 Define the key terms of molecular diagnostics. |
| | 26.06 Understand the principles of molecular diagnostic testing. |
| | 26.07 Compare the advantages and disadvantages of molecular techniques over traditional diagnostic tests for infectious diseases. |
| | 26.08 List molecular tests associated with the identification of microorganisms. |
| | 26.09 Identify the types of samples appropriate for molecular diagnostics. |
| | 26.10 Discuss the ethical impact of genetic technologies. |
| | 26.11 Outline requirements for reducing contamination in a molecular lab. |
| | 26.12 Discuss nucleic acid probes and their role in clinical laboratory diagnostics. |
| 27.0 | Demonstrate knowledge of urinalysis and body fluids principles and procedures. – The student will be able to: |
| | 27.01 Identify the components of the urinary system and explain their functions. |
| | 27.02 Discuss diseases affecting the urinary system. |
| | 27.03 Describe collection, transport and storage procedures for random and timed urine specimens. |
| | 27.04 Discuss specific gravity techniques; calibration and use of the refractometer. |
| | 27.05 Perform dipstick or tablet (non-automated) urinalysis techniques for chemical exam of the urine and interpret results |

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| | 27.06 | Demonstrate the proper use of automated urinalysise analyzers. |
| | 27.07 | Describe renal function tests. |
| | 27.08 | Describe principles of and perform routine physical and chemical analyses on urine. |
| | 27.09 | Prepare urine sediments and perform identification and quantitation of microscopic formed elements. |
| | 27.10 | Correlate abnormal physical, chemical and microscopic urine results with associated pathological conditions. |
| | 27.11 | Differentiate between transudates and exudates. |
| | 27.12 | Discuss miscellaneous body fluids to include cerebral spinal, serous, seminal and joint fluids. |
| | 27.13 | Perform physical, chemical and microscopic evaluations of common body fluids. |
| 28.0 | Demonstrate knowledge of hematological principles and procedures. – The student will be able to: | |
| | 28.01 | Discuss the organs, cells and cellular interaction of the lymphoid, myeloid and reticuloendothelial systems. |
| | 28.02 | Demonstrate an understanding of basic concepts of hematopoiesis. |
| | 28.03 | Identify the components of blood. |
| | 28.04 | Discuss the function of formed elements of blood. |
| | 28.05 | Demonstrate an understanding of the synthesis of normal and abnormal molecular structure of hemoglobin, common hemoglobinopathies, and associated tests. |
| | 28.06 | Describe normal hemoglobin-oxygen function using the oxygen dissociation curve (ODC). |
| | 28.07 | Discuss assessment and impact of preanalytical, analytical, and post-analytical factors on hematology testing. |
| | 28.08 | Calculate red blood cell indices. |
| | 28.09 | Discuss selected cytochemical staining and flow cytometry procedures. |
| | 28.10 | Evaluate red blood cell morphology. |
| | 28.11 | State the review process of histogram/scatterplot/scatter gram analysis. |
| | 28.12 | Describe the categories used in a morphological classification of anemias. |
| | 28.13 | Correlate complete blood cell results with peripheral exam of blood smear. |
| | 28.14 | List the white blood cell maturation sequence and identify distinguishing morphology for stages of developing white blood cells. |

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| | 28.15 Discuss normal and abnormal hematology findings, reference ranges and associated diseases. |
| | 28.16 Demonstrate an understanding of normal and abnormal white cell morphology, related disease states and associated tests. |
| | 28.17 Discuss the principles of and perform routine hematology procedures applying quality control procedures.as necessary. |
| | 28.18 Perform commonly used methods to evaluate leukocytes, correlate and verify automated cell counts with established criteria. |
| | 28.19 Identify characteristic findings of nonmalignant leukocytic disorders, e.g. shift to the left, toxic granulation, Döhle bodies, etc. |
| | 28.20 Perform techniques of manual blood smear evaluation including white blood cell differential, red cell and platelet morphology. |
| | 28.21 Correlate peripheral blood evaluation with automated cell analysis. |
| | 28.22 Perform platelet counts on patient and control specimens using manual and automated techniques and correlate counts with peripheral smear. |
| 29.0 | Demonstrate knowledge of hemostasis and related diagnostic principles and procedures. – The student will be able to: |
| | 29.01 Discuss and define the mechanisms of hemostasis including bleeding and clotting. |
| | 29.02 Discuss common coagulopathies and associated treatments. |
| | 29.03 Discuss assessment and impact of pre-analytical factors on hemostasis testing |
| | 29.04 Describe the principles of and perform routine testing used in the evaluation of primary and secondary hemostasis. |
| | 29.05 Discuss additional hemostasis tests performed to differentiate the cause of abnormal routine tests. |
| 30.0 | Demonstrate knowledge of immunology principles and procedures. – The student will be able to: |
| | 30.01 Discuss the functions of the cells of the immune system, cytokines and regulatory molecules. |
| | 30.02 Discuss physical and chemical properties of immunogens (antigens), immunoglobulins (antibodies) and complement |
| | 30.03 Compare and contrast the principles of basic agglutination, flocculation and precipitation procedures in immunology/serology. |
| | 30.04 Perform basic procedures in immunology/serology. |
| | 30.05 Discuss principles of serum protein electrophoresis and immunofixation. |
| | 30.06 Discuss the clinical significance of the commonly performed immunological tests. |
| | 30.07 Discuss selected serological tests such as immunoassays. |
| 31.0 | Demonstrate knowledge of clinical chemistry principles and procedures. – The student will be able to: |

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| 31.01 | Identify the chemistry analytes used to evaluate various organ function. |
| 31.02 | Discuss the renal system and related analytes. |
| 31.03 | Discuss principles of and perform common renal function tests. |
| 31.04 | Discuss carbohydrate, protein and lipid metabolism. |
| 31.05 | Discuss principles of and perform commonly ordered tests related to carbohydrate, protein and lipid metabolism. |
| 31.06 | Discuss the liver and its functions and related analytes. |
| 31.07 | Discuss principles of and perform commonly ordered liver function tests. |
| 31.08 | Discuss enzyme classification, origin, activity and function. |
| 31.09 | Discuss principles of and perform commonly ordered enzyme procedures. |
| 31.10 | Discuss electrolyte balance as related to health and disease. |
| 31.11 | Discuss principles of and perform electrolyte analyses. |
| 31.12 | Discuss principles of and perform commonly ordered tests to evaluate cardiac function. |
| 31.13 | Discuss the physiology of the endocrine system and the principal tests used to evaluate endocrine function. |
| 31.14 | Discuss the role of the laboratory in therapeutic drug monitoring and toxicology. |
| 31.15 | Discuss and perform general electrophoresis techniques. |
| 31.16 | Discuss the clinical significance of commonly ordered clinical chemistry tests. |
| 31.17 | Demonstrate knowledge of principles of instrumentation as related to the clinical chemistry laboratory. |
| 31.18 | Discuss techniques of clinical chemistry related to standardization of procedure and use of standards and controls. |
| 31.19 | Discuss other techniques of clinical chemistry. |
| 31.20 | Discuss basic techniques of clinical chemistry related to normal and abnormal physiology. |
| 32.0 | Demonstrate knowledge of immunohematology principles and procedures. – The student will be able to: |
| 32.01 | Discuss donor interview, criteria for selection, phlebotomy preparation, and donor blood processing. |
| 32.02 | Discuss blood component collection and, preparation, storage and use. |

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| 32.03 | Describe the roles of FDA, AABB, and state agencies and how to contact each. |
| 32.04 | Compare advantages and disadvantages for autologous, versus homologous (allogenic) blood collection and transfusion. |
| 32.05 | Discuss basic genetics of the blood group antigens |
| 32.06 | Discuss the ABO blood group system testing procedures and recognize ABO discrepancies. |
| 32.07 | Describe required tests on recipient blood samples. |
| 32.08 | Discuss and differentiate other blood group systems such as Duffy, Kell, Kidd, S,s, Lu, and the common cold-reacting antibodies such as Le, P, I, M and N. |
| 32.09 | Perform Rh testing to determine Rh phenotypes. |
| 32.10 | Perform and interpret antibody screening. |
| 32.11 | Perform antibody identification tests to detect clinically significant antibodies. |
| 32.12 | Discuss the safety and determine compatibility of blood components for transfusion. |
| 32.13 | Discuss and perform routine compatibility testing including the immediate spin crossmatch and the electronic crossmatch. |
| 32.14 | Discuss and perform phenotyping on recipient and donor specimens. |
| 32.15 | Identify symptoms of the suspected transfusion reaction and the required laboratory work-up. |
| 32.16 | Discuss immune hemolytic disorders and perform the direct antiglobulin test. |
| 32.17 | Discuss specialized techniques. |
| 32.18 | Perform quality control (QC) on reagents. |
| 32.19 | Describe the pathophysiology of hemolytic disease of the fetus and newborn. |
| 33.0 | Demonstrate knowledge of microbiological principles and procedures. – The student will be able to: |
| 33.01 | Discuss microbial taxonomy and nomenclature. |
| 33.02 | Discuss bacterial metabolism, reproduction, cell structures and their functions. |
| 33.03 | Discuss classification, composition and preparation of culture media. |
| 33.04 | Discuss the human pathogenesis of bacteria. |
| 33.05 | Discuss and perform sterilization techniques. |

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| 33.06 | Perform culturing techniques for urine, stool, wound, respiratory, body fluids, and blood specimens. |
| 33.07 | Perform techniques of microbiology related to inoculation and transfer of cultures. |
| 33.08 | Discuss the principles of Gram and AFB stains. |
| 33.09 | Accurately perform, read and report gram stains. |
| 33.10 | Perform techniques necessary for isolation and identification of aerobic and anaerobic bacterial organisms. |
| 33.11 | Identify commonly encountered aerobic bacteria through morphological, physical and biochemical properties. |
| 33.12 | Perform and interpret antimicrobial susceptibility tests. |
| 33.13 | Discuss collection and handling of specimens for fungal, mycobacterial and viral culture. |
| 33.14 | Prepare and examine specimens, and identify ova and parasites when present. |
| **Medical Laboratory Technology (Associate Degree) - The following intended outcomes (34-40), in addition to the outcomes for the program of Medical Laboratory Technology (Certificate), complete the competencies for the Medical Laboratory Technology (Associate Degree) program.** | |
| 34.0 | Demonstrate knowledge of advanced hematological principles and procedures. – The student will be able to: |
| 34.01 | Correlate histogram/scatterplot/scatter gram with differential results. |
| 34.02 | Describe the categories used in etiological classification of anemias. |
| 34.03 | Perform procedures, apply appropriate quality control procedures, recognize and follow up, within pre-established reporting guidelines, laboratory procedures used in the identification, classification and differentiation of neoplastic disorders. |
| 34.04 | Discuss the basic principles and applications of flow cytometry. |
| 34.05 | Discuss the principle of hemoglobin electrophoresis with pattern interpretation. |
| 35.0 | Demonstrate knowledge of advanced hemostasis testing. – The student will be able to: |
| 35.01 | Discuss the principle of mixing studies and factor assays. |
| 35.02 | Correlate the laboratory test results for fibrinolysis with conditions affecting the fibrinolytic system. |
| 35.03 | Perform additional hemostasis tests performed to differentiate the cause of abnormal routine tests. |
| 35.04 | Correlate laboratory results with possible inherited and/or acquired coagulation abnormalities. |

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| 36.0 | Demonstrate knowledge of advanced microbiological principles and procedures. – The student will be able to: |
| | 36.01 Discuss procedures for anaerobic identification and clinical significance of anaerobes. |
| | 36.02 Classify fungi and state their clinical significance. |
| | 36.03 Perform techniques used in identifying fungi. |
| | 36.04 Identify pathogenic fungi. |
| | 36.05 Discuss and perform automated microbiological procedures. |
| | 36.06 Identify life cycles, modes of transmission, prevention and pathophysiology of clinically significant parasites. |
| | 36.07 Discuss microbial and immunological techniques to identify clinically significant viruses. |
| | 36.08 Discuss classification and related disease states of clinically significant viruses. |
| | 36.09 Identify commonly used antibiotics, their usage and mechanisms of activity. |
| 37.0 | Demonstrate knowledge of advanced clinical chemistry principles and procedures. – The student will be able to: |
| | 37.01 Perform, calculate, analyze and recognize normal/abnormal electrophoresis procedures. |
| | 37.02 Perform immunoassay procedures. |
| | 37.03 Perform and recognize associated disease states for selected isoenzyme assays. |
| | 37.04 Perform, calculate, and recognize associated disease states for blood lipid profiles. |
| | 37.05 Perform selected procedures related to endocrine function. |
| | 37.06 Perform selected assays for therapeutic and toxic substances. |
| | 37.07 Discuss the principles and procedures of blood gas analysis, including arterial specimen collection and clinical significance. |
| 38.0 | Demonstrate knowledge of advanced immunological procedures. – The student will be able to: |
| | 38.01 Perform serological tests such as immunofluorescence assays. |
| | 38.02 Discuss and interpret antinuclear antibody patterns and their relationship to disease states. |
| | 38.03 Discuss MHC and HLA proteins and the application to transplant technology and rejection. |
| 39.0 | Demonstrate knowledge of advanced immunohematology principles and procedures. – The student will be able to: |

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| | 39.01 | Understand questions regarding donor suitability. |
| | 39.02 | Discuss the various parameters of required testing of donor blood according to AABB Standards. |
| | 39.03 | Describe the preparation and use of washed red cells, leukocyte-reduced red cells and platelet concentrations from donor units. |
| | 39.04 | Describe the preparation and use of cryoprecipitate and fresh frozen plasma. |
| | 39.05 | Describe the principle and use of the antiglobulin test, both direct and indirect methods, including the purpose for using IgG sensitized cells. |
| | 39.06 | Perform methods of adsorption and elution techniques. |
| | 39.07 | Perform procedures for identification of multiple antibodies in recipient specimen including enzyme enhancement, dosage, temperature and complement binding. |
| | 39.08 | Determine appropriate dosage of Rh Immune Globulin based on test results. |
| | 39.09 | Interpret the preliminary investigation results to determine whether a transfusion reaction has occurred. |
| 40.0 | Demonstrate and understanding of advanced principles of molecular diagnostics. – The student will be able to: | |
| | 40.01 | Describe the steps used to prepare genomic DNA from blood and buccal cells. |
| | 40.02 | Describe the process of Fluorescent In-Situ Hybridization (FISH). |
| | 40.03 | Compare and contrast real time PCR and conventional PCR. |

## Additional Information

### Laboratory Activities

Laboratory investigations that include scientific inquiry, research, measurement, problem solving, emerging technologies, tools and equipment, as well as, experimental, quality, and safety procedures are an integral part of this career and technical program/course. Laboratory investigations benefit all students by developing an understanding of the complexity and ambiguity of empirical work, as well as the skills required to manage, operate, calibrate and troubleshoot equipment/tools used to make observations. Students understand measurement error; and have the skills to aggregate, interpret, and present the resulting data. Equipment and supplies should be provided to enhance hands-on experiences for students.

**Clinical learning experiences in a clinical laboratory and related areas are an integral part of this program. Clinical learning experiences should reflect the full breadth of responsibilities expected of a Medical Laboratory Technician and should include appropriate experience in each of the areas of the laboratory described herein. The specified length for each of the courses listed is inclusive of clinical experience for each of the respective laboratory sections.**

### Special Notes

The following ATD programs have been approved by the Florida State Board of Education for statewide articulation credit into this degree program.

Medical Clinical Laboratory Technician –ATD (0351100404/0351100401) - 40 credits

The following industry certifications have been approved by the Florida State Board of Education for statewide articulation credit into this degree program.

Registered Phlebotomy Technician (RPT) (AMEDT005) - 3 credits

This program meets the Department of Health HIV/AIDS Domestic Violence and Prevention of Medical Errors education requirements. Upon completion of this program, the instructor will provide a certificate to the student verifying that these requirements have been met.

If students in this program are seeking a licensure, certificate or registration through the Department of Health, please refer to 456.0635 F.S. for more information on disqualification for a license, certificate, or registration through the Department of Health.

Outcomes 01-11 are referred to as the Health Careers Core and do not have to be completed if the student has previously completed the Core in another health science program. The Core should be taken first or concurrently with the first course in the program. Following the successful completion of the core, the student is eligible to take the National Health Care Foundation Skill Standards Assessment with instructor approval and the completion of a portfolio

## Career and Technical Student Organization (CTSO)

HOSA: Future Health Professionals is the intercurricular career and technical student organization providing leadership training and reinforcing specific career and technical skills. Career and Technical Student Organizations provide activities for students as an integral part of the instruction offered.

## Accommodations

Federal and state legislation requires the provision of accommodations for students with disabilities to meet individual needs and ensure equal access. Postsecondary students with disabilities must self-identify, present documentation, request accommodations if needed, and develop a plan with their counselor and/or instructors. Accommodations received in postsecondary education may differ from those received in secondary education. Accommodations change the way the student is instructed. Students with disabilities may need accommodations in such areas as instructional methods and materials, assignments and assessments, time demands and schedules, learning environment, assistive technology and special communication systems. Documentation of the accommodations requested and provided should be maintained in a confidential file.

**Florida Department of Education**
**Curriculum Framework**

**Program Title:** **Histologic Technology**
**Career Cluster:** **Health Science**

| AS | |
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| CIP Number | 1351100800 |
| Program Type | College Credit |
| Standard Length | 76 credit hours |
| CTSO | HOSA: Future Health Professionals |
| SOC Codes (all applicable) | 29-2011 Medical and Clinical Laboratory Technologists |

## Purpose

This program offers a sequence of courses that provides coherent and rigorous content aligned with challenging academic standards and relevant technical knowledge and skills needed to prepare for further education and careers in the Health Science career cluster; provides technical skill proficiency, and includes competency-based applied learning that contributes to the academic knowledge, higher-order reasoning and problem-solving skills, work attitudes, general employability skills, technical skills, and occupation-specific skills, and knowledge of all aspects of Health Science career cluster.

The purpose of this program is to prepare students for employment as tissue technologists SOC Code 29-2011 (Medical and Clinical Laboratory Technologists) or histotechnicians or to provide supplemental training for persons previously or currently employed in these occupations.

The content includes but is not limited to preparation of tissue specimens of human and animal origin for research, teaching purposes, or diagnosis of body dysfunction and malignancy. A clinical component is a necessary element of this program.

**Additional Information** relevant to this Career and Technical Education (CTE) program is provided at the end of this document.

## Program Structure

This program is a planned sequence of instruction consisting of 76 credit hours.

**Standards**

After successfully completing this program, the student will be able to perform the following:

01.0 Demonstrate knowledge of the health care delivery system and health occupations.
02.0 Demonstrate the ability to communicate and use interpersonal skills effectively.
03.0 Demonstrate legal and ethical responsibilities.
04.0 Demonstrate an understanding of and apply wellness and disease concepts.
05.0 Recognize and practice safety and security procedures.
06.0 Recognize and respond to emergency situations.
07.0 Recognize and practice infection control procedures.
08.0 Demonstrate an understanding of information technology applications in healthcare.
09.0 Demonstrate employability skills.
10.0 Demonstrate knowledge of blood borne diseases, including HIV/AIDS.
11.0 Apply basic math and science skills.
12.0 Identify the anatomic structure and function of body systems in relation to disease states and services performed by the histotechnician.
13.0 Practice quality assurance, safety, and acceptable communication skills.
14.0 Adhere to legal and ethical principles related to the practice of histotechnology.
15.0 Demonstrate knowledge of histology laboratory operations related to accessioning.
16.0 Demonstrate knowledge of histology laboratory operations related to grossing.
17.0 Demonstrate knowledge of histology laboratory operations related to tissue processing.
18.0 Demonstrate knowledge of histology laboratory operations related to embedding.
19.0 Demonstrate knowledge of histology laboratory operations related to microtomy.
20.0 Perform tissue preparation techniques.
21.0 Maintain histology laboratory equipment.

**Florida Department of Education**
**Student Performance Standards**

**Program Title:** **Histologic Technology**
**CIP Number:** **1351100800**
**Program Length:** **76 credit hours**
**SOC Code(s):** **29-2011**

Standards 1-11 are referred to as the **Health Science Core** and are required standards in this program. Secondary and Postsecondary students completing the health science core will not have to repeat the core in any other health science program in which it is a part. When the recommended sequence is followed, the structure allows students to complete at specified points for employment or remain for advanced training or cross-training.

To ensure consistency whenever these courses are offered, the health science core standards (1-11) have been placed in a separate document.

| **Refer to Rule 6A-14.030 (4) F.A.C., for the minimum amount of general education coursework required in the Associate of Science (AS) degree. At the completion of this program, the student will be able to:** | |
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| **Histologic Technology: The following intended outcomes complete the occupational completion point for the Histologic Technology program.** | |
| 12.0 | Identify the anatomic structure and function of body systems in relation to disease states and services performed by the histotechnician. – The student will be able to: |
| 12.01 | Demonstrate knowledge of human anatomy and physiology as related to histotechnology. |
| 12.02 | Demonstrate knowledge of normal histology of human organs. |
| 12.03 | Demonstrate knowledge of various methods of obtaining histological specimens from patients. |
| 12.04 | Identify tissue structures and cellular components; relate both to physiological functions. |
| 12.05 | Demonstrate knowledge of types of histological specimens usually submitted for gross and microscopic examination or submitted for gross description only. |
| 12.06 | Demonstrate knowledge of the processing of histologic specimens especially as related to disease processes. |
| 12.07 | Demonstrate knowledge of tissue processing methods and schedules, depending on tissue type and size including variety of fixatives used and how each relates to different tissue components and the disease process to be diagnosed. |
| 13.0 | Practice quality assurance, safety and acceptable communication skills. – The student will be able to: |
| 13.01 | Practice quality control in the histology laboratory as required by the accrediting agency. |

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| | 13.02 Follow institutional policies and procedures related to safety. |
| | 13.03 Demonstrate knowledge of medical terminology. |
| | 13.04 Recognize errors and their sources, and take corrective action. |
| | 13.05 Demonstrate knowledge of chemical hazards and acceptable exposure limits within the histopathology laboratory. |
| | 13.06 Demonstrate knowledge of proper disposal methods for all chemical and biological waste within the histopathology laboratory with emphasis on both state and local requirements. |
| | 13.07 Implement procedures to meet regulatory and accreditation agency patient safety guidelines. |
| 14.0 | Adhere to legal and ethical principles related to the practice of Histotechnology. – The student will be able to: |
| | 14.01 Practice discretion and confidentiality with protected health information in regard to laboratory reports, requisitions and computer monitors. |
| | 14.02 Demonstrate knowledge of the histotechnician's role and responsibilities in relation to the health care team. |
| | 14.03 Demonstrate knowledge of the legal ramifications of pathology practice of laboratory medicine. |
| 15.0 | Demonstrate knowledge of histology laboratory operations related to accessioning. – The student will be able to: |
| | 15.01 Demonstrate the understanding of evaluation of acceptable specimen protocol including proper patient identification. |
| | 15.02 Recognize specimens submitted for special studies (i.e. Immunofluorescence, Quantitative Iron). |
| | 15.03 Verify positive patient ID. |
| 16.0 | Demonstrate knowledge of histology laboratory operations related to grossing. – The student will be able to: |
| | 16.01 Demonstrate knowledge of fixation types and volume to size. |
| | 16.02 Demonstrate the need for accurate labeling of cassettes with accession number and sub-parts in relation to gross description. |
| | 16.03 Perform accurate and precise gross descriptions according to standard grossing protocol. |
| | 16.04 Demonstrate knowledge of loss prevention for small specimens (i.e. Sponges, lens paper, biopsy bags.) |
| | 16.05 Demonstrate knowledge of minute fragments-cell block procedures. |
| | 16.06 Demonstrate knowledge of decalcification procedures by specimen type. |
| | 16.07 Triage specimens for size for appropriate tissue processing schedules. |
| 17.0 | Demonstrate knowledge of histology laboratory operations related to tissue processing. – The student will be able to: |

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| | 17.01 Demonstrate knowledge of the types of tissue processors including routine, microwave and rapid. |
| | 17.02 Perform the operation and maintenance of equipment. |
| | 17.03 Perform the preparation of a reagent. |
| | 17.04 Create tissue processing schedules by size and tissue type. |
| | 17.05 Perform the maintenance reagents including changing and rotation. |
| | 17.06 Demonstrate knowledge of various paraffin types including additives and melting points. |
| 18.0 | Demonstrate knowledge of histology laboratory operations related to embedding. – The student will be able to: |
| | 18.01 Recognize adequacy of tissue processing and rectify if possible. |
| | 18.02 Recognize special instructions given from the gross team. |
| | 18.03 Verify the number of pieces and cassettes submitted. |
| | 18.04 Select the appropriate size of mold for the size of tissue being embedded. |
| | 18.05 Perform the proper orientation of tissue pieces (i.e. Punch biopsies, tubes, veins). |
| | 18.06 Apply knowledge of the prevent air bubbles and multi-layering of paraffin. |
| | 18.07 Apply quality control measures for the temperatures of paraffin including daily recording. |
| 19.0 | Demonstrate knowledge of histology laboratory operations related to microtomy. – The student will be able to: |
| | 19.01 Demonstrate the use of microtomy tools and microtomes including alignment and angles, and proper disposal of blades. |
| | 19.02 Demonstrate proper blade selection based on characteristics including disposable, high or low profile, or re-sharpen. |
| | 19.03 Select the appropriate thickness of sections for routine specimens and special procedures. |
| | 19.04 Identify the number of slides and levels per block as indicated. |
| | 19.05 Demonstrate techniques for facing/trimming into blocks for full section. |
| | 19.06 Perform slide selection for all specimen types including slides with adhesives for bones and nails. |
| 20.0 | Perform tissue preparation techniques. – The student will be able to: |
| | 20.01 Demonstrate an understanding of the need for proper histologic specimen identification. |

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| | 20.02 Perform the clinically appropriate preparation and histochemical staining techniques when ordered by the pathologist. |
| | 20.03 Identify and troubleshoot problems encountered in histological staining and reagent preparation procedures. |
| | 20.04 Demonstrate the knowledge of the current methods of immunohistochemistry procedures for the detection of antigen. |
| | 20.05 Evaluate, validate and implement new preparation and staining procedures. |
| | 20.06 Distinguish between well-prepared and stained and poorly-prepared and stained histologic specimens. |
| | 20.07 Identify tissue structures and their staining characteristics. |
| | 20.08 Demonstrate knowledge of frozen section use and techniques. |
| 21.0 | Maintain histology laboratory equipment. – The student will be able to: |
| | 21.01 Perform routine maintenance of equipment and instruments within specified limits to include:<br>21.01.01 embedding centers<br>21.01.02 tissue processors<br>21.01.03 microtomes<br>21.01.04 cryostat |
| | 21.02 Refer to appropriate person(s) for complex repairs. |
| | 21.03 Follow procedures for accessibility and maintenance of service records. |

## Additional Information

### Laboratory Activities

Laboratory investigations that include scientific inquiry, research, measurement, problem solving, emerging technologies, tools and equipment, as well as, experimental, quality, and safety procedures are an integral part of this career and technical program/course. Laboratory investigations benefit all students by developing an understanding of the complexity and ambiguity of empirical work, as well as the skills required to manage, operate, calibrate and troubleshoot equipment/tools used to make observations. Students understand measurement error; and have the skills to aggregate, interpret, and present the resulting data. Equipment and supplies should be provided to enhance hands-on experiences for students.

### Special Notes

This program meets the Department of Health's education requirements for HIV/AIDS, Domestic Violence and Prevention of Medical Errors. Although not a requirement for initial licensure, it is a requirement for renewal, therefore the instructor may provide a certificate for renewal purposes to the student verifying these requirements have been met.

If students in this program are seeking a licensure, certificate or registration through the Department of Health, please refer to 456.0635 F.S. for more information on disqualification for a license, certificate, or registration through the Department of Health.

Outcomes 01-11 are referred to as the Health Careers Core and do not have to be completed if the student has previously completed the Core in another health science program. The Core should be taken first or concurrently with the first course in the program. Following the successful completion of the core, the student is eligible to take the National Health Care Foundation Skill Standards Assessment with instructor approval and the completion of a portfolio

**Career and Technical Student Organization (CTSO)**

HOSA: Future Health Professionals is the intercurricular career and technical student organization providing leadership training and reinforcing specific career and technical skills. Career and Technical Student Organizations provide activities for students as an integral part of the instruction offered.

**Accommodations**

Federal and state legislation requires the provision of accommodations for students with disabilities to meet individual needs and ensure equal access. Postsecondary students with disabilities must self-identify, present documentation, request accommodations if needed, and develop a plan with their counselor and/or instructors. Accommodations received in postsecondary education may differ from those received in secondary education. Accommodations change the way the student is instructed. Students with disabilities may need accommodations in such areas as instructional methods and materials, assignments and assessments, time demands and schedules, learning environment, assistive technology and special communication systems. Documentation of the accommodations requested and provided should be maintained in a confidential file.

**Florida Department of Education**
**Curriculum Framework**

**Program Title:** **Opticianry**
**Career Cluster:** **Health Science**

| AS | |
|---|---|
| CIP Number | 1351180100 |
| Program Type | College Credit |
| Standard Length | 72 credit hours |
| CTSO | HOSA: Future Health Professionals |
| SOC Codes (all applicable) | 29-2081 Opticians, Dispensing |

## Purpose

This program offers a sequence of courses that provides coherent and rigorous content aligned with challenging academic standards and relevant technical knowledge and skills needed to prepare for further education and careers in the Health Science career cluster; provides technical skill proficiency, and includes competency-based applied learning that contributes to the academic knowledge, higher-order reasoning and problem-solving skills, work attitudes, general employability skills, technical skills, and occupation-specific skills, and knowledge of all aspects of Health Science career cluster.

This program is designed to prepare students for employment as dispensing opticians, optician apprentices, dispensing), opticians: dispensing and measuring SOC Code 29-2081 (Opticians, Dispensing) or to provide supplemental training for persons previously or currently employed in these occupations.

The content includes but is not limited to lens surfacing, finishing and mounting; dispensing of completed prescriptions; fitting contact lenses; frame repair, business management techniques and human relations.

**Additional Information** relevant to this Career and Technical Education (CTE) program is provided at the end of this document.

## Program Structure

This program is a planned sequence of instruction consisting of 72 credit hours.

**Regulated Programs**

The program must be approved by the:

Commission on Opticianry Accreditation
1011 Martin Luther King Highway, Suite 100
Bowie, Maryland 20720
(301) 459-8075

Graduates of a recognized program with an A.S. Degree are eligible to take the Florida optician licensure examination administered by the Department of Business and Professional Regulation for the Board of Opticianry (Chapter 484 F.S.  Rule Chapter 21, F.A.C.).

**Standards**

After successfully completing this program, the student will be able to perform the following:

01.0 Demonstrate knowledge of the health care delivery system and health occupations.
02.0 Demonstrate the ability to communicate and use interpersonal skills effectively.
03.0 Demonstrate legal and ethical responsibilities.
04.0 Demonstrate an understanding of and apply wellness and disease concepts.
05.0 Recognize and practice safety and security procedures.
06.0 Recognize and respond to emergency situations.
07.0 Recognize and practice infection control procedures.
08.0 Demonstrate an understanding of information technology applications in healthcare.
09.0 Demonstrate employability skills.
10.0 Demonstrate knowledge of blood borne diseases, including HIV/AIDS.
11.0 Apply basic math and science skills.
12.0 Surface ophthalmic lenses.
13.0 Edge and finish lenses.
14.0 Insert and mount lenses.
15.0 Select and order frames and lenses.
16.0 Fit and dispense prescriptions.
17.0 Fit contact lenses.
18.0 Repair frames.
19.0 Demonstrate knowledge of office management.
20.0 Practice effective business management operation techniques.
21.0 Demonstrate knowledge of anatomy and physiology of the eye.
22.0 Demonstrate knowledge of the effects ophthalmic devices have in correcting the errors of human vision.
23.0 Practice technical and business computer functions.

**Florida Department of Education**
**Student Performance Standards**

**Program Title:** **Optician**
**CIP Number:** **1351180100**
**Program Length:** **72 credit hours**
**SOC Code(s):** **29-2081**

Standards 1-11 are referred to as the **Health Science Core** and are required standards in this program. Secondary and Postsecondary students completing the health science core will not have to repeat the core in any other health science program in which it is a part. When the recommended sequence is followed, the structure allows students to complete at specified points for employment or remain for advanced training or cross-training.

To ensure consistency whenever these courses are offered, the health science core standards (1-11) have been placed in a separate document.

| **Refer to Rule 6A-14.030 (4) F.A.C., for the minimum amount of general education coursework required in the Associate of Science (AS) degree. At the completion of this program, the student will be able to:** | |
|---|---|
| **Optician: The completion of standards 12-23 has met the requirements for the occupational exit of Dispensing Optician.** | |
| 12.0 | Surface ophthalmic lenses. – The student will be able to: |
| 12.01 | Demonstrate knowledge of layout single vision and multi-focal lenses. |
| 12.02 | Demonstrate knowledge of grind, fine and polish single vision lenses and/or multi-focal lenses. |
| 12.03 | Demonstrate knowledge of select lenses and supplies. |
| 12.04 | Inspect lenses. |
| 13.0 | Edge and finish lenses. – The student will be able to: |
| 13.01 | Layout and block lenses. |
| 13.02 | Machine and hand edge lenses. |
| 13.03 | Inspect lenses. |
| 13.04 | Demonstrate knowledge of air temper glass lenses. |
| 13.05 | Demonstrate knowledge of chemical temper glass lenses. |

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| | 13.06 Tint hard resin lenses. |
| | 13.07 Select appropriate lenses. |
| 14.0 | Insert and mount lenses. – The student will be able to: |
| | 14.01 Insert lenses into zyl frames. |
| | 14.02 Insert lenses into metal frames. |
| | 14.03 Mount lenses into rimless and semi-rimless mountings or other appropriate designs. |
| | 14.04 Perform final inspection of eye glasses. |
| | 14.05 Demonstrate knowledge of lens accessories. |
| 15.0 | Select and order frames and lenses. – The student will be able to: |
| | 15.01 Analyze written prescriptions. |
| | 15.02 Duplicate prescriptions from existing lenses. |
| | 15.03 Evaluate patient's life-style needs. |
| | 15.04 Use selected instruments to assist in the calculation of fitting measurements. |
| | 15.05 Calculate lens size and availability. |
| | 15.06 Discuss charges with patients. |
| | 15.07 Demonstrate knowledge of managed vision care procedures. |
| | 15.08 Order lenses and frames. |
| 16.0 | Fit and dispense prescriptions. – The students will be able to: |
| | 16.01 Verify finished prescriptions to specifications. |
| | 16.02 Align frames. |
| | 16.03 Adjust and fit optical devices to patients. |
| 17.0 | Fit contact lenses. – The student will be able to: |
| | 17.01 Analyze prescriptions. |

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| | 17.02 Evaluate patient suitability. |
| | 17.03 Use selected instruments to conduct and assess fittings. |
| | 17.04 Identify types of contact lenses. |
| | 17.05 Conduct patient training. |
| | 17.06 Outline potential complications. |
| | 17.07 Conduct follow-up evaluations. |
| 18.0 | Repair frames. – The student will be able to: |
| | 18.01 Restore finish and replace/repair decorative trim on frames. |
| | 18.02 Replace/repair nose pieces on zyl or metal frames. |
| | 18.03 Demonstrate knowledge of soldering metal frames. |
| | 18.04 Replace/repair temples, front pieces, monofilament, and broken hinges. |
| | 18.05 Reshape damaged frames to lenses. |
| | 18.06 Modify frames for special needs. |
| 19.0 | Demonstrate knowledge of office management. – The student will be able to: |
| | 19.01 Demonstrate knowledge of legal and ethical standards of vision care professionals. |
| | 19.02 Maintain and file patient records. |
| | 19.03 Demonstrate knowledge of managed vision care, including the billing and collection of current and overdue accounts. |
| | 19.04 Practice office supply control. |
| 20.0 | Practice effective business management operation techniques. – The student will be able to: |
| | 20.01 Develop a small business plan of operation. |
| | 20.02 Develop an office policy/procedure manual. |
| | 20.03 Demonstrate knowledge of business finance and operating expenses. |
| | 20.04 Set up a pay scale and benefit program for employees and a bookkeeping system. |

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| | 20.05 Demonstrate knowledge of tax forms, payroll records, insurance needs and inventory needs. |
| | 20.06 Demonstrate knowledge of employee hiring and orientation. |
| | 20.07 Demonstrate knowledge of processes to resolve customer complaints. |
| | 20.08 Demonstrate a working knowledge of basic compliance laws related to Opticianry. |
| 21.0 | Demonstrate knowledge of anatomy and physiology of the eye. – The student will be able to: |
| | 21.01 Demonstrate understanding of the interrelationships between body systems. |
| | 21.02 Diagram and explain the anatomy of the visual system. |
| | 21.03 Recognize and discuss physiological conditions of the eye. |
| 22.0 | Demonstrate knowledge of the effects ophthalmic devices have in correcting the errors of human vision. – The student will be able to: |
| | 22.01 Demonstrate knowledge of basic mathematical principles that are involved in ophthalmic and geometrical optics. |
| | 22.02 Describe the influence of thick and thin prisms on the behavior of light. |
| | 22.03 Apply the principles of light acting on curved single refracting surface to the optic of ophthalmic lenses for parallel and nonparallel light. |
| | 22.04 Describe the relationship and optical properties of cylindrical lenses. |
| | 22.05 Demonstrate knowledge of the theory of lens surface power measuring devices. |
| | 22.06 Create and eliminate prismatic effect by decentration. |
| | 22.07 Demonstrate the influence of lens thickness and surface curvature. |
| 23.0 | Practice technical and business computer functions. – The student will be able to: |
| | 23.01 Demonstrate knowledge of technical computer functions. |
| | 23.02 Demonstrate knowledge of practice management software and business applications of computers. |

## Additional Information

### Laboratory Activities

Laboratory investigations that include scientific inquiry, research, measurement, problem solving, emerging technologies, tools and equipment, as well as, experimental, quality, and safety procedures are an integral part of this career and technical program/course. Laboratory investigations benefit all students by developing an understanding of the complexity and ambiguity of empirical work, as well as the skills required to manage, operate, calibrate and troubleshoot equipment/tools used to make observations. Students understand measurement error; and have the skills to aggregate, interpret, and present the resulting data. Equipment and supplies should be provided to enhance hands-on experiences for students.

### Special Notes

This program meets the Department of Health's education requirements for HIV/AIDS, Domestic Violence and Prevention of Medical Errors. Although not a requirement for initial licensure, it is a requirement for renewal, therefore the instructor may provide a certificate for renewal purposes to the student verifying these requirements have been met.

If students in this program are seeking a licensure, certificate or registration through the Department of Health, please refer to 456.0635 F.S. for more information on disqualification for a license, certificate, or registration through the Department of Health.

The cooperative method of instruction is appropriate for this program. When the cooperative method is offered, the following is required for each student: a training plan signed by the student, instructor and employer which includes instructional objectives and a list of on-the-job and in-school learning experiences; a work station which reflects equipment, skills, and tasks which are relevant to the occupations which the student has chosen as a career goal. Students must receive compensation for work performed.

Outcomes 01-11 are referred to as the Health Careers Core and do not have to be completed if the student has previously completed the Core in another health science program. The CORE should be taken first or concurrently with the first course in the program. Following the successful completion of the core, the student is eligible to take the National Health Care Foundation Skill Standards Assessment with instructor approval and the completion of a portfolio.

### Career and Technical Student Organization (CTSO)

HOSA: Future Health Professionals is the intercurricular career and technical student organization providing leadership training and reinforcing specific career and technical skills. Career and Technical Student Organizations provide activities for students as an integral part of the instruction offered.

### Accommodations

Federal and state legislation requires the provision of accommodations for students with disabilities to meet individual needs and ensure equal access. Postsecondary students with disabilities must self-identify, present documentation, request accommodations if needed, and develop a plan with their counselor and/or instructors. Accommodations received in postsecondary education may differ from those received in secondary education. Accommodations change the way the student is instructed. Students with disabilities may need accommodations in such areas as

instructional methods and materials, assignments and assessments, time demands and schedules, learning environment, assistive technology and special communication systems. Documentation of the accommodations requested and provided should be maintained in a confidential file.

**Certificate Programs**

A College Credit Certificate consists of a program of instruction of less than sixty (60) credits of college-level courses, which is part of an AS or AAS degree program and prepares students for entry into employment (Rule 6A-14.030, F.A.C.). This AS degree program includes the following College Credit Certificates:

Ophthalmic Laboratory Technician (CCC - 0351100600) – 24 credit hours
Eye Care Technician (CCC - 0351180302) – 48 credit hours

Standards for the above certificate programs are contained in separate curriculum frameworks.

**Florida Department of Education**
**Curriculum Framework**

**Program Title:** **Optical Management**
**Career Cluster:** **Health Science**

| AS | |
|---|---|
| CIP Number | 1351180202 |
| Program Type | College Credit |
| Standard Length | 60 credit hours |
| CTSO | HOSA: Future Health Professionals |
| SOC Codes (all applicable) | 11-9111 Medical and Health Services Managers |

## Purpose

This program offers a sequence of courses that provides coherent and rigorous content aligned with challenging academic standards and relevant technical knowledge and skills needed to prepare for further education and careers in the Health Science career cluster; provides technical skill proficiency, and includes competency-based applied learning that contributes to the academic knowledge, higher-order reasoning and problem-solving skills, work attitudes, general employability skills, technical skills, and occupation-specific skills, and knowledge of all aspects of Health Science career cluster.

The program is designed to prepare students for employment as an Optical Manager, SOC Code 11-9111 (Medical and Health Services Managers) or to provide supplemental training for persons previously or currently employed in these occupations.

The content includes but is not limited to communication skills, leadership skills, human relations and employability skills, principles of management, personnel management, and general business procedures.

**Additional Information** relevant to this Career and Technical Education (CTE) program is provided at the end of this document.

## Program Structure

This program is a planned sequence of instruction consisting of 60 credit hours.

**Standards**

After successfully completing this program, the student will be able to perform the following:

01.0 Demonstrate knowledge of the healthcare delivery system and health occupations.
02.0 Demonstrate the ability to communicate and use interpersonal skills effectively.
03.0 Demonstrate legal and ethical responsibilities.
04.0 Demonstrate an understanding of and apply wellness and disease concepts.
05.0 Recognize and practice safety and security procedures.
06.0 Recognize and respond to emergency situations.
07.0 Recognize and practice infection control procedures.
08.0 Demonstrate an understanding of information technology applications in healthcare.
09.0 Demonstrate employability skills.
10.0 Demonstrate knowledge of blood borne diseases, including HIV/AIDS.
11.0 Apply basic math and science skills.
12.0 Apply supervision skills.
13.0 Communicate effectively in supervision.
14.0 Manage human behavior.
15.0 Motivate one's self.
16.0 Motivate others.
17.0 Apply strategies for effective management.
18.0 Utilize creative thinking to achieve business objectives.
19.0 Apply basic decision making skills in supervision.
20.0 Demonstrate appropriate communication skills.
21.0 Demonstrate appropriate math skills.
22.0 Demonstrate an understanding of basic science as it relates to management.
23.0 Demonstrate an understanding of entrepreneurship.
24.0 Demonstrate knowledge of data processing activities.
25.0 Identify, classify and demonstrate management functions.
26.0 Apply basic quality control principles.
27.0 Demonstrate an understanding of technical or industrial competencies.

**Florida Department of Education**
**Student Performance Standards**

**Program Title:** **Optical Management**
**CIP Number:** **1351180202**
**Program Length:** **60 credit hours**
**SOC Code(s):** **11-9111**

Standards 1-11 are referred to as the **Health Science Core** and are required standards in this program. Secondary and Postsecondary students completing the health science core will not have to repeat the core in any other health science program in which it is a part. When the recommended sequence is followed, the structure allows students to complete at specified points for employment or remain for advanced training or cross-training.

To ensure consistency whenever these courses are offered, the health science core standards (1-11) have been placed in a separate document.

| **Refer to Rule 6A-14.030 (4) F.A.C., for the minimum amount of general education coursework required in the Associate of Science (AS) degree. At the completion of this program, the student will be able to:** |
|---|
| **Optical Management (12-27)** |
| 12.0 Apply supervision skills. – The student will be able to: |
| 12.01 Specify the responsibilities of the supervisor. |
| 12.02 Practice human relations skills. |
| 12.03 Follow leadership principles and approaches. |
| 12.04 Apply positive approaches to discipline. |
| 12.05 Conceptualize organizational functions of management. |
| 12.06 Develop organizational plans. |
| 12.07 Follow and teach accepted accident prevention practices. |
| 12.08 Apply elements of delegation. |
| 12.09 Coordinate employee and organization interest. |
| 12.10 Apply techniques of dealing with crisis. |

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| | 12.11 Utilize strategies for dealing with interpersonal conflicts. |
| | 12.12 Analyze causes of resistance in employees. |
| | 12.13 Implement the agreement finding process. |
| | 12.14 Develop and implement job instructions. |
| | 12.15 Apply delegation procedures. |
| | 12.16 Apply principles of management to employee/ employer conflicts. |
| 13.0 | Communicate effectively in supervision. – The student will be able to: |
| | 13.01 Solve problems in communicating. |
| | 13.02 Exhibit appropriate habits in person to person communication. |
| | 13.03 Apply listening skills. |
| | 13.04 Discuss the need for accurate pharmacy documentation and recordkeeping. |
| | 13.05 Use communication feedback effectively. |
| | 13.06 Use persuasion skills in communicating. |
| | 13.07 Build credibility in management. |
| | 13.08 React to non-verbal communication. |
| | 13.09 Practice confrontation skills. |
| | 13.10 Write an effective memorandum. |
| | 13.11 Prepare a written technical report. |
| 14.0 | Manage human behavior. – The student will be able to: |
| | 14.01 Use behavior modification techniques. |
| | 14.02 Practice transactional analysis skills. |
| | 14.03 Establish goals and objectives. |
| | 14.04 Identify and resolve emotional disturbances of workers. |

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| | 14.05 Use self-concept building skills. |
| | 14.06 Assess worker and supervisor roles and relationships. |
| | 14.07 Manage worker resistance to change. |
| | 14.08 Diagnose the dynamics involved in performance appraisal. |
| | 14.09 Use appropriate assertiveness skills. |
| 15.0 | Motivate one's self. – The student will be able to: |
| | 15.01 Build improved attitude and self-confidence. |
| | 15.02 Conceptualize cause and effect relationship. |
| | 15.03 Set personal goals. |
| | 15.04 Apply self-esteem building skills. |
| | 15.05 Diagnose life traps. |
| | 15.06 Apply self-discipline techniques. |
| | 15.07 Determine areas of personal talent. |
| 16.0 | Motivate others. – The student will be able to: |
| | 16.01 Discuss the self-fulfilling prophesy. |
| | 16.02 Discuss the process of motivation. |
| | 16.03 Apply the hierarchy of human needs to worker motivation. |
| | 16.04 Apply the hierarchy of human needs to worker motivation. |
| | 16.05 Effect job enrichment procedures. |
| | 16.06 Apply attitude enrichment procedures. |
| | 16.07 Discuss the concept of maintainers and motivators. |
| | 16.08 Develop role of trust and credibility in worker motivation. |
| | 16.09 Direct goal setting procedures with workers. |

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| | 16.10 Implement participative style of supervision. |
| 17.0 | Apply strategies for effective management. – The student will be able to: |
| | 17.01 Display knowledge or prescription pricing systems used in pharmacy. |
| | 17.02 Maintain stock inventory. |
| | 17.03 Prepare electronic purchase orders. |
| | 17.04 Receive, store and distribute pharmaceutical supplies. |
| | 17.05 Define industry standards in purchasing pharmaceutical supplies. |
| 18.0 | Utilize creative thinking to achieve business objectives. – The student will be able to: |
| | 18.01 Explain the difference between a cubic centimeter and a milliliter. |
| | 18.02 Use common pharmaceutical weighing equipment. |
| | 18.03 Use common pharmaceutical volume measurement equipment. |
| | 18.04 Explain the technique of preparing a solution, a suspension, an elixir, and emulsion and an extract. |
| | 18.05 Convert measurements within the apothecary, avoirdupois, and metric systems. |
| | 18.06 Use the following arithmetic procedures: ratio and proportion; percentage. |
| 19.0 | Apply basic decision making skills in supervision. – The student will be able to: |
| | 19.01 Predict physical and chemical incompatibilities utilizing chemistry properties. |
| | 19.02 Describe electrolyte balances. |
| | 19.03 Relate the general classes, actions, routes, action, and side effects of drugs. |
| | 19.04 Identify a listing of usual adult doses of medications and respective contraindications. |
| 20.0 | Demonstrate appropriate communication skills. – The student will be able to: |
| | 20.01 Read and prepare medication orders correctly. |
| | 20.02 Transport medications safely being aware of hazards: theft, legal implications of accidental loss, and other consequences. |
| | 20.03 Identify special precautions pertaining to children. |

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| | 20.04 Maintain controlled substance inventory. |
| | 20.05 Demonstrate the proper technique of preparing pharmaceutical preparations. |
| | 20.06 Demonstrate the ability to correctly fill and deliver medication cassettes. |
| | 20.07 Collect data from medication administration record and drug use and evaluation form. |
| | 20.08 Identify automated medication dispensing equipment and its proper use. |
| 21.0 | Demonstrate appropriate math skills. – The student will be able to: |
| | 21.01 Locate correct stock container. |
| | 21.02 Weigh measure, count required individual doses of medication. |
| | 21.03 Label with required information. |
| | 21.04 Operate unit does pre-packet equipment. |
| | 21.05 Place individual dose in appropriate containers, repackage in predetermined quantities. |
| | 21.06 Record prepackage medication data correctly. |
| | 21.07 Define role of technician in quality assurance activities. |
| 22.0 | Demonstrate an understanding of basic science as it relates to management. – The student will be able to: |
| | 22.01 Compare medication order with label on vial and check expiration date of product. |
| | 22.02 Calculate drug dosage for parenteral use. |
| | 22.03 Identify common drug/drug incompatibilities. |
| | 22.04 Reconstitute parenteral medications. |
| | 22.05 Use aseptic techniques to withdraw medication from stock vial measure correct quantity as instructed, select and insert it into IV solution without error. |
| | 22.06 Use aseptic technique to withdraw medication from an ampule. |
| | 22.07 Prepare parenteral solutions. |
| | 22.08 Prepare Total Parenteral Nutrition solutions. |
| | 22.09 Prepare chemotherapeutic agents using proper safety techniques. |

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| | 22.10 Demonstrate appropriate technique in the use of specialized equipment such as: laminar flow hoods, filters, pumps, and automated compounders. |
| | 22.11 Place label on IV solution container and keep records. |
| | 22.12 Perform quality control check. |
| | 22.13 Identify storage requirements of reconstituted IV solutions. |
| 23.0 | Demonstrate an understanding of entrepreneurship. – The student will be able to: |
| | 23.01 Identify basic concepts of the American economic system. |
| | 23.02 Identify basic types and sources of consumer credit. |
| 24.0 | Demonstrate knowledge of data processing activities. – The student will be able to: |
| | 24.01 Demonstrate the ability to determine the roper priority of work. |
| | 24.02 Prepare a day's schedule for the employer. |
| | 24.03 Choose appropriate action in situations requiring application of business ethics. |
| | 24.04 Choose appropriate action in situations requiring following a chain of command. |
| | 24.05 Choose appropriate action in situations requiring effective time management. |
| | 24.06 Demonstrate ability to manage a team. |
| 25.0 | Identify, classify, and demonstrate management functions. – The student will be able to: |
| | 25.01 Define management. |
| | 25.02 Identify management positions and styles. |
| | 25.03 Identify the major functions of management. |
| | 25.04 Classify activities as part of the planning function of management. |
| | 25.05 Classify activities as part of the organizing function of management. |
| | 25.06 Classify activities as part of the staffing function of management. |
| | 25.07 Classify activities as part of the directing function of management. |
| | 25.08 Classify activities as part of the controlling function of management. |

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| | 25.09 Demonstrate the ability to perform planning, organizing, staffing, directing, and controlling functions of management. |
| | 25.10 Distinguish among management functions. |
| | 25.11 Select the most effective communication systems. |
| 26.0 | Apply basic quality control principles. – The student will be able to: |
| | 26.01 Describe basic quality control systems. |
| | 26.02 Implement and practice quality control. |
| 27.0 | Demonstrate an understanding of technical or industrial competencies. – The student will be able to: |
| | 27.01 Discuss and/or perform basic procedures which fall under this management position. |
| | 27.02 Possess basic competency understanding necessary to the role of management. |

## Additional Information

### Laboratory Activities

Laboratory investigations that include scientific inquiry, research, measurement, problem solving, emerging technologies, tools and equipment, as well as, experimental, quality, and safety procedures are an integral part of this career and technical program/course. Laboratory investigations benefit all students by developing an understanding of the complexity and ambiguity of empirical work, as well as the skills required to manage, operate, calibrate and troubleshoot equipment/tools used to make observations. Students understand measurement error; and have the skills to aggregate, interpret, and present the resulting data. Equipment and supplies should be provided to enhance hands-on experiences for students.

### Special Notes

This program focuses on broad, transferable skills and stresses understanding and demonstration of the following elements of the health care industry; planning, management, finance, technical and production skills, underlying principles of technology, labor issues, community issues and health, safety, and environmental issues.

This program meets the Department of Health's education requirements for HIV/AIDS, Domestic Violence and Prevention of Medical Errors. Although not a requirement for initial licensure, it is a requirement for renewal, therefore the instructor may provide a certificate for renewal purposes to the student verifying these requirements have been met.

If students in this program are seeking a licensure, certificate or registration through the Department of Health, please refer to 456.0635 F.S. for more information on disqualification for a license, certificate, or registration through the Department of Health.

Cooperative training - OJT is appropriate for this program. When cooperative training is offered, the following is required for each student: a training plan, signed by the student, instructor and employer which includes instructional objectives and a list of on-the-job and in-school learning experiences; a workstation which reflects equipment, skills and tasks which are relevant to the occupations which the student has chosen as a career goal. Students must receive compensation for work performed.

Outcomes 01-11 are referred to as the Health Careers Core and do not have to be completed if the student has previously completed the Core in another health science program. The CORE should be taken first or concurrently with the first course in the program. Following the successful completion of the core, the student is eligible to take the National Health Care Foundation Skill Standards Assessment with instructor approval and the completion of a portfolio.

### Career and Technical Student Organization (CTSO)

HOSA: Future Health Professionals is the intercurricular career and technical student organization providing leadership training and reinforcing specific career and technical skills. Career and Technical Student Organizations provide activities for students as an integral part of the instruction offered.

## Accommodations

Federal and state legislation requires the provision of accommodations for students with disabilities to meet individual needs and ensure equal access. Postsecondary students with disabilities must self-identify, present documentation, request accommodations if needed, and develop a plan with their counselor and/or instructors. Accommodations received in postsecondary education may differ from those received in secondary education. Accommodations change the way the student is instructed. Students with disabilities may need accommodations in such areas as instructional methods and materials, assignments and assessments, time demands and schedules, learning environment, assistive technology and special communication systems. Documentation of the accommodations requested and provided should be maintained in a confidential file.