Florida Department of Education
Curriculum Framework

Course Title: **Introduction to Manufacturing**
Course Type: **Orientation/Exploratory**
Career Cluster: **Manufacturing**

Secondary – Middle School	
Course Number	9260350
CIP Number	149260350M
Grade Level	6 – 8
Standard Length	Semester
Teacher Certification	Refer to the **Course Structure** section
CTSO	FL-TSA

Purpose

The purpose of this course is to assist students in making informed decisions regarding their future academic and occupational goals and to provide information regarding careers in the manufacturing career cluster. The content includes but is not limited to planning, managing, and performing the processing of materials into intermediate or final products and related professional and technical support activities such as production planning and control, maintenance and manufacturing/process engineering. Reinforcement of academic skills occurs through classroom instruction and applied laboratory procedures. Instruction and learning activities are provided in a laboratory setting using hands-on experiences with the equipment, materials and technology appropriate to the course content and in accordance with current practices.

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

Course Structure

The length of this course is one semester. It may be offered for two semesters when appropriate. When offered for one semester, it is recommended that it be at the exploratory level and more in-depth when offered for two semesters.

To teach the course(s) listed below, instructors must hold at least one of the teacher certifications indicated for that course.

The following table illustrates the course structure:

Course Number	Course Title	Teacher Certification	Length
9260350	Introduction to Manufacturing	AUTO PROD 7G ELECTRONIC @7 7G ENG 7G IND ENGR 7G TEC ED 1 @ 2	Semester

Florida Standards for English Language Development (ELD)
English language learners communicate for social and instructional purposes within the school setting. ELD.K12.SI.1.1

English Language Development (ELD) Standards Special Notes:
Teachers are required to provide listening, speaking, reading and writing instruction that allows English language learners (ELL) to communicate for social and instructional purposes within the school setting.   For the given level of English language proficiency and with visual, graphic, or interactive support, students will interact with grade level words, expressions, sentences and discourse to process or produce language necessary for academic success. The ELD standard should specify a relevant content area concept or topic of study chosen by curriculum developers and teachers which maximizes an ELL's need for communication and social skills. For additional information on the development and implementation of the ELD standards, please contact the Bureau of Student Achievement through Language Acquisition.

Standards

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

01.0   Demonstrate an understanding of the Production career pathway.
02.0   Demonstrate an understanding of the Manufacturing Production Process Development career pathway.
03.0   Demonstrate an understanding of the Maintenance, Installation and Repair career pathway.
04.0   Demonstrate an understanding of the Quality Assurance career pathway.
05.0   Demonstrate an understanding of the Logistics and Inventory Control career pathway.
06.0   Demonstrate an understanding of the Health, Safety and Environmental Assurance career pathway.
07.0   Apply leadership and communication skills.
08.0   Describe how information technology is used in the Manufacturing career cluster.
09.0   Use information technology tools.

Florida Department of Education
Student Performance Standards

Course Title: **Introduction to Manufacturing**
Course Number: **9260350**
Course Length: **Semester**

Course Description:
Beginning with a broad overview of the manufacturing career cluster, students are introduced to the terminology, careers, history, required skills, and technologies associated with each pathway in the manufacturing career cluster. Additionally, they will be provided with opportunities to acquire and demonstrate beginning leadership skills.

CTE Standards and Benchmarks
01.0   Demonstrate an understanding of the Production career pathway–The student will be able to:
01.01   Define and use proper terminology associated with the Production career pathway.
01.02   Describe some of the careers available in the Production career pathway.
01.03   Identify common characteristics of the careers in the Production career pathway.
01.04   Research the history of the Production career pathway and describe how the associated careers have evolved and impacted society.
01.05   Identify skills required to successfully enter any career in the Production career pathway.
01.06   Describe technologies associated in careers within the Production career pathway.
02.0   Demonstrate an understanding of the Manufacturing Production Process Development career pathway–The student will be able to:
02.01   Define and use proper terminology associated with the Manufacturing Production Process Development career pathway.
02.02   Describe some of the careers available in the Manufacturing Production Process Development career pathway.
02.03   Identify common characteristics of the careers in the Manufacturing Production Process Development career pathway.
02.04   Research the history of the Manufacturing Production Process Development career pathway and describe how the careers have evolved and impacted society.
02.05   Identify skills required to successfully enter any career in the Manufacturing Production Process Development career pathway.
02.06   Describe technologies associated in careers within the Manufacturing Production Process Development career pathway.
03.0   Demonstrate an understanding of the Maintenance, Installation and Repair career pathway–The student will be able to:

CTE Standards and Benchmarks	
03.01	Define and use proper terminology associated with the Maintenance, Installation and Repair career pathway.
03.02	Describe some of the careers available in the Maintenance, Installation and Repair career pathway.
03.03	Identify common characteristics of the careers in the Maintenance, Installation and Repair career pathway.
03.04	Research the history of the Maintenance, Installation and Repair career pathway and describe how the careers have evolved and impacted society.
03.05	Identify skills required to successfully enter any career in the Maintenance, Installation and Repair career pathway.
03.06	Describe technologies associated in careers within the Maintenance, Installation and Repair career pathway.
04.0	Demonstrate an understanding of the Quality Assurance career pathway–The student will be able to:
04.01	Define and use proper terminology associated with the Quality Assurance career pathway.
04.02	Describe some of the careers available in the Quality Assurance career pathway.
04.03	Identify common characteristics of the careers in the Quality Assurance career pathway.
04.04	Research the history of the Quality Assurance career pathway and describe how the careers have evolved and impacted society.
04.05	Identify skills required to successfully enter any career in the Quality Assurance career pathway.
04.06	Describe technologies associated in careers within the Quality Assurance career pathway.
05.0	Demonstrate an understanding of the Logistics and Inventory Control career pathway–The student will be able to:
05.01	Define and use proper terminology associated with the Logistics and Inventory Control career pathway.
05.02	Describe some of the careers available in the Logistics and Inventory Control career pathway.
05.03	Identify common characteristics of the careers in the Logistics and Inventory Control career pathway.
05.04	Research the history of the Logistics and Inventory Control career pathway and describe how the careers have evolved and impacted society.
05.05	Identify skills required to successfully enter any career in the Logistics and Inventory Control career pathway.
05.06	Describe technologies associated in careers within the Logistics and Inventory Control career pathway.
06.0	Demonstrate an understanding of the Health, Safety and Environmental Assurance career pathway–The student will be able to:
06.01	Define and use proper terminology associated with the Health, Safety and Environmental Assurance career pathway.
06.02	Describe some of the careers available in the Health, Safety and Environmental Assurance career pathway.

	06.03	Identify common characteristics of the careers in the Health, Safety and Environmental Assurance career pathway.
	06.04	Research the history of the Health, Safety and Environmental Assurance career pathway and describe how the careers have evolved and impacted society.
	06.05	Identify skills required to successfully enter any career in the Health, Safety and Environmental Assurance career pathway.
	06.06	Describe technologies associated in careers within the Health, Safety and Environmental Assurance career pathway.
07.0	Apply leadership and communication skills–The student will be able to:	
	07.01	Discuss the establishment and history of the FL-TSA organization.
	07.02	Identify the characteristics and responsibilities of organizational leaders.
	07.03	Demonstrate parliamentary procedure skills during a meeting.
	07.04	Participate on a committee which has an assigned task and report to the class.
	07.05	Demonstrate effective communication skills through delivery of a speech, a slide presentation, or conducting a demonstration.
	07.06	Use a computer to assist in the completion of a project related to the manufacturing career cluster.
08.0	Describe how information technology is used in the manufacturing career cluster–The student will be able to:	
	08.01	Identify information technology (IT) careers in the manufacturing career cluster, including the responsibilities, tasks and skills they require.
	08.02	Relate information technology project management concepts and terms to careers in the manufacturing career cluster.
	08.03	Manage information technology components typically used in professions of the manufacturing career cluster.
	08.04	Identify security-related ethical and legal IT issues faced by professionals in the manufacturing career cluster.
09.0	Use information technology tools–The student will be able to:	
	09.01	Identify the functions of web browsers, and use them to access the World Wide Web and other computer resources typically used in the manufacturing career cluster.
	09.02	Use e-mail clients to send simple messages and files to other Internet users.
	09.03	Demonstrate ways to communicate effectively using Internet technology.
	09.04	Use different types of web search engines effectively to locate information relevant to the manufacturing career cluster.

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

MyCareerShines is an interactive resource to assist students in identifying their ideal career and to enhance preparation for employment. Teachers are encouraged to integrate this resource into the program curriculum to meet the employability goals for each student.

Career and Technical Student Organization (CTSO)

The Florida Technology Student Association (FL-TSA) is the intercurricular career and technical student organization 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 as identified on the secondary student's Individual Educational Plan (IEP) or 504 plan or postsecondary student's accommodations' plan 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.

In addition to accommodations, some secondary students with disabilities (students with an IEP served in Exceptional Student Education (ESE)) will need modifications to meet their needs. Modifications change the outcomes or what the student is expected to learn, e.g., modifying the curriculum of a secondary career and technical education course. Note: postsecondary curriculum and regulated secondary programs cannot be modified.

Florida Department of Education
Curriculum Framework

Course Title: **Introduction to Manufacturing and Career Planning***
Course Type: **Orientation/Exploratory**
Career Cluster: **Manufacturing**

Secondary – Middle School	
Course Number	9260360
CIP Number	149260360M
Grade Level	6 – 8
Standard Length	Semester
Teacher Certification	Refer to the **Course Structure** section.
CTSO	FL-TSA

*Effective July 1, 2017, there is no longer a promotion requirement for middle grades students to complete a Career and Education Planning course. However, these courses will continue to be available and should be taught integrating the eight career and education planning course standards. The MyCareerShines powered by Kuder® career planning system is available free of charge to all Florida middle and high schools to assist students in exploring career options and developing an academic and career plan.

Purpose

The purpose of this course is to assist students in making informed decisions regarding their future academic and occupational goals and to provide information regarding careers in the manufacturing career cluster. The content includes but is not limited to planning, managing, and performing the processing of materials into intermediate or final products and related professional and technical support activities such as production planning and control, maintenance and manufacturing/process engineering. Reinforcement of academic skills occurs through classroom instruction and applied laboratory procedures. Instruction and learning activities are provided in a laboratory setting using hands-on experiences with the equipment, materials and technology appropriate to the course content and in accordance with current practices.

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

Course Structure

The length of this course is one semester. It may be offered for two semesters when appropriate. When offered for one semester, it is recommended that it be at the exploratory level and more in-depth when offered for two semesters.

To teach the course(s) listed below, instructors must hold at least one of the teacher certifications indicated for that course.

The following table illustrates the course structure:

Course Number	Course Title	Teacher Certification	Length
9260360	Introduction to Manufacturing and Career Planning	AUTO PROD 7G ELECTRONIC @7 7G ENG 7G IND ENGR 7G TEC ED 1 @ 2	Semester

<u>Florida Standards for English Language Development (ELD)</u>
English language learners communicate for social and instructional purposes within the school setting. ELD.K12.SI.1.1

English Language Development (ELD) Standards Special Notes:
Teachers are required to provide listening, speaking, reading and writing instruction that allows English language learners (ELL) to communicate for social and instructional purposes within the school setting.   For the given level of English language proficiency and with visual, graphic, or interactive support, students will interact with grade level words, expressions, sentences and discourse to process or produce language necessary for academic success. The ELD standard should specify a relevant content area concept or topic of study chosen by curriculum developers and teachers which maximizes an ELL's need for communication and social skills. For additional information on the development and implementation of the ELD standards, please contact the Bureau of Student Achievement through Language Acquisition.

Standards

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

01.0 Demonstrate an understanding of the Production career pathway.
02.0 Demonstrate an understanding of the Manufacturing Production Process Development career pathway.
03.0 Demonstrate an understanding of the Maintenance, Installation and Repair career pathway.
04.0 Demonstrate an understanding of the Quality Assurance career pathway.
05.0 Demonstrate an understanding of the Logistics and Inventory Control career pathway.
06.0 Demonstrate an understanding of the Health, Safety and Environmental Assurance career pathway.
07.0 Apply leadership and communication skills.
08.0 Describe how information technology is used in the Manufacturing career cluster.
09.0 Use information technology tools.

Listed below are the eight career and education planning course standards.

10.0 Describe the influences that societal, economic, and technological changes have on employment trends and future training.
11.0 Develop skills to locate, evaluate, and interpret career information.
12.0 Identify and demonstrate processes for making short and long term goals.
13.0 Demonstrate employability skills such as working in a group, problem-solving and organizational skills, and the importance of entrepreneurship.
14.0 Understand the relationship between educational achievement and career choices/postsecondary options.
15.0 Identify a career cluster and related pathways through an interest assessment that match career and education goals.
16.0 Develop a career and education plan that includes short and long-term goals, high school program of study, and postsecondary/career goals.
17.0 Demonstrate knowledge of technology and its application in career fields/clusters.

Florida Department of Education
Student Performance Standards

Course Title: **Introduction to Manufacturing and Career Planning**
Course Number: **9260360**
Course Length: **Semester**

Course Description:

Beginning with a broad overview of the manufacturing career cluster, students are introduced to the terminology, careers, history, required skills, and technologies associated with each pathway in the manufacturing career cluster. Additionally, they will be provided with opportunities to acquire and demonstrate beginning leadership skills.

CTE Standards and Benchmarks
01.0   Demonstrate an understanding of the Production career pathway–The student will be able to:
01.01   Define and use proper terminology associated with the Production career pathway.
01.02   Describe some of the careers available in the Production career pathway.
01.03   Identify common characteristics of the careers in the Production career pathway.
01.04   Research the history of the Production career pathway and describe how the associated careers have evolved and impacted society.
01.05   Identify skills required to successfully enter any career in the Production career pathway.
01.06   Describe technologies associated in careers within the Production career pathway.
02.0   Demonstrate an understanding of the Manufacturing Production Process Development career pathway–The student will be able to:
02.01   Define and use proper terminology associated with the Manufacturing Production Process Development career pathway.
02.02   Describe some of the careers available in the Manufacturing Production Process Development career pathway.
02.03   Identify common characteristics of the careers in the Manufacturing Production Process Development career pathway.
02.04   Research the history of the Manufacturing Production Process Development career pathway and describe how the careers have evolved and impacted society.
02.05   Identify skills required to successfully enter any career in the Manufacturing Production Process Development career pathway.
02.06   Describe technologies associated in careers within the Manufacturing Production Process Development career pathway.

CTE Standards and Benchmarks
03.0   Demonstrate an understanding of the Maintenance, Installation and Repair career pathway–The student will be able to:
03.01   Define and use proper terminology associated with the Maintenance, Installation and Repair career pathway.
03.02   Describe some of the careers available in the Maintenance, Installation and Repair career pathway.
03.03   Identify common characteristics of the careers in the Maintenance, Installation and Repair career pathway.
03.04   Research the history of the Maintenance, Installation and Repair career pathway and describe how the careers have evolved and impacted society.
03.05   Identify skills required to successfully enter any career in the Maintenance, Installation and Repair career pathway.
03.06   Describe technologies associated in careers within the Maintenance, Installation and Repair career pathway.
04.0   Demonstrate an understanding of the Quality Assurance career pathway–The student will be able to:
04.01   Define and use proper terminology associated with the Quality Assurance career pathway.
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05.03   Identify common characteristics of the careers in the Logistics and Inventory Control career pathway.
05.04   Research the history of the Logistics and Inventory Control career pathway and describe how the careers have evolved and impacted society.
05.05   Identify skills required to successfully enter any career in the Logistics and Inventory Control career pathway.
05.06   Describe technologies associated in careers within the Logistics and Inventory Control career pathway.
06.0   Demonstrate an understanding of the Health, Safety and Environmental Assurance career pathway–The student will be able to:
06.01   Define and use proper terminology associated with the Health, Safety and Environmental Assurance career pathway.

CTE Standards and Benchmarks

	06.02	Describe some of the careers available in the Health, Safety and Environmental Assurance career pathway.
	06.03	Identify common characteristics of the careers in the Health, Safety and Environmental Assurance career pathway.
	06.04	Research the history of the Health, Safety and Environmental Assurance career pathway and describe how the careers have evolved and impacted society.
	06.05	Identify skills required to successfully enter any career in the Health, Safety and Environmental Assurance career pathway.
	06.06	Describe technologies associated in careers within the Health, Safety and Environmental Assurance career pathway.
07.0	Apply leadership and communication skills–The student will be able to:	
	07.01	Discuss the establishment and history of the FL-TSA organization.
	07.02	Identify the characteristics and responsibilities of organizational leaders.
	07.03	Demonstrate parliamentary procedure skills during a meeting.
	07.04	Participate on a committee which has an assigned task and report to the class.
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	07.06	Use a computer to assist in the completion of a project related to the manufacturing career cluster.
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	08.01	Identify information technology (IT) careers in the manufacturing career cluster, including the responsibilities, tasks and skills they require.
	08.02	Relate information technology project management concepts and terms to careers in the manufacturing career cluster.
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09.0	Use information technology tools–The student will be able to:	
	09.01	Identify the functions of web browsers, and use them to access the World Wide Web and other computer resources typically used in the manufacturing career cluster.
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	09.04	Use different types of web search engines effectively to locate information relevant to the manufacturing career cluster.

CTE Standards and Benchmarks

Listed below are the eight career and education planning course standards:

The student will be able to**:**

10.0	Describe the influences that societal, economic, and technological changes have on employment trends and future training.
11.0	Develop skills to locate, evaluate, and interpret career information.
12.0	Identify and demonstrate processes for making short and long term goals.
13.0	Demonstrate employability skills such as working in a group, problem-solving and organizational skills, and the importance of entrepreneurship.
14.0	Understand the relationship between educational achievement and career choices/postsecondary options.
15.0	Identify a career cluster and related pathways through an interest assessment that match career and education goals.
16.0	Develop a career and education plan that includes short and long-term goals, high school program of study, and postsecondary/career goals.
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Additional Information

Laboratory Activities

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Federal and state legislation requires the provision of accommodations for students with disabilities as identified on the secondary student's Individual Educational Plan (IEP) or 504 plan or postsecondary student's accommodations' plan to meet individual needs and ensure equal access. 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.

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Florida Department of Education
Curriculum Framework

Course Title: **Fundamentals of Manufacturing**
Course Type: **Orientation/Exploratory**
Career Cluster: **Manufacturing**

Secondary – Middle School	
Course Number	9260400
CIP Number	149260400M
Grade Level	6 – 8
Standard Length	Semester
Teacher Certification	Refer to the **Course Structure** section
CTSO	FL-TSA

Purpose

The purpose of this course is to assist students in making informed decisions regarding their future academic and occupational goals and to provide information regarding careers in the manufacturing career cluster. This course provides students with opportunities to become familiar with related careers and develop fundamental technological literacy as they learn about the history, systems, and processes of manufacturing. In addition, the course will provide an overview of the safe use of tools and equipment used in the industry. Instruction and learning activities are provided in a laboratory setting using hands-on experiences with the equipment, materials and technology appropriate to the course content and in accordance with current practices.

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

Course Structure

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The following table illustrates the course structure:

Course Number	Course Title	Teacher Certification	Length
9260400	Fundamentals of Manufacturing	AUTO PROD 7G ELECTRONIC @7 7G ENG 7G IND ENGR 7G TEC ED 1 @ 2	Semester

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English Language Development (ELD) Standards Special Notes:
Teachers are required to provide listening, speaking, reading and writing instruction that allows English language learners (ELL) to communicate for social and instructional purposes within the school setting.   For the given level of English language proficiency and with visual, graphic, or interactive support, students will interact with grade level words, expressions, sentences and discourse to process or produce language necessary for academic success. The ELD standard should specify a relevant content area concept or topic of study chosen by curriculum developers and teachers which maximizes an ELL's need for communication and social skills. For additional information on the development and implementation of the ELD standards, please contact the Bureau of Student Achievement through Language Acquisition.

Standards

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

01.0   Demonstrate an understanding of the societal impact of manufacturing.
02.0   Demonstrate an understanding of the history of manufacturing**.**
03.0   Demonstrate an understanding of the universal systems model as it relates to manufacturing.
04.0   Demonstrate an understanding of safe work practices while performing tasks.
05.0   Identify materials and resources used in manufacturing.
06.0   Describe the essential systems and processes involved in manufacturing.
07.0   Perform a pre-planned introductory manufacturing activity applying correct safety procedures, appropriate use of materials, and processing operations.
08.0   Use visual and verbal communication to present employment and career opportunities in manufacturing.
09.0   Students will select and demonstrate techniques, skills, tools, and understanding related to manufacturing.
10.0   Students will develop leadership and interpersonal problem-solving skills through participation in co-curricular activities.

Course Title: **Fundamentals of Manufacturing**
Course Number: **9260400**
Course Length: **Semester**

Course Description:
This course provides students with opportunities to become familiar with related careers and develop fundamental technological literacy as they learn about the history, systems, and processes of manufacturing. In addition, the course will provide an overview of the safe use of tools and equipment used in the industry.

CTE Standards and Benchmarks
01.0   Demonstrate an understanding of the societal impact of manufacturing--The student will be able to:
01.01   Track the evolution of manufacturing and its impact on society.
01.02   Explain the educational requirements and professional expectations associated with a career in manufacturing.
01.03   Describe the impact of governmental and political systems on manufacturing.
01.04   Explain the interaction between manufacturing industries and social change
01.05   Explain how manufacturing made the United States a world leader.
01.06   Describe the relationship between manufacturing and the environment
01.07   Explain the importance of a technologically literate workforce to the manufacturing industry.
02.0   Demonstrate an understanding of the history of manufacturing--The student will be able to:
02.01   Identify key historical events and their impact on manufacturing.
02.02   List key persons who have contributed to change in manufacturing.
02.03   Describe the Industrial Revolution and its impact on manufacturing.
02.04   Identify pioneers of the manufacturing industry.
02.05   Describe/debate the affect that automation has had on manufacturing.
03.0   Demonstrate an understanding of the universal systems model as it relates to manufacturing--The student will be able to:

CTE Standards and Benchmarks	
03.01	Describe the processes of input, processing, output, and feedback that comprise the universal systems model.
03.02	Demonstrate applications of the universal systems model in manufacturing.
03.03	Describe the role of time, capital, people, tools and machines, energy, materials, and information within the universal systems model as it applies to manufacturing industries.
04.0	Demonstrate an understanding of safe work practices while performing tasks--The student will be able to:
04.01	Identify safety equipment.
04.02	Recognize immediate, potential, and hidden hazards.
04.03	Perform housekeeping tasks related to maintaining a safe work environment.
04.04	Pass a safety test with a perfect score prior to operating equipment.
04.05	Demonstrate the proper safe use of tools and equipment
04.06	Identify safety color codes
05.0	Identify materials and resources used in manufacturing--The student will be able to:
05.01	Describe the seven basic technological resources.
05.02	Describe the properties of manufacturing materials.
05.03	Explain how materials are classified.
05.04	List, measure, and compare common mechanical properties of select materials.
05.05	List sources and costs where materials may be obtained
05.06	Create a bill of materials
05.07	Calculate production cost analysis
06.0	Describe the essential systems and processes involved in manufacturing--The student will be able to:
06.01	Compare and contrast custom, intermittent, and continuous manufacturing systems.
06.02	Demonstrate fundamentals of producing technical sketches.
06.03	Create simple two and three dimensional drawings using CAD software.
06.04	List common hand tools used in the maintenance, installation, and repair of equipment.

CTE Standards and Benchmarks

06.05	Identify commonly used power tools.
06.06	Describe primary manufacturing processes.
06.07	List secondary manufacturing processes.
06.08	Define the terms separating and forming as it relates to manufacturing.
06.09	Identify separating processes – traditional and non-traditional.
06.10	Identify forming processes including casting, molding, compression, stretching, and conditioning.
06.11	Differentiate between combining processes such as mixing, bonding, coating, and mechanical filtering.
06.12	Produce a simple part applying computer assisted production equipment.
06.13	Program a robot to perform a repetitive task.
06.14	Create a device that will perform a task using a computer controlled program.
06.15	Describe the advantages/disadvantages of the separation processing of materials using manual versus computer controlled machinery.
06.16	Describe assembling processes.
06.17	Explain the importance of finishing processes.
06.18	Describe the role of quality control in the manufacturing process.
06.19	Explain the importance of quality control within a manufacturing system.
07.0	Perform a pre-planned introductory manufacturing activity applying correct safety procedures, appropriate use of materials, and processing operations--The student will be able to:
07.01	Use hand and power tools safely.
07.02	Demonstrate fundamentals of reading technical sketches.
07.03	Use English and/or metric measurement effectively in order to properly lay out a part for manufacturing.
07.04	Follow a production flow chart to produce a teacher-selected product.
07.05	Apply appropriate problem solving to improve an existing manufacturing system.
08.0	Use visual and verbal communication to present employment and career opportunities in manufacturing--The student will be able to:
08.01	Present a technical report to an audience regarding a researched manufacturing related career using multimedia.

CTE Standards and Benchmarks	
	08.02 Prepare and produce a portfolio representing experiences throughout the course of study.
09.0	Students will select and demonstrate techniques, skills, tools, and understanding related to manufacturing--The student will be able to:
	09.01 Use common tools correctly and safely.
	09.02 Describe strategies for selecting materials and processes necessary for developing a technological system or artifact.
	09.03 Demonstrate fundamental materials processing and assembly techniques.
	09.04 Evaluate the interdependence of components in a technological system and identify those elements that are critical to correct functioning.
	09.05 Apply analytical tools to the development of optimal solutions for technological problems.
10.0	Students will develop leadership and interpersonal problem-solving skills through participation in co-curricular activities. --The student will be able to:
	10.01 Demonstrate effective communication skills.
	10.02 Participate in teamwork to accomplish specified organizational goals.
	10.03 Demonstrate cooperation and understanding with persons who are ethnically and culturally diverse.

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

MyCareerShines is an interactive resource to assist students in identifying their ideal career and to enhance preparation for employment. Teachers are encouraged to integrate this resource into the program curriculum to meet the employability goals for each student.

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Florida Department of Education
Curriculum Framework

Course Title: **Orientation to Career Clusters**
Course Type: **Orientation/Exploratory**

Secondary – Middle School	
Course Number	8000400
CIP Number	1498999907
Grade Level	6 – 8
Standard Length	Semester
Teacher Certification	Refer to the **Course Structure** section.
CTSO	Any CTSO as appropriate

Purpose

The purpose of this course is to assist students in making informed decisions regarding their future academic and occupational goals and to provide information regarding careers in the seventeen career clusters. This course is a compilation of modules for each of the seventeen career clusters and is designed to provide flexibility in course offerings. Any number of modules can be selected to comprise a course that meets the needs of the students.

The content includes, but is not limited to, the orientation of students to career pathways in the career and technical education field. Reinforcement of academic skills occurs through classroom instruction and applied laboratory procedures. This course is recommended for students in the sixth grade, but not required.

Instruction and learning activities are provided in a laboratory setting using hands-on experiences with the equipment, materials and technology appropriate to the course content and in accordance with current practices.

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

Course Structure

The length of this course is one semester. It may be offered for two semesters when appropriate. When offered for one semester, it is recommended that it be at the exploratory level and more in-depth when offered for two semesters.

To teach the course(s) listed below, instructors must hold at least one of the teacher certifications indicated for that course.

The following table illustrates the course structure:

Course Number	Course Title	Teacher Certification	Length
8000400	Orientation to Career Clusters	ANY FIELD	Semester

Florida Standards for English Language Development (ELD)
English language learners communicate for social and instructional purposes within the school setting. ELD.K12.SI.1.1

English Language Development (ELD) Standards Special Notes:
Teachers are required to provide listening, speaking, reading and writing instruction that allows English language learners (ELL) to communicate for social and instructional purposes within the school setting.   For the given level of English language proficiency and with visual, graphic, or interactive support, students will interact with grade level words, expressions, sentences and discourse to process or produce language necessary for academic success. The ELD standard should specify a relevant content area concept or topic of study chosen by curriculum developers and teachers which maximizes an ELL's need for communication and social skills. For additional information on the development and implementation of the ELD standards, please contact the Bureau of Student Achievement through Language Acquisition.

Standards

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

01.0   Identify Florida's seventeen career clusters.
02.0   Identify and explore careers in the Agriculture, Food & Natural Resources cluster.
03.0   Identify and explore careers in the Architecture & Construction cluster.
04.0   Identify and explore careers in the Arts, A/V Technology & Communication cluster.
05.0   Identify and explore careers in the Business Management & Administration cluster.
06.0   Identify and explore careers in the Education & Training cluster.
07.0   Identify and explore careers in the Energy cluster.
08.0   Identify and explore careers in the Finance cluster.
09.0   Identify and explore careers in the Government & Public Administration cluster.
10.0   Identify and explore careers in the Health Science cluster.
11.0   Identify and explore careers in the Hospitality and Tourism cluster.
12.0   Identify and explore careers in the Human Services cluster.
13.0   Identify and explore careers in the Information Technology cluster.
14.0   Identify and explore careers in the Law, Public Safety & Security cluster.
15.0   Identify and explore careers in the Manufacturing cluster.
16.0   Identify and explore careers in the Marketing, Sales & Service cluster.
17.0   Identify and explore careers in the Engineering and Technology Education cluster.
18.0   Identify and explore careers in the Transportation, Distribution & Logistics cluster.
19.0   Describe leadership skills.

Florida Department of Education
Student Performance Standards

Course Title: **Orientation to Career Clusters**
Course Number: **8000400**
Course Credit: **Semester**

Course Description:

This course is a broad overview of the seventeen career clusters offered in Florida. This course provides hands-on introductory activities for each career cluster as well as opportunities to acquire and demonstrate beginning leadership skills.

CTE Standards and Benchmarks
01.0   Identify Florida's seventeen career clusters – the student will be able to:
01.01   List Florida's seventeen career clusters.
01.02   Research the national career clusters website.
01.03   Identify the Career and Technical Student Organizations (CTSO) appropriate for Career and Technical Education (CTE) programs.
01.04   Explain the purpose of a CTSO.
02.0   Identify and explore careers in the Agriculture, Food & Natural Resources cluster – the student will be able to:
02.01   Identify the pathways in the Agriculture, Food & Natural Resources career cluster and the careers in each pathway.
02.02   Describe the types of places that employ individuals who have careers in the Agriculture, Food & Natural Resources career cluster.
02.03   Describe the variety of tasks performed by individuals who have careers in the Agriculture, Food & Natural Resources career cluster.
02.04   List the skills, abilities, and talents needed for careers in the Agriculture, Food & Natural Resources career cluster.
02.05   Identify the level of training and education required for careers in the Agriculture, Food & Natural Resources career cluster.
02.06   Research a career in the Agriculture, Food & Natural Resources career cluster and present findings to the class.
02.07   Apply math, science, and reading skills in the completion of a project or activity related to the Agriculture, Food & Natural Resources career cluster.
03.0   Identify and explore careers in the Architecture & Construction cluster – the student will be able to:
03.01   Identify the pathways in the Architecture & Construction career cluster and the careers in each pathway.

		CTE Standards and Benchmarks
	03.02	Describe the types of places that employ individuals who have careers in the Architecture & Construction career cluster.
	03.03	Describe the variety of tasks performed by individuals who have careers in the Architecture & Construction career cluster.
	03.04	List the skills, abilities, and talents needed for careers in the Architecture & Construction career cluster.
	03.05	Identify the level of training and education required for careers in the Architecture & Construction career cluster.
	03.06	Research a career in the Architecture & Construction career cluster and present findings to the class.
	03.07	Apply math, science, and reading skills in the completion of a project or activity related to the Architecture & Construction career cluster.
04.0		Identify and explore careers in the Arts, A/V Technology & Communication cluster – the student will be able to:
	04.01	Identify the pathways in the Arts, A/V Technology & Communication career cluster and the careers in each pathway.
	04.02	Describe the types of places that employ individuals who have careers in the Arts, A/V Technology & Communication career cluster.
	04.03	Describe the variety of tasks performed by individuals who have careers in the Arts, A/V Technology & Communication career cluster.
	04.04	List the skills, abilities, and talents needed for careers in the Arts, A/V Technology & Communication career cluster.
	04.05	Identify the level of training and education required for careers in the Arts, A/V Technology & Communication career cluster.
	04.06	Research a career in the Arts, A/V Technology & Communication career cluster and present findings to the class.
	04.07	Apply math, science, and reading skills in the completion of a project or activity related to the Arts, A/V Technology & Communication career cluster.
05.0		Identify and explore careers in the Business, Management & Administration cluster – the student will be able to:
	05.01	Identify the pathways in the Business, Management & Administration career cluster and the careers in each pathway.
	05.02	Describe the types of places that employ individuals who have careers in the Business Management & Administration career cluster.
	05.03	Describe the variety of tasks performed by individuals who have careers in the Business Management & Administration career cluster.
	05.04	List the skills, abilities, and talents needed for careers in the Business Management & Administration career cluster.
	05.05	Identify the level of training and education required for careers in the Business Management & Administration career cluster.
	05.06	Research a career in the Business Management & Administration career cluster and present findings to the class.
	05.07	Apply math, science, and reading skills in the completion of a project or activity related to the Business Management & Administration career cluster.

CTE Standards and Benchmarks
06.0   Identify and explore careers in the Education & Training cluster – the student will be able to:
06.01   Identify the pathways in the Education & Training career cluster and the careers in each pathway.
06.02   Describe the types of places that employ individuals who have careers in the Education & Training career cluster.
06.03   Describe the variety of tasks performed by individuals who have careers in the Education & Training career cluster.
06.04   List the skills, abilities, and talents needed for careers in the Education & Training career cluster.
06.05   Identify the level of training and education required for careers in the Education & Training career cluster.
06.06   Research a career in the Education & Training career cluster and present findings to the class.
06.07   Apply math, science, and reading skills in the completion of a project or activity related to the Education & Training career cluster.
07.0   Identify and explore careers in the Energy cluster – the student will be able to:
07.01   Identify the pathways in the Energy career cluster and the careers in each pathway.
07.02   Describe the types of places that employ individuals who have careers in the Energy career cluster.
07.03   Describe the variety of tasks performed by individuals who have careers in the Energy career cluster.
07.04   List the skills, abilities, and talents needed for careers in the Energy career cluster.
07.05   Identify the level of training and education required for careers in the Energy career cluster.
07.06   Research a career in the Energy career cluster and present findings to the class.
07.07   Apply math, science, and reading skills in the completion of a project or activity related to the Energy career cluster.
08.0   Identify and explore careers in the Finance cluster – the student will be able to:
08.01   Identify the pathways in the Finance career cluster and the careers in each pathway.
08.02   Describe the types of places that employ individuals who have careers in the Finance career cluster.
08.03   Describe the variety of tasks performed by individuals who have careers in the Finance career cluster.
08.04   List the skills, abilities, and talents needed for careers in the Finance career cluster.
08.05   Identify the level of training and education required for careers in the Finance career cluster.
08.06   Research a career in the Finance career cluster and present findings to the class.

CTE Standards and Benchmarks	
	08.07 Apply math, science, and reading skills in the completion of a project or activity related to the Finance career cluster.
09.0	Identify and explore careers in the Government & Public Administration cluster – the student will be able to:
	09.01 Identify the pathways in the Government & Public Administration career cluster and the careers in each pathway.
	09.02 Describe the types of places that employ individuals who have careers in the Government & Public Administration career cluster.
	09.03 Describe the variety of tasks performed by individuals who have careers in the Government & Public Administration career cluster.
	09.04 List the skills, abilities, and talents needed for careers in the Government & Public Administration career cluster.
	09.05 Identify the level of training and education required for careers in the Government & Public Administration career cluster.
	09.06 Research a career in the Government & Public Administration career cluster and present findings to the class.
	09.07 Apply math, science, and reading skills in the completion of a project or activity related to the Government & Public Administration career cluster.
10.0	Identify and explore careers in the Health Science cluster – the student will be able to:
	10.01 Identify the pathways in the Health Science career cluster and the careers in each pathway.
	10.02 Describe the types of places that employ individuals who have careers in the Health Science career cluster.
	10.03 Describe the variety of tasks performed by individuals who have careers in the Health Science career cluster.
	10.04 List the skills, abilities, and talents needed for careers in the Health Science career cluster.
	10.05 Identify the level of training and education required for careers in the Health Science career cluster.
	10.06 Research a career in the Health Science career cluster and present findings to the class.
	10.07 Apply math, science, and reading skills in the completion of a project or activity related to the Health Science career cluster.
11.0	Identify and explore careers in the Hospitality & Tourism cluster – the student will be able to:
	11.01 Identify the pathways in the Hospitality & Tourism career cluster and the careers in each pathway.
	11.02 Describe the types of places that employ individuals who have careers in the Hospitality & Tourism career cluster.
	11.03 Describe the variety of tasks performed by individuals who have careers in the Hospitality & Tourism career cluster.
	11.04 List the skills, abilities, and talents needed for careers in the Hospitality & Tourism career cluster.
	11.05 Identify the level of training and education required for careers in the Hospitality & Tourism career cluster.

CTE Standards and Benchmarks

| 11.06 | Research a career in the Hospitality & Tourism career cluster and present findings to the class. |
| 11.07 | Apply math, science, and reading skills in the completion of a project or activity related to the Hospitality & Tourism career cluster. |

12.0	Identify and explore careers in the Human Services cluster – the student will be able to:
12.01	Identify the pathways in the Human Services career cluster and the careers in each pathway.
12.02	Describe the types of places that employ individuals who have careers in the Human Services career cluster.
12.03	Describe the variety of tasks performed by individuals who have careers in the Human Services career cluster.
12.04	List the skills, abilities, and talents needed for careers in the Human Services career cluster.
12.05	Identify the level of training and education required for careers in the Human Services career cluster.
12.06	Research a career in the Human Services career cluster and present findings to the class.
12.07	Apply math, science, and reading skills in the completion of a project or activity related to the Human Services career cluster.

13.0	Identify and explore careers in the Information Technology cluster – the student will be able to:
13.01	Identify the pathways in the Information Technology career cluster and the careers in each pathway.
13.02	Describe the types of places that employ individuals who have careers in the Information Technology career cluster.
13.03	Describe the variety of tasks performed by individuals who have careers in the Information Technology career cluster.
13.04	List the skills, abilities, and talents needed for careers in the Information Technology career cluster.
13.05	Identify the level of training and education required for careers in the Information Technology career cluster.
13.06	Research a career in the Information Technology career cluster and present findings to the class.
13.07	Apply math, science, and reading skills in the completion of a project or activity related to the Information Technology career cluster.

14.0	Identify and explore careers in the Law, Public Safety & Security cluster–The student will be able to:
14.01	Identify the pathways in the Law, Public Safety & Security career cluster and the careers in each pathway.
14.02	Describe the types of places that employ individuals who have careers in the Law, Public Safety & Security career cluster.
14.03	Describe the variety of tasks performed by individuals who have careers in the Law, Public Safety & Security career cluster.
14.04	List the skills, abilities, and talents needed for careers in the Law, Public Safety & Security career cluster.

CTE Standards and Benchmarks	
14.05	Identify the level of training and education required for careers in the Law, Public Safety & Security career cluster.
14.06	Research a career in the Law, Public Safety & Security career cluster and present findings to the class.
14.07	Apply math, science, and reading skills in the completion of a project or activity related to the Law, Public Safety & Security career cluster.
15.0 Identify and explore careers in the Manufacturing cluster – the student will be able to:	
15.01	Identify the pathways in the Manufacturing career cluster and the careers in each pathway.
15.02	Describe the types of places that employ individuals who have careers in the Manufacturing career cluster.
15.03	Describe the variety of tasks performed by individuals who have careers in the Manufacturing career cluster.
15.04	List the skills, abilities, and talents needed for careers in the Manufacturing career cluster.
15.05	Identify the level of training and education required for careers in the Manufacturing career cluster.
15.06	Research a career in the Manufacturing career cluster and present findings to the class.
15.07	Apply math, science, and reading skills in the completion of a project or activity related to the Manufacturing career cluster.
16.0 Identify and explore careers in the Marketing, Sales & Service cluster – the student will be able to:	
16.01	Identify the pathways in the Marketing, Sales & Service career cluster and the careers in each pathway.
16.02	Describe the types of places that employ individuals who have careers in the Marketing, Sales & Service career cluster.
16.03	Describe the variety of tasks performed by individuals who have careers in the Marketing, Sales & Service career cluster.
16.04	List the skills, abilities, and talents needed for careers in the Marketing, Sales & Service career cluster.
16.05	Identify the level of training and education required for careers in the Marketing, Sales & Service career cluster.
16.06	Research a career in the Marketing, Sales & Service career cluster and present findings to the class.
16.07	Apply math, science, and reading skills in the completion of a project or activity related to the Marketing, Sales & Service career cluster.
17.0 Identify and explore careers in Engineering and Technology Education – the student will be able to:	
17.01	Identify the pathways in Engineering and Technology Education.
17.02	Describe the types of places that employ individuals who have careers in Engineering and Technology Education.
17.03	Describe the variety of tasks performed by individuals who have careers in Engineering and Technology Education.

CTE Standards and Benchmarks
17.04 List the skills, abilities, and talents needed for careers in Engineering and Technology Education.
17.05 Identify the level of training and education required for careers in Engineering and Technology Education.
17.06 Research a career in Engineering and Technology Education and present findings to the class.
17.07 Apply math, science, and reading skills in the completion of a project or activity related to the Engineering and Technology Education.
18.0 Identify and explore careers in the Transportation & Logistics cluster – the student will be able to:
18.01 Identify the pathways in the Transportation & Logistics career cluster and the careers in each pathway.
18.02 Describe the types of places that employ individuals who have careers in the Transportation & Logistics career cluster.
18.03 Describe the variety of tasks performed by individuals who have careers in the Transportation & Logistics career cluster.
18.04 List the skills, abilities, and talents needed for careers in the Transportation & Logistics career cluster.
18.05 Identify the level of training and education required for careers in the Transportation & Logistics career cluster.
18.06 Research a career in the Transportation & Logistics career cluster and present findings to the class.
18.07 Apply math, science, and reading skills in the completion of a project or activity related to the Transportation & Logistics career cluster.
19.0 Describe leadership skills – the student will be able to:
19.01 Identify the Career and Technical Student Organization(s) that are appropriate for CTE programs in each of the career clusters.
19.02 Describe the leadership opportunities available to members of the CTSOs identified above.
19.03 Investigate the CTSOs at your school and/or in your school district (e.g., membership requirements, dues, activities, events).

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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.

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