

**Florida Department of Education
CURRICULUM FRAMEWORK**

Program Title: Integrated Technology Studies
Occupational Area: Technology Education
Program Numbers: 8600000
CIP Number: 0821.0122EX
Grade Level: Secondary 6-9, & 30, 31
Standard Length: 0.5 Credits
Facility Design Code: 240, Related 803, 808, 849, 851, 852
CTSO: Florida Technology Student Association (FL-TSA)
Certification: I ART-TEC 1 @2
 IND ARTS @4 @6

- I. **MAJOR CONCEPTS/CONTENT:** The purpose of this program is to provide students with a foundation of knowledge and technically oriented experiences in the study of the applications of technology and its effect upon our lives and the choosing of an occupation. The content and activities will also include the study of entrepreneurship, safety, and leadership skills. This program focuses on transferable skills and stresses understanding and demonstration of the technological tools, machines, instruments, materials, processes and systems in business and industry.

The emphasis of this program is on developing awareness of future needs, developing technological competence, confidence and awareness through interaction with technologies, developing awareness of other vocational programs, interacting with business, industry and community organizations, applying basic skills in learning activities, and developing self-awareness of individual abilities, needs and interests. The courses are intended to help students develop their problem-solving skills and creativity while learning about technology and careers. Students will learn to gather data through research and testing, as well as to record the results of their laboratory experiments.

The content includes introductory studies in areas of technology which introduce students to the development of abilities to calculate, make important observations, analyze and solve problems using manipulative skills while working cooperatively with others in team activities.

Listed below are the courses that make up this program at the secondary level followed by the laboratory design code appropriate for each course:

8600010 - Introduction to Technology (240)
 8600020 - Exploring Technology (240)
 8600030 - Exploration of Communications Technology (240)
 8600040 - Exploration of Production Technology (240)
 8600050 - Exploration of Aerospace Technology (240)

- II. **LABORATORY ACTIVITIES:** Instruction and learning activities are provided in a laboratory setting using hands-on experiences with technology equipment, tools and materials appropriate to the course content.
- III. **SPECIAL NOTE:** The Florida Technology Student Association (FL-TSA) is the appropriate Career and Technical Student Organization

for providing leadership training experiences and reinforcing specific vocational skills. Career and Technical Student Organizations, shall be an integral part of the vocational instructional program, and the activities of such organizations are defined as part of the curriculum in accordance with Rule 6A-6.065, FAC. FL-TSA information can be obtained from the web site at <<http://www.florida-tsa.net>>.

When a secondary student with a disability is enrolled in a vocational class with modifications to the curriculum framework, the particular outcomes and student performance standards which the student shall master to earn credit must be specified on an individual basis in each students Individual Educational Plan (IEP).

IV. **INTENDED OUTCOMES:** After successfully completing a course the student will be able to:

- 01.0 Demonstrate proper and safe procedures while working with technological tools, apparatus, equipment, systems, and materials.
- 02.0 Exhibit positive human relations and leadership skills.
- 03.0 Demonstrate computer application and literacy.
- 04.0 Apply basic skills in language, social studies, the arts, mathematics, and science appropriate to technological content and learning activities
- 05.0 Demonstrate and apply design/problem-solving processes.
- 06.0 Display an understanding and appreciation regarding career interests, opportunities and their relationships in society.
- 07.0 Display an understanding and appreciation for the dignity and worth of honest labor.
- 08.0 Discuss individual interests and aptitudes as they relate to a career.
- 09.0 Develop the idea that technology is the application of knowledge to solve human problems and extend capabilities.
- 10.0 Describe positive and negative impacts of technology.
- 11.0 Identify resources of technology.
- 12.0 Utilize the systems approach in technology.
- 13.0 Utilize tools, machines, and equipment in the technology laboratory.
- 14.0 Identify evolving technologies in our technological world.
- 15.0 Perform special skills unique to electronics, computers, and the technology systems of communications manufacturing, construction, energy, power, and transportation.
- 16.0 Express a knowledge of the essential elements and organization of the free enterprise system.
- 17.0 List requisites and employment opportunities for employment in today's and our future technological world.
- 18.0 Identify kinds and levels of work common to today's and our future technological world.
- 19.0 List and demonstrate techniques used in technical drawing.
- 20.0 Demonstrate an application of basic electronic publishing techniques.
- 21.0 Identify, describe and utilize the major types of printing techniques used in print production.

- 22.0 Identify and demonstrate the role of electronic communication.
- 23.0 Identify and demonstrate the role of optical technology.
- 24.0 Identify evolving Technologies of Production Systems.
- 25.0 Perform special skills unique to Manufacturing Technology.
- 26.0 Express knowledge of factors that impact on Manufacturing Technologies and practices.
- 27.0 Perform special skills unique to Construction Technology.
- 28.0 Express a knowledge of factors that impact on Construction Technology and practices.
- 29.0 Identify kinds and levels of work common to Production Technology.
- 30.0 Demonstrate knowledge of the basic principles of aerostatics and aerodynamics.
- 31.0 Identify and demonstrate knowledge of both liquid and solid propellant rocket propulsion systems.
- 32.0 Define, describe and demonstrate composite materials processing and use in airframe fabrication.
- 33.0 Define and describe the stages and forms of interference in a basic or satellite communication systems.

**Florida Department of Education
STUDENT PERFORMANCE STANDARDS**

Course Number: 8600010
Course Title: Introduction to Technology
Course Credit: 0.5

COURSE DESCRIPTION:

- 01.0 DEMONSTRATE PROPER AND SAFE PROCEDURES WHILE WORKING WITH TECHNOLOGICAL TOOLS, APPARATUS, EQUIPMENT, SYSTEMS, AND MATERIALS--The student will be able to:
- 01.01 Follow laboratory safety rules and procedures.
 - 01.02 Demonstrate good housekeeping at work station within total laboratory.
 - 01.03 Conduct laboratory activities and equipment operations in a safe manner.
 - 01.04 Exercise care and respect for all tools, equipment, and materials.
 - 01.05 Identify color-coding safety standards.
 - 01.06 Safely use hand tools and power equipment.
 - 01.07 Explain fire prevention and safety precautions and practices for extinguishing fires.
 - 01.08 Identify harmful effects/potential dangers of familiar hazardous substances/devices to people and the environment.
- 02.0 EXHIBIT POSITIVE HUMAN RELATIONS AND LEADERSHIP SKILLS--The student will be able to:
- 02.01 Perform roles in a student personnel system or in the Florida Technology Student Association (FL-TSA).
 - 02.02 Work cooperatively with others.
- 03.0 DEMONSTRATE COMPUTER APPLICATION AND LITERACY--The student will be able to:
- 03.01 Define terms related to computer parts and usage.
 - 03.02 List ways in which computers are used in technology.
 - 03.03 Discuss advantages and disadvantages in the use of computers.
 - 03.04 Demonstrate the application of a computer.
- 04.0 APPLY BASIC SKILLS IN LANGUAGE, SOCIAL STUDIES, THE ARTS, MATHEMATICS, AND SCIENCE APPROPRIATE TO TECHNOLOGICAL CONTENT AND LEARNING ACTIVITIES--The student will be able to:
- 04.01 Use the features of books and reference materials, such as table of contents, preface, introduction, titles and subtitles, index, glossary, appendix, bibliography.
 - 04.02 Read and follow complex written directions.
 - 04.03 Find, understand, and apply information from a variety of sources (books, manuals, newspapers, periodicals, directories, reference works, computer printouts, and other printed matter or electronic sources such as video display terminals).

- 04.04 Use and expand general and specialized vocabulary (including abbreviations, acronyms, and concepts) As appropriate to subject areas studied at the grade level.
 - 04.05 Write Standard English sentences with correct:
 - sentence structure;
 - verb forms;
 - punctuation, capitalization, possessives, plural forms, and other matters of mechanics;
 - word choice and spelling.
 - 04.06 Answer and ask questions coherently and concisely, and follow spoken instructions.
 - 04.07 Identify and comprehend the main and subordinate ideas in lectures and discussions, ask questions to clarify information heard, and report accurately what others have said.
 - 04.08 Perform with accuracy the computations of addition, subtraction, multiplication, and division using natural numbers, fractions, decimals and integers.
 - 04.09 Make and use measurements in both traditional and metric units.
 - 04.10 Formulate and solve problems in mathematical terms, selecting appropriate approaches and tools (mental computation, trial and error, paper-and-pencil techniques, calculator, and computer).
 - 04.11 Solve work-related problems involving the basic arithmetic operations using whole numbers, fractions, decimals, and percents.
 - 04.12 Describe the role of observation and experimentation in the development of scientific theories.
 - 04.13 Gather scientific information through skills in laboratory, field and library work.
 - 04.14 Draw conclusions or make inferences from data.
 - 04.15 Apply basic scientific/technical solutions to the appropriate problems.
- 05.0 DEMONSTRATE AND APPLY DESIGN/PROBLEM-SOLVING PROCESSES--The student will be able to:
- 05.01 Describe and explain steps in the design/problem-solving process.
 - 05.02 Propose solutions to given problems.
 - 05.03 Design and implement the optimal solution to a given problem.
- 06.0 DEMONSTRATE TECHNOLOGICAL LITERACY--The student will be able to:
- 06.01 Outline major historical technological developments or events.
 - 06.02 Identify recent advances in technology.
 - 06.03 Explain problem-solving roles of technology.
 - 06.04 Forecast a technological development or event.
 - 06.05 Make a technological decision.
 - 06.06 Define technology.
- 07.0 DISPLAY AN UNDERSTANDING AND APPRECIATION FOR THE DIGNITY AND WORTH OF HONEST LABOR--The student will be able to:
- 07.01 Form an understanding and appreciation for work after listening to or observing technology workers.

- 07.02 Form an understanding and appreciation for work after participating in a simulated technology group project in the laboratory.
- 07.03 Form an understanding and appreciation for the roles and work of co-workers.
- 08.0 DISCUSS INDIVIDUAL INTERESTS AND APTITUDES AS THEY RELATE TO A CAREER--The student will be able to:
 - 08.01 Describe individual strengths and weaknesses.
 - 08.02 Discuss individual interests related to a career.
 - 08.03 Identify careers within specific areas of technology.
 - 08.04 Explore careers within specific areas of interest.
- 09.0 DEVELOP THE IDEA THAT TECHNOLOGY IS THE APPLICATION OF KNOWLEDGE TO SOLVE HUMAN PROBLEMS AND EXTEND CAPABILITIES--The student will be able to:
 - 09.01 Discuss the impacts of technology on work, job opportunities, and careers.
 - 09.02 Discuss the outputs of technology, now and in the future.
 - 09.03 Discuss how technology can solve and/or create problems.
 - 09.04 Discuss expected and unexpected outputs of technology.
 - 09.05 Identify a problem affecting human life in your community and utilize problem-solving skills and teamwork to find a solution.
- 10.0 DESCRIBE POSITIVE AND NEGATIVE IMPACTS OF TECHNOLOGY--The student will be able to:
 - 10.01 Explain the term "impact".
 - 10.02 Explain ways in which technology influences/affects his/her life and the environment.
 - 10.03 Categorize impacts as "desirable" or "undesirable".
 - 10.04 Suggest ways of minimizing undesirable impacts and protecting the environment.
- 11.0 IDENTIFY RESOURCES OF TECHNOLOGY--The student will be able to:
 - 11.01 Define the term "resource".
 - 11.02 Identify major categories of resources of technology.
 - 11.03 List specific examples of resources of technology.
 - 11.04 Categorize examples of resources of technology.
 - 11.05 Explain how technological development is dependent upon resources.
 - 11.06 Utilize technological resources to produce a product.
- 12.0 UTILIZE THE SYSTEMS APPROACH IN TECHNOLOGY--The student will be able to:
 - 12.01 Define the term "system" as used in technology.
 - 12.02 Identify and explain major components of a system.
 - 12.03 Draw and label a basic system model.
 - 12.04 Describe common examples of technological systems.
 - 12.05 Construct and/or operate a simple technological system.
- 13.0 UTILIZE TOOLS, MACHINES, AND EQUIPMENT IN THE TECHNOLOGY LABORATORY--The student will be able to:
 - 13.01 Identify tools, machines, materials and equipment and describe their functions.

- 13.02 Select appropriate tools, machines, and equipment to accomplish a given task.
- 13.03 Demonstrate safe and correct use of tools, machines, and equipment.

**Florida Department of Education
STUDENT PERFORMANCE STANDARDS**

Course Number: 8600020
Course Title: Exploring Technology
Course Credit: 0.5

COURSE DESCRIPTION:

01.0 DEMONSTRATE PROPER AND SAFE PROCEDURES WHILE WORKING WITH TECHNOLOGICAL TOOLS, APPARATUS, EQUIPMENT, SYSTEMS, AND MATERIALS--The student will be able to:

- 01.01 Follow laboratory safety rules and procedures.
- 01.02 Demonstrate good housekeeping at work station within total laboratory.
- 01.03 Conduct laboratory activities and equipment operations in a safe manner.
- 01.04 Exercise care and respect for all tools, equipment, and materials.
- 01.05 Identify color-coding safety standards.
- 01.06 Safely use hand tools and power equipment.
- 01.07 Explain fire prevention and safety precautions and practices for extinguishing fires.
- 01.08 Identify harmful effects/potential dangers of familiar hazardous substances/devices to people and the environment.

02.0 EXHIBIT POSITIVE HUMAN RELATIONS AND LEADERSHIP SKILLS--The student will be able to:

- 02.01 Perform roles in a student personnel system or in the Florida Technology Student Association (FL-TSA).
- 02.02 Work cooperatively with others.

03.0 DEMONSTRATE COMPUTER APPLICATION AND LITERACY--The student will be able to:

- 03.01 Define terms related to computer parts and usage.
- 03.02 List ways in which computers are used in technology.
- 03.03 Discuss advantages and disadvantages in the use of computers.
- 03.04 Demonstrate the application of a computer.

04.0 APPLY BASIC SKILLS IN LANGUAGE, SOCIAL STUDIES, THE ARTS, MATHEMATICS, AND SCIENCE APPROPRIATE TO TECHNOLOGICAL CONTENT AND LEARNING ACTIVITIES--The student will be able to:

- 04.01 Use the features of books and reference materials, such as table of contents, preface, introduction, titles and subtitles, index, glossary, appendix, bibliography.
- 04.02 Read and follow complex written directions.
- 04.03 Find, understand, and apply information from a variety of sources (books, manuals, newspapers, periodicals, directories, reference works, computer printouts, and other printed matter or electronic sources such as video display terminals).
- 04.04 Use and expand general and specialized vocabulary (including abbreviations, acronyms, and concepts) As appropriate to subject areas studied at the grade level.

- 04.05 Write Standard English sentences with correct:
 - sentence structure;
 - verb forms;
 - punctuation, capitalization, possessives, plural forms, and other matters of mechanics;
 - word choice and spelling.
 - 04.06 Answer and ask questions coherently and concisely, and follow spoken instructions.
 - 04.07 Identify and comprehend the main and subordinate ideas in lectures and discussions, ask questions to clarify information heard, and report accurately what others have said.
 - 04.08 Perform with accuracy the computations of addition, subtraction, multiplication, and division using natural numbers, fractions, decimals and integers.
 - 04.09 Make and use measurements in both traditional and metric units.
 - 04.10 Formulate and solve problems in mathematical terms, selecting appropriate approaches and tools (mental computation, trial and error, paper-and-pencil techniques, calculator, and computer).
 - 04.11 Solve work-related problems involving the basic arithmetic operations using whole numbers, fractions, decimals, and percents.
 - 04.12 Describe the role of observation and experimentation in the development of scientific theories.
 - 04.13 Gather scientific information through skills in laboratory, field and library work.
 - 04.14 Draw conclusions or make inferences from data.
 - 04.15 Apply basic scientific/technical solutions to the appropriate problems.
- 05.0 DEMONSTRATE AND APPLY DESIGN/PROBLEM-SOLVING PROCESSES--The student will be able to:
- 05.01 Describe and explain steps in the design/problem-solving process.
 - 05.02 Propose solutions to given problems.
 - 05.03 Design and implement the optimal solution to a given problem.
- 06.0 DEMONSTRATE TECHNOLOGICAL LITERACY--The student will be able to:
- 06.01 Outline major historical technological developments or events.
 - 06.02 Identify recent advances in technology.
 - 06.03 Explain problem-solving roles of technology.
 - 06.04 Forecast a technological development or event.
 - 06.05 Make a technological decision.
 - 06.06 Define technology.
- 07.0 DISPLAY AN UNDERSTANDING AND APPRECIATION FOR THE DIGNITY AND WORTH OF HONEST LABOR--The student will be able to:
- 07.01 Form an understanding and appreciation for work after listening to or observing technology workers.
 - 07.02 Form an understanding and appreciation for work after participating in a simulated technology group project in the laboratory.
 - 07.03 Form an understanding and appreciation for the roles and work of co-workers.

- 08.0 DISCUSS INDIVIDUAL INTERESTS AND APTITUDES AS THEY RELATE TO A CAREER--The student will be able to:
- 08.01 Describe individual strengths and weaknesses.
 - 08.02 Discuss individual interests related to a career.
 - 08.03 Identify careers within specific areas of technology.
 - 08.04 Explore careers within specific areas of interest.
- 14.0 IDENTIFY EVOLVING TECHNOLOGIES IN OUR TECHNOLOGICAL WORLD--The student will be able to:
- 14.01 List evolving technologies.
 - 14.02 Report on a recent or evolving technology.
- 15.0 PERFORM SPECIAL SKILLS UNIQUE TO ELECTRONICS, COMPUTERS AND THE TECHNOLOGY SYSTEMS OF COMMUNICATIONS, CONSTRUCTION, MANUFACTURING, ENERGY, POWER, AND TRANSPORTATION--The student will be able to:
- 15.01 Perform electronic technology laboratory activities.
 - 15.01.01 Define electronic systems.
 - 15.01.02 Conduct electronic systems experiments using input, process, and output.
 - 15.02 Perform computer technology laboratory activities.
 - 15.02.01 Define computer technology.
 - 15.02.02 Conduct computer controlled experiments.
 - 15.03 Perform special skills unique to communications operations.
 - 15.03.01 Perform basic drafting skills using traditional tools, instruments, and methods.
 - 15.03.02 Perform basic drafting skills using today's technology.
 - 15.04 Perform construction technology laboratory activities.
 - 15.04.01 Perform basic construction skills using traditional tools, equipment and methods.
 - 15.04.02 Perform basic construction skills using today's technology, tools, equipment, and methods.
 - 15.05 Perform special skills unique to manufacturing technology.
 - 15.05.01 Perform basic production skills using traditional tools, equipment, and methods.
 - 15.05.02 Perform basic production skills using today's technology, tools, equipment, and methods (CAD/CAM, CNC, Robots, Work Cell, etc.).
 - 15.06 Perform special skills unique to energy, power, and transportation technology.
 - 15.06.01 Perform basic energy, power, and transportation skills using traditional tools, equipment and methods.
 - 15.06.02 Perform basic energy, power, and transportation skills using today's technology, tools, equipment and methods.
- 16.0 EXPRESS A KNOWLEDGE OF THE ESSENTIAL ELEMENTS AND ORGANIZATION OF THE FREE ENTERPRISE SYSTEM--The student will be able to:
- 16.01 Outline the main functions of research and development, personnel management, production, quality control, and marketing.
 - 16.02 Participate in a simulated technology organization incorporating the five above elements.

17.0 LIST REQUISITES AND EMPLOYMENT OPPORTUNITIES FOR EMPLOYMENT IN TODAY'S AND OUR FUTURE TECHNOLOGICAL WORLD--The student will be able to:

- 17.01 List occupations, job requirements and employment opportunities in communications technology.
- 17.02 List occupations, job requirements and employment opportunities in construction technology.
- 17.03 List occupations, job requirements and employment opportunities in manufacturing technology.
- 17.04 List occupations, job requirements and employment opportunities in energy, power, and transportation technology.
- 17.05 List related occupations and academic courses available at the secondary and postsecondary levels.

18.0 IDENTIFY KINDS AND LEVELS OF WORK COMMON TO TECHNOLOGY--The student will be able to:

- 18.01 Identify kinds of work as a technology craftsperson.
- 18.02 Identify kinds of work as a technology technician.
- 18.03 Identify kinds of work as a technology engineer or scientist.
- 18.04 Identify kinds of work in technology management.
- 18.05 Identify other kinds of technology work.

**Florida Department of Education
STUDENT PERFORMANCE STANDARDS**

Course Number: 8600030
Course Title: Exploration of Communications Technology
Course Credit: 0.5

COURSE DESCRIPTION:

All areas listed below should be covered no matter what length of time this course is taught.

01.0 Health and Safety: DEMONSTRATE PROPER AND SAFE PROCEDURES WHILE WORKING WITH TECHNOLOGICAL TOOLS, APPARATUS, EQUIPMENT, SYSTEMS, AND MATERIALS--The student will be able to:

- 01.01 Follow laboratory safety rules and procedures. SSS: LA.A.2.3.1; HE.A.1.3.7; HE.B.1.3.2; HE.B.1.3.5; HE.A.1.3.6, VA.A.1.3.2
- 01.02 Demonstrate good housekeeping at the work station and within total laboratory. SSS: HE.A.1.3.2; HE.A.1.3.5; HE.A.1.3.6; HE.A.1.3.7; SC.G.1.3.2
- 01.03 Conduct laboratory activities and equipment operations in a safe manner. SSS: LA.C.3.3.2; HE.A.1.3.9; PE.B.2.3.1
- 01.04 Exercise care and respect for all tools, equipment, and materials. SSS: HE.A.1.3.8; VA.A.1.3.2
- 01.05 Identify color-coding safety standards. SSS: HE.B.3.3.1
- 01.06 Safely use hand tools and power equipment. SSS: VA.A.1.3.2
- 01.07 Explain fire prevention and safety precautions and practices for extinguishing fires. SSS: LA.A.1.3.1
- 01.08 Identify harmful effects/potential dangers of familiar hazardous substances/devices to people and the environment. SSS: SC.G.1.3.4
- 01.09 Demonstrate appropriate ergonomic practices in the laboratory and classroom areas. SSS: L.A.A.2.3.2; HE.A.1.3.1; HE.A.1.3.5; HE.A.1.3.6; HE.B.1.3.1; SC.D.2.3.2; SC.H.3.3.1

02.0 Human Relations/Leadership: EXHIBIT POSITIVE HUMAN RELATIONS AND LEADERSHIP SKILLS--Technology Student Association--The student will be able to:

- 02.01 Perform roles in a student personnel system or in the Florida Technology Student Association (FL-TSA) SSS: LA.A.2.3.8; LA.C.2.3.1; LA.C.2.3.2; LA.C.3.3.1; LA.C.3.3.2; LA.C.3.3.3; LA.D.1.3.1; LA.D.1.3.2; LA.D.1.3.3; LA.D.1.3.4; LA.D.2.3.1; LA.D.2.3.2; LA.D.2.3.3; LA.D.2.3.4; LA.D.2.3.5; LA.D.2.3.6; LA.D.2.3.7; HE.B.3.3.2; HE.B.3.3.3; HE.B.3.3.4; HE.B.3.3.5; HE.B.3.3.6; HE.B.3.3.7; HE.B.3.3.8; SC.C.1.3.1; SC.D.2.3.1; PE.B.2.3.2; PE.B.2.3.3; PE.C.2.3.6; SS.C.2.3.6; HE.C.1.3.1; HE.C.1.3.3; HE.C.1.3.6; HE.C.1.3.7
- 02.02 Work cooperatively with others. SSS: LA.C.1.3.3; FL.A.1.3.1; FL.A.1.3.2; FL.A.1.3.3; FL.A.1.3.4; FL.A.2.3.1; FL.A.2.3.2; FL.A.2.3.4; HE.A.1.3.3; HE.A.1.3.4; SC.D.2.3.1; HE.C.2.3.4; PE.B.2.3.4

- 02.03 Form an understanding and appreciation for work. SSS: SC.H.1.3.3
- 02.04 Participate in a technology group project in the laboratory. SSS: LA.C.2.3.1; LA.C.2.3.2
- 02.05 Form an understanding and appreciation of the divisions of labor. SSS: LA.A.1.3.1; LA.A.2.3.1
- 03.0 **Computer Application: DEMONSTRATE COMPUTER APPLICATION AND LITERACY**--The student will be able to:
- 03.01 Define terms related to computer parts and usage. SSS: LA.A.1.3.3; SC.H.3.3.7
- 03.02 List ways in which computers are used in society. SSS: VA.A.1.3.1; VA.C.1.3.1
- 03.03 Discuss advantages and disadvantages in the use of computers. SSS: LA.A.1.3.1; LA.A.1.3.3; LA.C.3.3.1; LA.C.3.3.2; LA.C.3.3.3
- 03.04 Demonstrate the proper use and care of a computer. SSS: LA.A.2.3.2; LA.A.2.3.5
- 03.05 Research information to purchase a computer system. SSS: LA.B.2.3.2; LA.B.2.3.4; MA.E.1.3.1; MA.E.1.3.2; MA.E.1.3.3; SS.D.1.3.3; SC.H.1.3.2; SC.H.3.3.7
- 04.0 **Technological Communications: APPLY BASIC SKILLS IN LANGUAGE, SOCIAL STUDIES, THE ARTS, MATHEMATICS, AND SCIENCE APPROPRIATE TO TECHNOLOGICAL CONTENT AND LEARNING ACTIVITIES**--The student will be able to:
- 04.01 Use the features of books and reference materials, such as table of contents, preface, subtitles, glossary, and bibliography. SSS: LA.A.2.3.
- 04.02 Read, understand, and apply information from a variety of sources (books, manuals, newspapers, periodicals, directories, reference works, computer printouts, and other printed matter or electronic sources such as video display terminals. SSS: LA.A.1.3.1 LA.A.1.3.4; LA.A.2.3.1; LA.A.2.3.2; LA.B.2.3.1; LA.B.2.3.2
- 04.03 Read and follow complex written directions. SSS: LA.A.1.3.2; LA.B.2.3.3
- 04.04 Use and expand general and specialized vocabulary (including abbreviations, acronyms, and concepts) As appropriate to subject areas studied at the grade level. SSS: LA.A.1.3.2
- 04.05 Write Standard English sentences with correct:
- sentence structure;
 - verb forms;
 - punctuation, capitalization, possessives, plural forms, and other matters of mechanics;
 - word choice and spelling. SSS: LA.B.1.3.1; LA.B.1.3.2; LA.B.1.3.3
- 04.06 Answer and ask questions coherently and concisely, and follow spoken instructions. SSS: LA.A.1.3.3
- 04.07 Identify and comprehend the main and subordinate ideas in lectures and discussions, ask questions to clarify information heard, and report accurately what others have said. SSS: LA.A.1.3.2; LA.C.1.3.1; LA.C.1.3.2; LA.C.1.3.3; LA.C.1.3.4; LA.C.3.3.2
- 04.08 Perform with accuracy the computations of addition, subtraction, multiplication, and division using natural numbers, fractions, decimals and integers. SSS: MA.A.1.3.2; MA.A.3.3.1; MA.A.3.3.2; MA.A.3.3.3; MA.A.4.3.1

- 04.09 Make and use measurements in both traditional and metric units. SSS: MA.A.1.3.2; MA.B.2.3.1; MA.B.2.3.2
- 04.10 Formulate and solve problems in mathematical terms, selecting appropriate approaches and tools (mental computation, trial and error, paper-and-pencil techniques, calculator, and computer). SSS: MA.A.1.3.3; MA.A.2.3.1; MA.A.4.3.1; MA.A.5.3.1; MA.D.1.3.1
- 04.11 Solve work-related problems involving the basic arithmetic operations using whole numbers, fractions, decimals, and percents. SSS: MA.A.1.3.1; MA.A.1.3.4; MA.A.2.3.2
- 04.12 Describe the role of observation and experimentation in the development of scientific theories. SSS: LA.A.1.3.3; SC.H.1.3.5
- 04.13 Gather scientific information through skills in laboratory, field and library work. SSS: LA.B.2.3.4; HE.A.2.3.4; SC.H.1.3.4; MA.E.3.3.1
- 04.14 Draw conclusions or make inferences from data. SSS: LA.A.1.3.1; SC.H.1.3.2; SS.A.1.3.2; MA.D.1.3.1; MA.E.2.3.1; MA.E.2.3.2.
- 04.15 Apply basic scientific/technical solutions to the appropriate problems. SSS: MA.D.1.3.2; MA.E.2.3.1; MA.E.3.3.2
- 04.16 Utilize resources to define and evaluate historical influences on Communication Technology. SSS: LA.A1.3.1; HE.B.3.3.1; SC.H.3.3.5; SC.H.3.3.6; SC.H.3.3.5; S.C.H.3.3.6; MA.E.3.3.2; SS.A.1.3.3; SSA.2.3.6; SSA.2.3.2; SSA.2.3.3; SS.A.5.3.2; VA.C.1.3.2
- 05.0 **Design: DEMONSTRATE AND APPLY DESIGN/PROBLEM-SOLVING PROCESSES**--
The student will be able to:
- 05.01 Demonstrate and explain the proper use of design elements, design principles; and the design/problem solving process. SSS: LA.A.1.3.4; VA.A.1.3.1; VA.A.1.3.3; VA.B.1.3.1; VA.D.1.3.1
- 05.02 Demonstrate an understanding of a variety of layout solutions. SSS: VA.A.1.3.3; VA.B.1.3.2
- 05.03 Recognize examples of different kinds of typography. SSS: LA.A.2.3.5
- 05.04 Propose solutions to given problems. SSS: LA.A.2.3.5; LA.E.2.3.2; VA.B.1.3.1
- 05.05 Given a set of solutions, recognize the most appropriate choice. SSS: VA.A.1.3.4; VA.B.1.3.1
- 06.0 **Communication and Society: DISPLAY AN UNDERSTANDING AND APPRECIATION REGARDING CAREER INTERESTS, OPPORTUNITIES AND THEIR RELATIONSHIPS IN SOCIETY** --The student will be able to:
- 06.01 Outline major historical technological developments or events. SSS: LA.A.2.3.5; LA.A.2.3.6; LA.A.2.3.7; SS.A.1.3.1; SS.A.1.3.3; VA.C.1.3.1; SS.A.2.3.2; TH.C.1.3.1
- 06.02 Identify recent advances in technology. SSS: LA.A.2.3.1; LA.A.2.3.4; SS.A.1.3.1; MA.E.1.3.3; SC.H.1.3.6
- 06.03 Explain problem-solving roles of technology. SSS: SC.H.1.3.7
- 06.04 Forecast a technological development or event.
- 06.05 Make a technological decision. SSS: LA.A.2.3.3; LA.A.2.3.5
- 06.06 Define technology. SSS: LA.A.1.3.2

- 07.0 **Employment & Society: DISPLAY AN UNDERSTANDING AND APPRECIATION FOR THE DIGNITY AND WORTH OF HONEST LABOR--**The student will be able to:
- 07.01 Identify kinds of work related to various communications occupations. SSS: LA.A.2.3.5; VA.E.1.3.1
 - 07.02 List academic and vocational programs at the secondary levels in communications technologies. SSS: LA.A.2.3.7; VA.E.1.3.2
 - 07.03 Identify and report on recent advances and in communications technologies. SSS: LA.A.2.3.7; LA.B.1.3.2; LA.B.1.3.3; VA.C.1.3.1
 - 07.04 Explain economic and ecological factors that impact on communications technology. SSS: LA.A.1.3.1; LA.A.2.3.3; LA.A.2.3.8; SC.H.3.3.4; SC.H.3.3.6
 - 07.05 Demonstrate an understanding of ethical and legal considerations of media usage. SSS: LA.D.2.3.7; SC.H.3.3.6
- 08.0 **Forward Thinking: DISCUSS INDIVIDUAL INTERESTS AND APTITUDES AS THEY RELATE TO A CAREER--**The student will be able to:
- 08.01 Describe individual strengths and weaknesses. SSS: LA.B.1.3.1; MA.E.1.3.1
 - 08.02 Discuss individual interests related to a career. SSS: LA.A.2.3.4; VA.E.1.3.2; TH.E.1.3.3
 - 08.03 Identify careers within specific areas of technology. SSS: LA.A.1.3.4
 - 08.04 Explore careers within specific areas of interest.
- 19.0 **Technical Drawing: LIST AND DEMONSTRATE TECHNIQUES USED IN TECHNICAL DRAWING--**The student will be able to:
- 19.01 Identify and use basic drafting tools and instruments for making drawings. SSS: VA.A.1.3.1
 - 19.02 List and explain freehand sketching techniques. SSS: MA.C.2.3.1
 - 19.03 Communicate with others by means of simple sketches and diagrams. SSS: MA.C.1.3.1
 - 19.04 Demonstrate by drawing: multiview, isometric, oblique, and perspective drawings. SSS: MA.B.1.3.1; MA.B.1.3.3; MA.B.3.3.1; MA.B.3.3.2
 - 19.05 Identify the applications of technical drawing. SSS: MA.B.1.3.3
 - 19.06 Implement technical drawing standards on a project. SSS: LA.A.2.3.5; MA.B.1.3.1; MA.B.1.3.4; MA.B.R.4.3.1; MA.C.2.3.2
 - 19.07 Utilize a CAD application to generate a technical drawing. SSS: MA.B.1.3.2; VA.A.1.3.4; VA.B.1.3.4; VA.D.1.3.3
- 20.0 **Electronic Publishing: DEMONSTRATE AN APPLICATION OF BASIC ELECTRONIC PUBLISHING TECHNIQUES--**The student will be able to:
- 20.01 Utilize electronic publishing to combine input, editing, and output into a finished product. SSS: LA.B.2.3.4; LA.E.2.3.2; MA.B.4.3.1; VA.A.1.3.4
 - 20.02 Utilize the components of layouts including type, typography and illustration to electronically manipulate the elements. SSS: MA.C.3.3.1

- 20.03 Develop a web page using appropriate electronic software. SSS: LA.D.2.3.7; LA.E.2.3.2; VA.A.1.3.4
- 20.04 Create a document on an electronic publishing system by inputting existing digitized graphics or by digitizing original art or photographs on a digitizing scanner. SSS: LA.A.2.3.5; LA.B.1.3.2; LA.B.1.3.3; VA.B.1.3.3; VA.B.1.3.4; VA.D.1.3.3; MA.B.4.3.1
- 21.0 **Print Production: IDENTIFY, DESCRIBE AND UTILIZE THE MAJOR TYPES OF PRINTING TECHNIQUES USED IN PRINT PRODUCTION**--The student will be able to:
- 21.01 Identify and explain the standard printing processes including but not limited to: relief, gravure, screen process, and lithographic printing. SSS: LA.A.2.3.7; MA.E.1.3.1
- 21.02 Utilize common design principles to create camera ready art. SSS: LA.A.2.3.5
- 21.03 Produce a printed product using a current printing method. SSS: SC.C.2.3.4
- 21.04 Utilize appropriate finishing techniques on a printed project. SSS: LA.A.2.3.5; VA.A.1.3.4; VA.B.1.3.3; VA.B.1.3.4; VA.D.1.3.3
- 22.0 **Electronic Communications: IDENTIFY AND DEMONSTRATE THE ROLE OF ELECTRONIC COMMUNICATION**--The student will be able to:
- 22.01 Explain how to create code, transmit, and receive messages using electronic devices. SSS: MA.E.1.3.1; SC.B.1.3.6
- 22.02 Explain the basic concepts of electrical energy. SSS: MA.D.2.3.1; MA.E.2.3.2; SC.A.2.3.3; SC.C.2.3.1
- 22.03 List and explain the common communication categories. SSS: TH.E.1.3.1
- 22.04 Define and explain the use of telecommunications in everyday life. SSS: MA.E.3.3.2; MU.E.2.3.1
- 22.05 Utilize a telecommunications device to transmit and receive an electronic message. SSS: MA.B.4.3.2; SC.A.2.3.1; SC.C.1.3.2; MU.E.1.3.2
- 22.06 Produce an audio and/or visual product using electronic communication technology. SSS: LA.A.2.3.5; FL.A.2.3.1; FL.A.2.3.2; FL.A.2.3.3; FL.A.2.3.4; VA.A.1.3.4; VA.B.1.3.1; VA.B.1.3.4; VA.D.1.3.3; MU.1.3.3; TH.A.1.3.1; TH.A.2.3.3.1; TH.A.3.3.1; TH.A.3.3.2; TH.B.1.3.1; TH.D.1.3.3; TH.E.1.3.2; TH.E.1.3.4
- 23.0 **Optical Technology: IDENTIFY AND DEMONSTRATE THE ROLE OF OPTICAL TECHNOLOGY**--The student will be able to:
- 23.01 Identify the purposes and property of light. SSS: SC.B.1.3.3
- 23.02 Explain how light signals are transmitted and received via different optical devices to include but not limited to: fiber optics, satellite communication, bandwidth, laser, and photography. SSS: SC.A.1.3.1; SC.B.1.3.1; SC.H.2.3.1; MA.B.4.3.2; MA.D.2.3.1; MA.D.2.3.2
- 23.03 Generate a product using optical technology. SSS: LA.A.2.3.5; VA.A.1.3.4; MA.E.1.3.1

***** Minimum Equipment and Tool needs for an Exploration of Communication Technology Course *****

1. Affiliation to the Technology Student Association with Competitive Events Book
2. 15 computer stations (to create a 2 students/computer ratio) complete with, built in zip drive; built in CD-Rom drive; appropriate furniture; lockdowns, and chairs
3. class set plus 5 (33): textbooks; dictionaries; safety goggles; rubber aprons; rubber gloves; rulers; T squares; drafting tables; appropriate height stools; french curves; compasses; protractors; per each student each year: erasers, appropriate drawing pencils, tape, drafting brushes,
4. Software (all to include site licenses): CAD; web page; publishing; design; word processing; office management; photoshop or equal; illustrator or equal; 3D animation
5. Two 11X17 color inkjet printers;
6. Internet access to the entire lab;
7. Safety video
8. Disinfecting cabinet (for safety goggles)
9. One teacher computer station with an ergonomic chair (height adjustable, cushioned, on wheels)
10. One teacher desk
11. One white board with a beginning set of multicolored board markers
12. One overhead projector
13. One RF Modulator (to turn TV into a computer screen)
14. One current Occupational Outlook Handbook
15. One scanner
16. Three digital cameras
17. Two video cameras
18. Video editing equipment package
19. Audio broadcast package
20. Risographic type printing equipment package
21. Vinyl signmaker with materials package
22. Thermal screen maker with materials package
23. Four color unit for screen printing
24. Screen printing dryer
25. Heat press for transfers
26. Fifteen 6 foot folding work tables or better
27. 30 chairs
28. One set of basic mechanics/carpenters hand tools with storage
29. 3-4 A.V. Carts
30. Class set of calculators
31. Binding Machine; binding coils and padding compound
32. Heavy duty hole press for 100 pages.
33. Electric stapler
34. 6 electric pencil sharpeners
35. Paper cutter 11" x 17"
36. Desktop copy machine
37. 3 Light tables
38. Laser & Fiber Optic equipment

**Florida Department of Education
STUDENT PERFORMANCE STANDARDS**

Course Number: 8600040
Course Title: Exploration of Production Technology
Course Credit: 0.5

COURSE DESCRIPTION:

- 01.0 DEMONSTRATE PROPER AND SAFE PROCEDURES WHILE WORKING WITH TECHNOLOGICAL TOOLS, APPARATUS, EQUIPMENT, SYSTEMS, AND MATERIALS--The student will be able to:
- 01.01 Follow laboratory safety rules and procedures.
 - 01.02 Demonstrate good housekeeping at work station within total laboratory.
 - 01.03 Conduct laboratory activities and equipment operations in a safe manner.
 - 01.04 Exercise care and respect for all tools, equipment, and materials.
 - 01.05 Identify color-coding safety standards.
 - 01.06 Safely use hand tools and power equipment.
 - 01.07 Explain fire prevention and safety precautions and practices for extinguishing fires.
 - 01.08 Identify harmful effects/potential dangers of familiar hazardous substances/devices to people and the environment.
- 02.0 EXHIBIT POSITIVE HUMAN RELATIONS AND LEADERSHIP SKILLS--The student will be able to:
- 02.01 Perform roles in a student personnel system or in the Florida Technology Student Association (FL-TSA).
 - 02.02 Work cooperatively with others.
- 03.0 DEMONSTRATE COMPUTER APPLICATION AND LITERACY--The student will be able to:
- 03.01 Define terms related to computer parts and usage.
 - 03.02 List ways in which computers are used in technology.
 - 03.03 Discuss advantages and disadvantages in the use of computers.
 - 03.04 Demonstrate the application of a computer.
- 04.0 APPLY BASIC SKILLS IN LANGUAGE, SOCIAL STUDIES, THE ARTS, MATHEMATICS, AND SCIENCE APPROPRIATE TO TECHNOLOGICAL CONTENT AND LEARNING ACTIVITIES--The student will be able to:
- 04.01 Use the features of books and reference materials, such as table of contents, preface, introduction, titles and subtitles, index, glossary, appendix, bibliography.
 - 04.02 Read and follow complex written directions.
 - 04.03 Find, understand, and apply information from a variety of sources (books, manuals, newspapers, periodicals, directories, reference works, computer printouts, and other printed matter or electronic sources such as video display terminals).

- 04.04 Use and expand general and specialized vocabulary (including abbreviations, acronyms, and concepts) As appropriate to subject areas studied at the grade level.
 - 04.05 Write Standard English sentences with correct:
 - sentence structure;
 - verb forms;
 - punctuation, capitalization, possessives, plural forms, and other matters of mechanics;
 - word choice and spelling.
 - 04.06 Answer and ask questions coherently and concisely, and follow spoken instructions.
 - 04.07 Identify and comprehend the main and subordinate ideas in lectures and discussions, ask questions to clarify information heard, and report accurately what others have said.
 - 04.08 Perform with accuracy the computations of addition, subtraction, multiplication, and division using natural numbers, fractions, decimals and integers.
 - 04.09 Make and use measurements in both traditional and metric units.
 - 04.10 Formulate and solve problems in mathematical terms, selecting appropriate approaches and tools (mental computation, trial and error, paper-and-pencil techniques, calculator, and computer).
 - 04.11 Solve work-related problems involving the basic arithmetic operations using whole numbers, fractions, decimals, and percents.
 - 04.12 Describe the role of observation and experimentation in the development of scientific theories.
 - 04.13 Gather scientific information through skills in laboratory, field and library work.
 - 04.14 Draw conclusions or make inferences from data.
 - 04.15 Apply basic scientific/technical solutions to the appropriate problems.
- 05.0 DEMONSTRATE AND APPLY DESIGN/PROBLEM-SOLVING PROCESSES--The student will be able to:
- 05.01 Describe and explain steps in the design/problem-solving process.
 - 05.02 Propose solutions to given problems.
 - 05.03 Design and implement the optimal solution to a given problem.
- 06.0 DEMONSTRATE TECHNOLOGICAL LITERACY--The student will be able to:
- 06.01 Outline major historical technological developments or events.
 - 06.02 Identify recent advances in technology.
 - 06.03 Explain problem-solving roles of technology.
 - 06.04 Forecast a technological development or event.
 - 06.05 Make a technological decision.
 - 06.06 Define technology.
- 07.0 DISPLAY AN UNDERSTANDING AND APPRECIATION FOR THE DIGNITY AND WORTH OF HONEST LABOR--The student will be able to:
- 07.01 Form an understanding and appreciation for work after listening to or observing technology workers.

- 07.02 Form an understanding and appreciation for work after participating in a simulated technology group project in the laboratory.
- 07.03 Form an understanding and appreciation for the roles and work of co-workers.
- 08.0 DISCUSS INDIVIDUAL INTERESTS AND APTITUDES AS THEY RELATE TO A CAREER--The student will be able to:
 - 08.01 Describe individual strengths and weaknesses.
 - 08.02 Discuss individual interests related to a career.
 - 08.03 Identify careers within specific areas of technology.
 - 08.04 Explore careers within specific areas of interest.
- 24.0 IDENTIFY EVOLVING TECHNOLOGIES OF PRODUCTIONS SYSTEMS--The student will be able to:
 - 24.01 Participate in a discussion about evolving technologies of manufacturing systems and construction processes.
 - 24.02 List evolving technologies of manufacturing and construction industries.
 - 24.03 Brainstorm futuristic production systems.
- 25.0 PERFORM SPECIAL SKILLS UNIQUE TO MANUFACTURING TECHNOLOGY--The student will be able to:
 - 25.01 Design a product for custom or mass production manufacturing.
 - 25.02 Plan a mass production system for manufacturing a product.
 - 25.03 Perform materials forming practices such as casting or molding, and compressing or stretching.
 - 25.04 Perform materials separating practices such as shearing, chip removing, and other separating processes.
 - 25.05 Perform materials conditioning practices such as heat treating, physical conditioning, or through chemical reactions.
 - 25.06 Combine components through mixing, coating, bonding, and mechanical fastening.
 - 25.07 Assemble a product or a subassembly of a product.
- 26.0 EXPRESS KNOWLEDGE OF FACTORS THAT IMPACT ON MANUFACTURING TECHNOLOGY AND PRACTICES--The student will be able to:
 - 26.01 Explain economic factors that impact on manufacturing technology.
 - 26.02 Research and identify consumer demands for a manufactured product.
 - 26.03 Identify sources of raw materials and/or standard stock materials needed for a manufactured product.
 - 26.04 Interview, hire, train, or promote an applicant or employee for a simulated mass production manufacturing activity.
 - 26.05 Define the terms "organized labor" and "collective bargaining."
 - 26.06 Prepare a plan for marketing and distributing a manufactured product.
- 27.0 PERFORM SPECIAL SKILLS UNIQUE TO CONSTRUCTION TECHNOLOGY--The student will be able to:

- 27.01 Interpret construction plans and blueprints.
- 27.02 Identify construction materials.
- 27.03 Apply carpentry skills.
- 27.04 Apply plumbing skills.
- 27.05 Apply electrical wiring skills.
- 27.06 Apply masonry skills.
- 27.07 Describe or demonstrate the construction skills of plastering, roofing and finishing.

28.0 EXPRESS A KNOWLEDGE OF FACTORS THAT IMPACT ON CONSTRUCTION TECHNOLOGY AND PRACTICES--The student will be able to:

- 28.01 Explain economic factors that impact on construction technology.
- 28.02 Research and identify types and styles of construction desired by consumers.
- 28.03 List sources of raw materials and standard stock materials available to construction technology.
- 28.04 Express a knowledge of construction technology labor organizations and hiring practices.

29.0 IDENTIFY KINDS AND LEVELS OF WORK COMMON TO PRODUCTION TECHNOLOGY--The student will be able to:

- 29.01 Identify kinds of work related to manufacturing technologies.
- 29.02 Identify semiskilled, skilled, and professional levels of work in manufacturing construction technology.
- 29.03 List occupations, job requirements, and employment opportunities in manufacturing technology.
- 29.04 List occupational training programs and academic programs at the secondary/post secondary levels in manufacturing technologies.
- 29.05 List occupations, job requirements and employment opportunities in construction technology.
- 29.06 List occupational training programs and academic programs at the secondary/post secondary levels in construction technologies.

**Florida Department of Education
STUDENT PERFORMANCE STANDARDS**

Course Number: 8600050
Course Title: Exploration of Aerospace Technology
Course Credit: 0.5

COURSE DESCRIPTION:

- 01.0 DEMONSTRATE PROPER AND SAFE PROCEDURES WHILE WORKING WITH TECHNOLOGICAL TOOLS, APPARATUS, EQUIPMENT, SYSTEMS, AND MATERIALS--The student will be able to:
- 01.01 Follow laboratory safety rules and procedures.
 - 01.02 Demonstrate good housekeeping at work station within total laboratory.
 - 01.03 Conduct laboratory activities and equipment operations in a safe manner.
 - 01.04 Exercise care and respect for all tools, equipment, and materials.
 - 01.05 Identify color-coding safety standards.
 - 01.06 Safely use hand tools and power equipment.
 - 01.07 Explain fire prevention and safety precautions and practices for extinguishing fires.
 - 01.08 Identify harmful effects/potential dangers of familiar hazardous substances/devices to people and the environment.
- 02.0 EXHIBIT POSITIVE HUMAN RELATIONS AND LEADERSHIP SKILLS--The student will be able to:
- 02.01 Perform roles in a student personnel system or in the Florida Technology Student Association (FL-TSA).
 - 02.02 Work cooperatively with others.
- 03.0 DEMONSTRATE COMPUTER APPLICATION AND LITERACY--The student will be able to:
- 03.01 Define terms related to computer parts and usage.
 - 03.02 List ways in which computers are used in technology.
 - 03.03 Discuss advantages and disadvantages in the use of computers.
 - 03.04 Demonstrate the application of a computer.
- 04.0 APPLY BASIC SKILLS IN LANGUAGE, SOCIAL STUDIES, THE ARTS, MATHEMATICS, AND SCIENCE APPROPRIATE TO TECHNOLOGICAL CONTENT AND LEARNING ACTIVITIES--The student will be able to:
- 04.01 Use the features of books and reference materials, such as table of contents, preface, introduction, titles and subtitles, index, glossary, appendix, bibliography.
 - 04.02 Read and follow complex written directions.
 - 04.03 Find, understand, and apply information from a variety of sources (books, manuals, newspapers, periodicals, directories, reference works, computer printouts, and other printed matter or electronic sources such as video display terminals).

- 04.04 Use and expand general and specialized vocabulary (including abbreviations, acronyms, and concepts) As appropriate to subject areas studied at the grade level.
 - 04.05 Write Standard English sentences with correct:
 - sentence structure;
 - verb forms;
 - punctuation, capitalization, possessives, plural forms, and other matters of mechanics;
 - word choice and spelling.
 - 04.06 Answer and ask questions coherently and concisely, and follow spoken instructions.
 - 04.07 Identify and comprehend the main and subordinate ideas in lectures and discussions, ask questions to clarify information heard, and report accurately what others have said.
 - 04.08 Perform with accuracy the computations of addition, subtraction, multiplication, and division using natural numbers, fractions, decimals and integers.
 - 04.09 Make and use measurements in both traditional and metric units.
 - 04.10 Formulate and solve problems in mathematical terms, selecting appropriate approaches and tools (mental computation, trial and error, paper-and-pencil techniques, calculator, and computer).
 - 04.11 Solve work-related problems involving the basic arithmetic operations using whole numbers, fractions, decimals, and percents.
 - 04.12 Describe the role of observation and experimentation in the development of scientific theories.
 - 04.13 Gather scientific information through skills in laboratory, field and library work.
 - 04.14 Draw conclusions or make inferences from data.
 - 04.15 Apply basic scientific/technical solutions to the appropriate problems.
- 05.0 DEMONSTRATE AND APPLY DESIGN/PROBLEM-SOLVING PROCESSES--The student will be able to:
- 05.01 Describe and explain steps in the design/problem-solving process.
 - 05.02 Propose solutions to given problems.
 - 05.03 Design and implement the optimal solution to a given problem.
- 06.0 DEMONSTRATE TECHNOLOGICAL LITERACY--The student will be able to:
- 06.01 Outline major historical technological developments or events.
 - 06.02 Identify recent advances in technology.
 - 06.03 Explain problem-solving roles of technology.
 - 06.04 Forecast a technological development or event.
 - 06.05 Make a technological decision.
 - 06.06 Define technology.
- 07.0 DISPLAY AN UNDERSTANDING AND APPRECIATION FOR THE DIGNITY AND WORTH OF HONEST LABOR--The student will be able to:
- 07.01 Form an understanding and appreciation for work after listening to or observing technology workers.

- 07.02 Form an understanding and appreciation for work after participating in a simulated technology group project in the laboratory.
- 07.03 Form an understanding and appreciation for the roles and work of co-workers.
- 08.0 DISCUSS INDIVIDUAL INTERESTS AND APTITUDES AS THEY RELATE TO A CAREER--The student will be able to:
 - 08.01 Describe individual strengths and weaknesses.
 - 08.02 Discuss individual interests related to a career.
 - 08.03 Identify careers within specific areas of technology.
 - 08.04 Explore careers within specific areas of interest.
- 30.0 DEMONSTRATE KNOWLEDGE OF THE BASIC PRINCIPLES OF AEROSTATICS AND AERODYNAMICS--The student will be able to:
 - 30.01 State definitions of terms associated with aerostatics and aerodynamics.
 - 30.02 State the Buoyancy Principle.
 - 30.03 State Bernoulli's Principle.
 - 30.04 Match basic forces acting on an aerodyne in flight to their correct definition.
 - 30.05 State descriptions of the basic parts of a glider.
 - 30.06 State definitions of the components of the cross-sectional shape of an aircraft's wing.
 - 30.07 Build an aerostatic vehicle.
 - 30.08 Build an aerodynamic vehicle.
- 31.0 IDENTIFY AND DEMONSTRATE KNOWLEDGE OF BOTH LIQUID AND SOLID PROPELLANT ROCKET PROPULSION SYSTEMS--The student will be able to:
 - 31.01 Match terms associated with propulsion systems to their correct definitions.
 - 31.02 State definitions of types of rocket propulsion systems.
 - 31.03 Match parts of a solid-propellant rocket engine to their correct definitions.
 - 31.04 Match parts of a liquid-propellant rocket engine to their correct definitions.
 - 31.05 Discuss the principle of rocket propulsion.
 - 31.06 Label the major units of the Space Shuttle's propulsion systems.
 - 31.07 Identify the major components of the Space Shuttle's main engines.
 - 31.08 Label the major components of the Space Shuttle's external tank.
 - 31.09 Identify the major components of the Space Shuttle's solid-rocket boosters.
 - 31.10 Compare the propulsion systems of solid and liquid-propellant rockets.
 - 31.11 Simulate a multi-stage rocket launch.
 - 31.12 Construct a solid-propellant model rocket.
- 32.0 DEFINE, DESCRIBE AND DEMONSTRATE COMPOSITE MATERIALS PROCESSING AND USE IN AIRFRAME FABRICATION--The student will be able to:
 - 32.01 Match terms associated with airframe manufacturing to their correct definitions.
 - 32.02 Match components of the manufacturing system model to their correct definitions.

33.0 DEFINE AND DESCRIBE THE STAGES AND FORMS OF INTERFERENCE IN A BASIC OR SATELLITE COMMUNICATION SYSTEMS--The student will be able to:

- 33.01 State definitions of the terms communication and interference.
- 33.02 List and define the stages of a basic communication system.
- 33.03 Describe forms of interference that can occur at various stages in a basic communication system.
- 33.04 Discuss the importance of feed back in a basic communication system.
- 33.05 Define parts of the process in a basic communication system.
- 33.06 Describe the parts of the process in a satellite communication system.
- 33.07 Describe the parts of the process in a helium-neon laser communication system.