

**Florida Department of Education  
CURRICULUM FRAMEWORK**

**Program Title:** Communications Technology  
**Occupational Area:** Technology Education  
**Program Numbers:** 8601000  
**CIP Number:** 0821.010600  
**Grade Level:** Secondary 9-12, & 30, 31  
**Standard Length:** 3 Credits  
**Facility Design Code:** 243, Related 803, 808, 810, 849, 851, 853, 854  
**CTSO:** Florida Technology Student Association (FL-TSA)  
**Certification:** INDUS ARTS @4 @6                      PRINTING @7G  
                     GRAPH ARTS @4                      I ART-TEC 1 @2  
                     GEN SHOP @4                      ENG 7G

- 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 communications technology. 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. Communications Technology represents the current and expanding digital technology. The content includes, but is not limited to a study of the processes, uses, and technical skills found in visual technologies (both conventional and digital procedures), multimedia production, computer animation and graphics, web page design, electronic media and other new and emerging technologies.

8601010 - Communications Technology I  
 8601020 - Communications Technology II  
 8601030 - Communications Technology III

- II. **LABORATORY ACTIVITIES:** Instruction and learning activities are provided in a laboratory setting using hands-on experiences with the tools and materials appropriate to the course content.
- III. **SPECIAL NOTE:** The Florida Technology Student Association (FL-TSA) is the appropriate Career Student Organization for providing leadership training experiences and reinforcing specific career skills. Career Student Organizations, shall be an integral part of the career 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.floridatsa.com>.

Advanced Applications in Technology (AAiT) - course number 8601900 is appropriate to be used for content area continuation in this program after all three credits of this program have been completed. The purpose of this course is to provide students with the opportunity to develop a school based project from "vision" to "reality". Working in teams to design, engineer, manufacture, construct, test, redesign, test again; and then produce a finished "project". This would involve using ALL the knowledge previously learned, not only in Technology Education but also across the curriculum. See the (AAiT) framework for more information.

Work-Based Experience (WBE) - course number 8601800 is the appropriate course to provide Technology Education students with the opportunity, as Student Learners, to gain real world practical, first-hand exposure in broad occupational clusters or industry sectors through a structured, compensated or uncompensated experience. Work-Based Experience is also designed to give the Student Learners an opportunity to apply and integrate the knowledge, skills, and abilities acquired during their School-Based Experience to actual work situations independent of school facilities. At least one credit of a Technology Education program consisting of three credits must be completed before enrolling in WBE. See the (WBE) framework for more information.

The Intermediate and Advanced courses in this program may articulate into post-secondary Tech-Prep 2 + 2 programs when taken in sequence. Tech-Prep 2 + 2 programs require articulation agreements between secondary and post-secondary educational agencies.

Course substitutions as defined in the Comprehensive Course Table for this program area may be used to qualify a student for Florida's Gold Seal Vocational Scholarship, providing all other eligibility requirements are met. The comprehensive course table requirements are available online at <<http://nwrdc.fsu.edu/fnbpcm02>>. Gold Seal Vocational Scholarship requirements are available online at <<http://www.myfloridaeducation.com/brfuture/gsvrequire.htm>>.

Federal and state legislation requires the provision of accommodations for students with disabilities to meet individual needs and ensure equal access. Adult students with disabilities must self-identify and request such services. 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.

The student should demonstrate an understanding of prior grade specific knowledge covered in the national *Standards for Technological Literacy\** (STL) and the Florida *Sunshine State Standards*. Benchmarks followed by a reference code indicate alignment with one or both of these documents.

\* *Standards for Technological Literacy: Content for the Study of Technology.* Copyright 2000 by the International Technology Education Association. Reston, VA.

- IV. **INTENDED OUTCOMES:** After successfully completing this program, the student will be able to:

**TECHNOLOGICAL LITERACY STANDARDS**

- 01.0 Demonstrate an understanding of the characteristics and scope of technology.
- 02.0 Demonstrate an understanding of the core concepts of technology.
- 03.0 Demonstrate an understanding of the relationships among technologies and the connections between technology and other fields of study.

- 04.0 Demonstrate an understanding of the cultural, social, economic, and political effects of technology.
- 05.0 Demonstrate an understanding of the influence of technology on history.
- 06.0 Demonstrate an understanding of the attributes of design.
- 07.0 Demonstrate an understanding of the role of troubleshooting, research and development, invention and innovation, and experimentation in problem solving.
- 08.0 Demonstrate abilities to apply the design process.
- 09.0 Demonstrate the abilities to use and maintain technological products and systems.
- 10.0 Demonstrate the abilities to assess the impact of products and systems.
- 11.0 Demonstrate an understanding of and be able to select and use information and communication technologies.

**TECHNICAL CONTENT STANDARDS**

- 12.0 Demonstrate safe and appropriate use of tools, machines and materials in communications technology.
- 13.0 Demonstrate technical knowledge and skills in the area of design.
- 14.0 Demonstrate technical knowledge and skills in the area of image generation.
- 15.0 Demonstrate technical knowledge and understanding of the use of photonics in communication.
- 16.0 Demonstrate technical knowledge and understanding about major printing processes.
- 17.0 Demonstrate technical knowledge and skills in the development of advertising specialties.
- 18.0 Demonstrate technical knowledge and skills in finishing, binding, and packaging.
- 19.0 Demonstrate technical knowledge and skills in digital and electronic communication.
- 20.0 Demonstrate and present a research and design project.
- 21.0 Demonstrate an understanding of career opportunities and requirements in the field of communications technology.

Florida Department of Education  
STUDENT PERFORMANCE STANDARDS

**Course Number:** 8601010  
**Course Title:** Communications Technology I  
**Course Credit:** 1

**COURSE DESCRIPTION:** This course provides students with an introduction to the knowledge, human relations and technical skills of communications technology.

01.0 DEMONSTRATE AN UNDERSTANDING OF THE CHARACTERISTICS AND SCOPE OF TECHNOLOGY--The student will be able to:

- 01.01 Discuss the nature and development of technological knowledge and processes. STL.1.J, LA.B.2.4, LA.C.3.4, SC.H.3.4
- 01.02 Explain the rapid increase in the rate of technological development and diffusion. STL.1.K, LA.B.2.4, LA.D.2.4, MA.B.1.4
- 01.03 Conduct specific, goal-directed research related to inventions and innovations. STL.1.L, LA.A.1.4, LA.A.2.4, LA.B.2.4

02.0 DEMONSTRATE AN UNDERSTANDING OF THE CORE CONCEPTS OF TECHNOLOGY--The student will be able to:

- 02.01 Identify systems thinking logic and creativity with appropriate compromises in complex real-life problems. STL.2.W
- 02.02 Define technological systems, which are the building blocks of technology, are embedded within larger technological, social, and environmental systems. STL.2.X, LA.D.2.4
- 02.03 Identify the stability of a technological system and its influence by all of the components in the system, especially those in the feedback loop. STL.2.Y
- 02.04 Identify resources involves trade-offs between competing values, such as availability, cost, desirability, and waste. STL.2.Z, SS.D.1.4
- 02.05 Identify the criteria and constraints of a product or system and determine how they affect the final design and development. STL.2.AA, MA.A.5.4, MA.B.1.4, MA.B.3.4, MA.B.4.4, MA.E.3.4, SC.H.1.4
- 02.06 Define a management system as the process of planning, organizing, and controlling work. STL.2.EE

03.0 DEMONSTRATE AN UNDERSTANDING OF THE RELATIONSHIPS AMONG TECHNOLOGIES AND THE CONNECTIONS BETWEEN TECHNOLOGY AND OTHER FIELDS OF STUDY--The student will be able to:

- 03.01 Identify technology transfer occurring when a new user applies an existing innovation developed for one purpose in a different function. STL.3.G, SC.H.3.4
- 03.02 Identify technological innovation resulting when ideas, knowledge, or skills are shared within a technology, among technologies, or across other fields. STL.3.H, SC.H.3.4
- 03.03 Outline the process of patenting to protect a technological idea. STL.3.I
- 03.04 Identify technological progresses that promote the advancement of science and mathematics. STL.3.J, LA.A.1.4, LA.B.1.4, SC.H.3.4

- 04.0 DEMONSTRATE AN UNDERSTANDING OF THE CULTURAL, SOCIAL, ECONOMIC, AND POLITICAL EFFECTS OF TECHNOLOGY--The student will be able to:
- 04.01 Identify changes caused by the use of technology ranging from gradual to rapid and from subtle to obvious. STL.4.H
  - 04.02 Classify the use of technology involving weighing the trade-offs between the positive and negative effects. STL.4.I, LA.B.2.4
- 05.0 DEMONSTRATE AN UNDERSTANDING OF THE INFLUENCE OF TECHNOLOGY ON HISTORY  
--The student will be able to:
- 05.01 Describe how most technological development has been evolutionary, the result of a series of refinements to a basic invention. STL.7.G, LA.B.1.4, SS.A.1.4
  - 05.02 Research how the evolution of civilization has been directly affected by, and has in turn affected the development and use of tools and materials. STL.7.H, LA.A.1.4, LA.A.2.4, LA.B.2.4, SC.H.3.4, SS.A.2.4
  - 05.03 Define the history of technology as a powerful force in reshaping the social, cultural, political, and economic landscape. STL.7.I, LA.D.2.4, SS.A.2.4
  - 05.04 Define the Industrial Revolution and the development of continuous manufacturing, sophisticated transportation and communication systems, advanced construction practices, and improved education and leisure time. STL.7.N, SS.A.5.4
  - 05.05 Define the Information Age and its placement of emphasis on the processing and exchange of information. STL.7.O, SS.A.5.4
- 06.0 DEMONSTRATE AN UNDERSTANDING OF THE ATTRIBUTES OF DESIGN--The student will be able to:
- 06.01 Recognize the design process; including defining a problem, brainstorming, researching and generating ideas, identifying criteria and specifying constraints, exploring possibilities, selecting an approach, developing a design proposal, making a model or prototype, testing and evaluating the design using specifications, refining the design, creating or making it, and communicating processes and results. STL.8.H
  - 06.02 Restate design problems that are seldom presented in a clearly defined form. STL.8.I, LA.D.1.4, LA.D.2.4
  - 06.03 Check and critique a design continually, and improve and revise the idea of the design as needed. STL.8.J, SC.H.1.4
  - 06.04 List competing requirements of a design, such as criteria, constraints, and efficiency. STL.8.K, MA.A.3.4, MA.B.1.4, MA.B.3.4, MA.B.4.4, MA.D.1.4, MA.D.2.4, MA.E.1.4
- 07.0 DEMONSTRATE AN UNDERSTANDING OF THE ROLE OF TROUBLESHOOTING, RESEARCH AND DEVELOPMENT, INVENTION AND INNOVATION, AND EXPERIMENTATION IN PROBLEM SOLVING--The student will be able to:
- 07.01 Define research and development as a specific problem-solving approach that is used intensively in business and industry to prepare devices and systems for the marketplace. STL.10.I
  - 07.02 Identify research needed to solve technological problems. STL.10.J, LA.A.1.4, LA.A.2.4

- 07.03 Differentiate between technological and non-technological problems, and identify which problems can be solved using technology. STL.10.K, SC.H.1.4
- 07.04 Utilize a multidisciplinary approach to solving technological problems. STL.10.L, MA.A.1.4, MA.A.3.4, MA.B.1.4, MA.B.3.4, MA.B.4.4, MA.E.1.4, MA.E.3.4, SC.H.1.4, SC.H.3.4
- 08.0 DEMONSTRATE ABILITIES TO APPLY THE DESIGN PROCESS--The student will be able to:
  - 08.01 Identify the design problem to solve and decide whether or not to address it. STL.11.M, SC.H.1.4
  - 08.02 Identify criteria and constraints and determine how these will affect the design process. STL.11.N, MA.A.3.4, MA.B.1.4, MA.B.3.4, MA.B.4.4, MA.D.1.4, MA.D.2.4, MA.E.1.4, SC.H.1.4, SC.H.3.4
  - 08.03 Refine a design by using prototypes and modeling to ensure quality, efficiency, and productivity of the final product. STL.11.O, SC.H.3.4
  - 08.04 Evaluate the design solution using conceptual, physical, and mathematical models at various intervals of the design process in order to check for proper design and to note areas where improvements are needed. STL.11.P, MA.A.4.4, MA.B.1.4, MA.B.3.4, MA.B.4.4, SC.H.1.4, SC.H.3.4
  - 08.05 Develop and produce a product or system using a design process. STL.11.Q
  - 08.06 Evaluate final solutions and communicate observation, processes, and results of the entire design process, using verbal, graphic, quantitative, virtual, and written means, in addition to three-dimensional models. STL.11.R, LA.B.2.4, LA.C.3.4, MA.B.4.4, MA.D.2.4, MA.E.1.4, MA.E.2.4, MA.E.3.4, SC.H.1.4, SC.H.3.4
- 09.0 DEMONSTRATE THE ABILITIES TO USE AND MAINTAIN TECHNOLOGICAL PRODUCTS AND SYSTEMS--The student will be able to:
  - 09.01 Document processes and procedures and communicate them to different audiences using appropriate oral and written techniques. STL.12.L, LA.B.1.4, LA.B.2.4, LA.C.3.4
  - 09.02 Diagnose a system that is malfunctioning and use tools, materials, machines, and knowledge to repair it. STL.12.M
  - 09.03 Troubleshoot, analyze, and maintain systems to ensure safe and proper function and precision. STL.12.N
  - 09.04 Operate systems so that they function in the way they were designed. STL.12.O
  - 09.05 Use computers and calculators to access, retrieve, organize, process, maintain, interpret, and evaluate data and information in order to communicate. STL.12.P, LA.A.2.4, MA.E.1.4
- 10.0 DEMONSTRATE THE ABILITIES TO ASSESS THE IMPACT OF PRODUCTS AND SYSTEMS--The student will be able to:
  - 10.01 Collect information and evaluate its quality. STL.13.J, LA.A.2.4, SC.H.1.4
  - 10.02 Evaluate data, analyze trends, and draw conclusions regarding the effect of technology on the individual, society, and environment. STL.13.K, LA.A.2.4, SC.G.1.4, SC.G.2.4, SC.H.1.4

- 10.03 Use assessment techniques, such as trend analysis and experimentation to make decisions about the future development of technology. STL.13.L, LA.A.2.4, MA.E.1.4, MA.E.2.4, MA.E.3.4
- 10.04 Identify forecasting techniques to evaluate the results of altering natural systems. STL.13.M, MA.E.3.4, SC.G.2.4
- 11.0 DEMONSTRATE AN UNDERSTANDING OF AND BE ABLE TO SELECT AND USE INFORMATION AND COMMUNICATION TECHNOLOGIES--The student will be able to:
  - 11.01 Discuss information and communication technologies including the inputs, processes, and outputs associated with sending and receiving information. STL.17.L
  - 11.02 Classify information and communication systems that allow information to be transferred from human to human, human to machine, machine to human, and machine to machine. STL.17.M
  - 11.03 Use information and communication systems to inform, persuade, entertain, control, manage, and educate. STL.17.N
  - 11.04 Identify components of a communication system, including source, encoder, transmitter, receiver, decoder, storage, retrieval, and destination. STL.17.O
  - 11.05 Identify many ways to communicate information, such as graphic and electronic means. STL.17.P
  - 11.06 Communicate technological knowledge and processes using symbols, measurement, conventions, icons, graphic images, and languages that incorporate a variety of visual, auditory, and tactile stimuli. STL.17.Q
- 12.0 DEMONSTRATE SAFE AND APPROPRIATE USE OF TOOLS, MACHINES, AND MATERIALS IN COMMUNICATIONS TECHNOLOGY--The student will be able to:
  - 12.01 Select appropriate tools, procedures, and/or equipment.
  - 12.02 Demonstrate the safe usage of appropriate tools, procedures, and operation of equipment.
  - 12.03 Follow laboratory safety rules and procedures.
  - 12.04 Demonstrate good housekeeping at workstation within total laboratory.
  - 12.05 Identify color-coding safety standards.
  - 12.06 Explain fire prevention and safety precautions and practices for extinguishing fires.
  - 12.07 Identify harmful effects/potential dangers of familiar hazardous substances/devices to people and the environment.
- 13.0 DEMONSTRATE TECHNICAL KNOWLEDGE AND SKILLS IN THE AREA OF DESIGN--The student will be able to:
  - 13.01 Understand elements and principles of design.
  - 13.02 Understand basic types of layouts. LA.C.2.4, LA.D.2.4
  - 13.03 Understand copy preparation and proofreading. LA.B.1.4
  - 13.04 Develop specifications for a particular job.
- 14.0 DEMONSTRATE TECHNICAL KNOWLEDGE AND SKILLS IN THE AREA OF IMAGE GENERATION--The student will be able to:
  - 14.01 Understand the differences between manual paste-up and electronic page layout.
  - 14.02 Identify distinct elements in a layout. LA.C.2.4, LA.D.2.4

- 14.03 Demonstrate the creation of a layout using paste-up techniques.
  - 14.04 Demonstrate knowledge and operation of desktop publishing software.
  - 14.05 Demonstrate working knowledge of clip art/stock images.
  - 14.06 Understand legalities of using preexisting images (copyright/trademark). LA.D.2.4
  - 14.07 Generate images utilizing a variety of digital technologies.
  - 14.08 Understand and use appropriate file formats.
  - 14.09 Identify different types of optical reproduction systems. SC.F.1.4
  - 14.10 Apply the procedures for set up, exposing, film processing, correcting problems, and clean-up. SA.A.1.4
  - 14.11 Produce a negative, print, hologram or video. VA.A.1.4
- 15.0 DEMONSTRATE AN UNDERSTANDING OF THE USE OF PHOTONICS IN COMMUNICATION--  
The student will be able to:
- 15.01 Define terminology associated with photonics.
  - 15.02 Demonstrate safe use of lasers and related equipment.
  - 15.03 Describe the principals of holography and associated wave theory used to produce holographic images.
  - 15.04 Demonstrate understanding of the principals of optics and how they relate to communications technology.
  - 15.05 Describe basic theories of wavelength, light and optics used in a variety of industries using lasers, including: manufacturing, engineering, telecommunications, entertainment, medicine, construction, and art.
- 16.0 EXPRESS TECHNICAL KNOWLEDGE AND UNDERSTANDING OF MAJOR PRINTING PROCESSES--The student will be able to:
- 16.01 Explain and demonstrate pre-press operations.
  - 16.02 Demonstrate an understanding of the process of letterpress printing.
  - 16.03 Demonstrate an understanding of the process of gravure printing.
  - 16.04 Demonstrate an understanding of the process of screen printing.
  - 16.05 Demonstrate an understanding of the process of lithographic printing.
  - 16.06 Demonstrate an understanding of the process of digital printing.
  - 16.07 Demonstrate an understanding of the process of projection printing.
  - 16.08 Demonstrate an understanding of the lithographic offset press process.
  - 16.09 Explain the difference between printing and duplicating processes. LA.B.2.4
  - 16.10 Design and layout copy for single-color printing project. VA.1.1.2, VA.1.1.3, VA.1.1.4, VA.2.1.2, VA.2.1.2, VA.2.1.4, VA.4.1.3, LA.1.1.1, LA.1.1.3, LA.2.2.1
  - 16.11 Produce a printing project.
- 17.0 DEMONSTRATE TECHNICAL KNOWLEDGE AND SKILLS IN THE DEVELOPMENT OF ADVERTISING SPECIALTIES--The student will be able to:
- 17.01 Explain modern trends in sign making and imprinted advertising specialties. SS.A.1.4
  - 17.02 Explain the various technologies associated with these industries.

19.0 DEMONSTRATE TECHNICAL KNOWLEDGE AND SKILLS IN DIGITAL AND ELECTRONIC COMMUNICATION--The student will be able to:

- 19.01 Demonstrate effective use of the internet to locate and evaluate information. LA.A.2.4
- 19.02 Distribute information electronically. LA.D.2.4
- 19.03 Identify effective design methods for presenting information digitally. LA.C.2.4, LA.D.2.4
- 19.04 Explain the history of electronic media and its role in the mass media and society. SS.A.1.4, SS.B.2.4
- 19.05 Demonstrate key roles in each stage of the production process.
- 19.06 Organize a set for an electronic media production.
- 19.07 Demonstrate ability to select appropriate media topics, equipment, and materials for an electronic media production.
- 19.08 Identify and write different types of script copy.
- 19.09 Produce an electronic media project. LA.B.1.4, LA.B.2.4

Florida Department of Education  
STUDENT PERFORMANCE STANDARDS

**Course Number:** 8601020  
**Course Title:** Communications Technology II  
**Course Credit:** 1

**COURSE DESCRIPTION:** This course provides students with an intermediate understanding of the knowledge, human relations, and technical skills of communications technology.

- 01.0 DEMONSTRATE AN UNDERSTANDING OF THE CHARACTERISTICS AND SCOPE OF TECHNOLOGY--The student will be able to:
- 01.01 Illustrate the nature and development of technological knowledge and processes. STL.1.J, LA.B.2.4, LA.C.3.4, SC.H.3.4
  - 01.02 Graph the rapid increase in the rate of technological development and diffusion. STL.1.K, LA.B.2.4, LA.D.2.4, MA.B.1.4
  - 01.03 Conduct specific, goal-directed research related to inventions and innovations. STL.1.L, LA.A.1.4, LA.A.2.4, LA.B.2.4
  - 01.04 Evaluate current technological developments that are driven by profit motives and the market. STL.1.M, SS.D.1.4
- 02.0 DEMONSTRATE AN UNDERSTANDING OF THE CORE CONCEPTS OF TECHNOLOGY--The student will be able to:
- 02.01 Apply systems thinking logic and creativity with appropriate compromises in complex real-life problems. STL.2.W
  - 02.02 Discuss technological systems, which are the building blocks of technology, are embedded within larger technological, social, and environmental systems. STL.2.X, LA.D.2.4
  - 02.03 Assess the stability of a technological system and its influence by all of the components in the system, especially those in the feedback loop. STL.2.Y
  - 02.04 Select resources involving trade-offs between competing values, such as availability, cost, desirability, and waste. STL.2.Z, SS.D.1.4
  - 02.05 Identify the criteria and constraints of a product or system and determine how they affect the final design and development. STL.2.AA, MA.A.5.4, MA.B.1.4, MA.B.3.4, MA.B.4.4, MA.E.3.4, SC.H.1.4
  - 02.06 Implement strategies for optimizing a technological process or methodology of designing or making a product, dependent on criteria and constraints. STL.2.CC
  - 02.07 Organize a management system as the process of planning, organizing, and controlling work. STL.2.EE
- 03.0 DEMONSTRATE AN UNDERSTANDING OF THE RELATIONSHIPS AMONG TECHNOLOGIES AND THE CONNECTIONS BETWEEN TECHNOLOGY AND OTHER FIELDS OF STUDY--The student will be able to:
- 03.01 Discuss technology transfer occurring when a new user applies an existing innovation developed for one purpose in a different function. STL.3.G, SC.H.3.4

- 03.02 Explain technological innovation resulting when ideas, knowledge, or skills are shared within a technology, among technologies, or across other fields. STL.3.H, SC.H.3.4
  - 03.03 Report the process of patenting to protect a technological idea. STL.3.I
  - 03.04 Discuss technological progresses that promote the advancement of science and mathematics. STL.3.J, LA.A.1.4, LA.B.1.4, SC.H.3.4
- 04.0 DEMONSTRATE AN UNDERSTANDING OF THE CULTURAL, SOCIAL, ECONOMIC, AND POLITICAL EFFECTS OF TECHNOLOGY--The student will be able to:
- 04.01 Identify changes caused by the use of technology ranging from gradual to rapid and from subtle to obvious. STL.4.H
  - 04.02 Classify the use of technology involving weighing the trade-offs between the positive and negative effects. STL.4.I, LA.B.2.4
  - 04.03 List the cultural, social, economic, and political changes caused by the transfer of technology from one society to another. STL.4.K, LA.B.2.4, LA.E.1.4, SC.H.3.4
- 05.0 DEMONSTRATE AN UNDERSTANDING OF THE INFLUENCE OF TECHNOLOGY ON HISTORY--The student will be able to:
- 05.01 Describe how most technological development has been evolutionary, the result of a series of refinements to a basic invention. STL.7.G, LA.B.1.4, SS.A.1.4
  - 05.02 Discuss how the evolution of civilization has been directly affected by, and has in turn affected, the development and use of tools and materials. STL.7.H, LA.A.1.4, LA.A.2.4, LA.B.2.4, SC.H.3.4, SS.A.2.4
  - 05.03 Research the history of technology as a powerful force in reshaping the social, cultural, political, and economic landscape. STL.7.I, LA.D.2.4, SS.A.2.4
  - 05.04 Debate that early in the history of technology, the development of many tools and machines was not based on scientific knowledge, but on technological know-how. STL.7.J, SS.A.1.4
  - 05.05 Discuss the Industrial Revolution and the development of continuous manufacturing, sophisticated transportation and communication systems, advanced construction practices, and improved education and leisure time. STL.7.N, SS.A.5.4
  - 05.06 Discuss the Information Age and its placement of emphasis on the processing and exchange of information. STL.7.O, SS.A.5.4
- 06.0 DEMONSTRATE AN UNDERSTANDING OF THE ATTRIBUTES OF DESIGN--The student will be able to:
- 06.01 Describe the design process; including defining a problem, brainstorming, researching and generating ideas, identifying criteria and specifying constraints, exploring possibilities, selecting an approach, developing a design proposal, making a model or prototype, testing and evaluating the design using specifications, refining the design, creating or making it, and communicating processes and results. STL.8.H
  - 06.02 Translate design problems that are seldom presented in a clearly defined form. STL.8.I, LA.D.1.4, LA.D.2.4
  - 06.03 Evaluate a design continually, and improve and revise the idea of the design as needed. STL.8.J, SC.H.1.4

- 06.04 Analyze competing requirements of a design, such as criteria, constraints, and efficiency. STL.8.K, MA.A.3.4, MA.B.1.4, MA.B.3.4, MA.B.4.4, MA.D.1.4, MA.D.2.4, MA.E.1.4
- 07.0 DEMONSTRATE AN UNDERSTANDING OF THE ROLE OF TROUBLESHOOTING, RESEARCH AND DEVELOPMENT, INVENTION AND INNOVATION, AND EXPERIMENTATION IN PROBLEM SOLVING--The student will be able to:
- 07.01 Employ research and development as a specific problem solving approach that is used intensively in business and industry to prepare devices and systems for the marketplace. STL.10.I
- 07.02 Conduct research needed to solve technological problems. STL.10.J, LA.A.1.4, LA.A.2.4
- 07.03 Differentiate between technological and non-technological problems, and identify which problems can be solved using technology. STL.10.K, SC.H.1.4
- 07.04 Utilize a multidisciplinary approach to solving technological problems. STL.10.L, MA.A.1.4, MA.A.3.4, MA.B.1.4, MA.B.3.4, MA.B.4.4, MA.E.1.4, MA.E.3.4, SC.H.1.4, SC.H.3.4
- 08.0 DEMONSTRATE ABILITIES TO APPLY THE DESIGN PROCESS--The student will be able to:
- 08.01 Interpret the design problem to solve and decide whether or not to address it. STL.11.M, SC.H.1.4
- 08.02 Evaluate criteria and constraints and determine how these will affect the design process. STL.11.N, MA.A.3.4, MA.B.1.4, MA.B.3.4, MA.B.4.4, MA.D.1.4, MA.D.2.4, MA.E.1.4, SC.H.1.4, SC.H.3.4
- 08.03 Refine a design by using prototypes and modeling to ensure quality, efficiency, and productivity of the final product. STL.11.O, SC.H.3.4
- 08.04 Evaluate the design solution using conceptual, physical, and mathematical models at various intervals of the design process in order to check for proper design and to note areas where improvements are needed. STL.11.P, MA.A.4.4, MA.B.1.4, MA.B.3.4, MA.B.4.4, SC.H.1.4, SC.H.3.4
- 08.05 Develop and produce a product or system using a design process. STL.11.Q
- 08.06 Evaluate final solutions and communicate observation, processes, and results of the entire design process, using verbal, graphic, quantitative, virtual, and written means, in addition to three-dimensional models. STL.11.R, LA.B.2.4, LA.C.3.4, MA.B.4.4, MA.D.2.4, MA.E.1.4, MA.E.2.4, MA.E.3.4, SC.H.1.4, SC.H.3.4
- 09.0 DEMONSTRATE THE ABILITIES TO USE AND MAINTAIN TECHNOLOGICAL PRODUCTS AND SYSTEMS--The student will be able to:
- 09.01 Document processes and procedures and communicate them to different audiences using appropriate oral and written techniques. STL.12.L, LA.B.1.4, LA.B.2.4, LA.C.3.4
- 09.02 Diagnose a system that is malfunctioning and use tools, materials, machines, and knowledge to repair it. STL.12.M
- 09.03 Troubleshoot, analyze, and maintain systems to ensure safe and proper function and precision. STL.12.N
- 09.04 Operate systems so that they function in the way they were designed. STL.12.O

- 09.05 Use computers and calculators to access, retrieve, organize, process, maintain, interpret, and evaluate data and information in order to communicate. STL.12.P, LA.A.2.4, MA.E.1.4
- 10.0 DEMONSTRATE THE ABILITIES TO ASSESS THE IMPACT OF PRODUCTS AND SYSTEMS.  
--The student will be able to:
- 10.01 Collect information and evaluate its quality. STL.13.J, LA.A.2.4, SC.H.1.4
- 10.02 Synthesize data, analyze trends, and draw conclusions regarding the effect of technology on the individual, society, and environment. STL.13.K, LA.A.2.4, SC.G.1.4, SC.G.2.4, SC.H.1.4
- 10.03 Apply assessment techniques, such as trend analysis and experimentation to make decisions about the future development of technology. STL.13.L, LA.A.2.4, MA.E.1.4, MA.E.2.4, MA.E.3.4
- 10.04 Design forecasting techniques to evaluate the results of altering natural systems. STL.13.M, MA.E.3.4, SC.G.2.4
- 11.0 DEMONSTRATE AN UNDERSTANDING OF AND BE ABLE TO SELECT AND USE INFORMATION AND COMMUNICATION TECHNOLOGIES--The student will be able to:
- 11.01 Discuss information and communication technologies including the inputs, processes, and outputs associated with sending and receiving information. STL.17.L
- 11.02 Classify information and communication systems that allow information to be transferred from human to human, human to machine, machine to human, and machine to machine. STL.17.M
- 11.03 Use information and communication systems to inform, persuade, entertain, control, manage, and educate. STL.17.N
- 11.04 Identify components of a communication system, including source, encoder, transmitter, receiver, decoder, storage, retrieval, and destination. STL.17.O
- 11.05 Identify many ways to communicate information, such as graphic and electronic means. STL.17.P
- 11.06 Communicate technological knowledge and processes using symbols, measurement, conventions, icons, graphic images, and languages that incorporate a variety of visual, auditory, and tactile stimuli. STL.17.Q
- 12.0 DEMONSTRATE SAFE AND APPROPRIATE USE OF TOOLS, MACHINES, AND MATERIALS IN COMMUNICATIONS TECHNOLOGY--The student will be able to:
- 12.01 Select appropriate tools, procedures, and/or equipment needed to produce a product.
- 12.02 Demonstrate the safe usage of appropriate tools, procedures, and operation of equipment needed to manufacture a product.
- 12.03 Follow laboratory safety rules and procedures.
- 12.04 Demonstrate good housekeeping at workstation within total laboratory.
- 12.05 Identify color-coding safety standards.
- 12.06 Explain fire prevention and safety precautions and practices for extinguishing fires.
- 12.07 Identify harmful effects/potential dangers of familiar hazardous substances/devices to people and the environment.

- 13.0 DEMONSTRATE TECHNICAL KNOWLEDGE AND SKILLS IN THE AREA OF DESIGN--The student will be able to:
- 13.01 Demonstrate how to represent type and graphic elements in a rough layout. LA.B.1.4, LA.B.2.4
  - 13.02 Describe the effects of various printing technologies on the design process.
  - 13.03 Describe how a project's purpose, mood and audience affect the design process. LA.B.2.4, LA.D.2.4
  - 13.04 Demonstrate advanced organizational structures in layout and design. LA.B.2.4
- 14.0 DEMONSTRATE TECHNICAL KNOWLEDGE AND SKILLS IN THE AREA OF IMAGE GENERATION--The student will be able to:
- 14.01 Access digital images from a variety of sources.
  - 14.02 Create various graphs from statistical information.
  - 14.03 Create a technical drawing from a photograph.
  - 14.04 Demonstrate digital image generation and modification techniques.
- 15.0 DEMONSTRATE AN UNDERSTANDING OF THE USE OF PHOTONICS IN COMMUNICATION--The student will be able to:
- 15.01 Define terminology associated with photonics.
  - 15.02 Demonstrate safe use of lasers and related equipment.
  - 15.03 Describe the principals of holography and associated wave theory used to produce holographic images.
  - 15.04 Demonstrate understanding of the principals of optics and how they relate to communications technology.
  - 15.05 Apply basic theories of wavelength, light and optics to a variety of industries using lasers, including: manufacturing, engineering, telecommunications, entertainment, medicine, construction, and art.
- 16.0 DEMONSTRATE TECHNICAL KNOWLEDGE AND UNDERSTANDING USING MAJOR PRINTING PROCESSES--The student will be able to:
- 16.01 Explain major technological advances in the printing industry. SS.A.1.4
  - 16.02 Use proper technical skills in the layout, preparation, production, and finishing of a printed project. MA.2.2.1, MA.A.3.1, HE.2.1.1, VA 2.1.2, VA 2.1.4, VA 4.1.3
  - 16.03 Analyze and choose appropriate materials for complex printing applications.
- 18.0 DEMONSTRATE TECHNICAL KNOWLEDGE AND SKILLS IN FINISHING, BINDING AND PACKAGING--The student will be able to:
- 18.01 Describe standard binding, finishing and packaging processes. LA 1.1.1, VA 1.1.3, MA 2.2.1
  - 18.02 Demonstrate the proper and safe use of binding, finishing, and packaging equipment. LA 1.1.1, VA 1.1.3, MA 2.2.1
  - 18.03 Describe the processes of scoring, folding, gathering, and collating. LA 1.1.1, VA 1.1.3, MA 2.2.1
  - 18.04 Finish and bind a printed product using the proper technical skills. LA 1.1.1, VA 1.1.3, MA 2.2.1
  - 18.05 Demonstrate proper packaging for a printed project.

19.0 DEMONSTRATE TECHNICAL KNOWLEDGE AND SKILLS IN DIGITAL AND ELECTRONIC COMMUNICATION--The student will be able to:

- 19.01 Demonstrate knowledge of terms and principles associated with web page design.
- 19.02 Process graphic images in formats appropriate for a web page.
- 19.03 Create and use background patterns.
- 19.04 Create and format text.
- 19.05 Use web design and layout software to produce web pages to a specified design.
- 19.06 Create and use hypertext links.
- 19.07 Use a File Transfer Protocol program or other method to upload web pages to a server.
- 19.08 Demonstrate ability to write script to broadcast style.
- 19.09 Write, produce, and direct a variety of electronic media projects. LA.D.2.4
- 19.10 Perform video recording and editing operations.

Florida Department of Education  
STUDENT PERFORMANCE STANDARDS

**Course Number:** 8601030  
**Course Title:** Communications Technology III  
**Course Credit:** 1

**COURSE DESCRIPTION:** This course provides students with an advanced knowledge of the human relations and technical skills of printing, graphic, digital, and electronic communications technology.

- 01.0 DEMONSTRATE AN UNDERSTANDING OF THE CHARACTERISTICS AND SCOPE OF TECHNOLOGY--The student will be able to:
- 01.01 Illustrate the nature and development of technological knowledge and processes. STL.1.J, LA.B.2.4, LA.C.3.4, SC.H.3.4
  - 01.02 Graph the rapid increase in the rate of technological development and diffusion. STL.1.K, LA.B.2.4, LA.D.2.4, MA.B.1.4
  - 01.03 Conduct specific, goal-directed research related to inventions and innovations. STL.1.L, LA.A.1.4, LA.A.2.4, LA.B.2.4
- 02.0 DEMONSTRATE AN UNDERSTANDING OF THE CORE CONCEPTS OF TECHNOLOGY--The student will be able to:
- 02.01 Apply systems thinking logic and creativity with appropriate compromises in complex real-life problems. STL.2.W
  - 02.02 Assess technological systems, which are the building blocks of technology, are embedded within larger technological, social, and environmental systems. STL.2.X, LA.D.2.4
  - 02.03 Assess the stability of a technological system and its influence by all of the components in the system, especially those in the feedback loop. STL.2.Y
  - 02.04 Compare resources involves trade-offs between competing values, such as availability, cost, desirability, and waste. STL.2.Z, SS.D.1.4
  - 02.05 Identify the criteria and constraints of a product or system and determine how they affect the final design and development. STL.2.AA, MA.A.5.4, MA.B.1.4, MA.B.3.4, MA.B.4.4, MA.E.3.4, SC.H.1.4
  - 02.06 Propose strategies for optimizing a technological process or methodology of designing or making a product, dependent on criteria and constraints. STL.2.BB
  - 02.07 Develop a management system as the process of planning, organizing, and controlling work. STL.2.EE
  - 02.08 Outline complex systems that have many layers of controls and feedback loops to provide information. STL.2.FF
- 03.0 DEMONSTRATE AN UNDERSTANDING OF THE RELATIONSHIPS AMONG TECHNOLOGIES AND THE CONNECTIONS BETWEEN TECHNOLOGY AND OTHER FIELDS OF STUDY--The student will be able to:
- 03.01 Create technology transfer occurring when a new user applies an existing innovation developed for one purpose in a different function. STL.3.G, SC.H.3.4

- 03.02 Examine technological innovation resulting when ideas, knowledge, or skills are shared within a technology, among technologies, or across other fields. STL.3.H, SC.H.3.4
  - 03.03 Report the process of patenting to protect a technological idea. STL.3.I
  - 03.04 Investigate technological progresses that promote the advancement of science and mathematics. STL.3.J, LA.A.1.4, LA.B.1.4, SC.H.3.4
- 04.0 DEMONSTRATE AN UNDERSTANDING OF THE CULTURAL, SOCIAL, ECONOMIC, AND POLITICAL EFFECTS OF TECHNOLOGY--The student will be able to:
- 04.01 Evaluate the use of technology involving weighing the trade-offs between the positive and negative effects. STL.4.I, LA.B.2.4
  - 04.02 Discuss ethical considerations important in the development, selection, and use of technologies. STL.4.J, SC.H.1.4, SS.C.2.4
  - 04.03 Debate the cultural, social, economic, and political changes caused by the transfer of technology from one society to another. STL.4.K, LA.B.2.4, LA.E.1.4, SC.H.3.4
- 05.0 DEMONSTRATE AN UNDERSTANDING OF THE INFLUENCE OF TECHNOLOGY ON HISTORY --The student will be able to:
- 05.01 Assess how most technological development has been evolutionary, the result of a series of refinements to a basic invention. STL.7.G, LA.B.1.4, SS.A.1.4
  - 05.02 Evaluate how the evolution of civilization has been directly affected by, and has in turn affected, the development and use of tools and materials. STL.7.H, LA.A.1.4, LA.A.2.4, LA.B.2.4, SC.H.3.4, SS.A.2.4
  - 05.03 Discuss the Information Age and its placement of emphasis on the processing and exchange of information. STL.7.O, SS.A.5.4
- 06.0 DEMONSTRATE AN UNDERSTANDING OF THE ATTRIBUTES OF DESIGN--The student will be able to:
- 06.01 Implement the design process; including defining a problem, brainstorming, researching and generating ideas, identifying criteria and specifying constraints, exploring possibilities, selecting an approach, developing a design proposal, making a model or prototype, testing and evaluating the design using specifications, refining the design, creating or making it, and communicating processes and results. STL.8.H
  - 06.02 Translate design problems that are seldom presented in a clearly defined form. STL.8.I, LA.D.1.4, LA.D.2.4
  - 06.03 Evaluate a design continually, and improve and revise the idea of the design as needed. STL.8.J, SC.H.1.4
  - 06.04 Analyze competing requirements of a design, such as criteria, constraints, and efficiency. STL.8.K, MA.A.3.4, MA.B.1.4, MA.B.3.4, MA.B.4.4, MA.D.1.4, MA.D.2.4, MA.E.1.4
- 07.0 DEMONSTRATE AN UNDERSTANDING OF THE ROLE OF TROUBLESHOOTING, RESEARCH AND DEVELOPMENT, INVENTION AND INNOVATION, AND EXPERIMENTATION IN PROBLEM SOLVING--The student will be able to:

- 07.01 Employ research and development as a specific problem solving approach that is used intensively in business and industry to prepare devices and systems for the marketplace. STL.10.I
  - 07.02 Conduct research needed to solve technological problems. STL.10.J, LA.A.1.4, LA.A.2.4
  - 07.03 Differentiate between technological and non-technological problems, and identify which problems can be solved using technology. STL.10.K, SC.H.1.4
  - 07.04 Utilize a multidisciplinary approach to solving technological problems. STL.10.L, MA.A.1.4, MA.A.3.4, MA.B.1.4, MA.B.3.4, MA.B.4.4, MA.E.1.4, MA.E.3.4, SC.H.1.4, SC.H.3.4
- 08.0 DEMONSTRATE ABILITIES TO APPLY THE DESIGN PROCESS--The student will be able to:
- 08.01 Interpret the design problem to solve and decide whether or not to address it. STL.11.M, SC.H.1.4
  - 08.02 Evaluate criteria and constraints and determine how these will affect the design process. STL.11.N, MA.A.3.4, MA.B.1.4, MA.B.3.4, MA.B.4.4, MA.D.1.4, MA.D.2.4, MA.E.1.4, SC.H.1.4, SC.H.3.4
  - 08.03 Refine a design by using prototypes and modeling to ensure quality, efficiency, and productivity of the final product. STL.11.O, SC.H.3.4
  - 08.04 Evaluate the design solution using conceptual, physical, and mathematical models at various intervals of the design process in order to check for proper design and to note areas where improvements are needed. STL.11.P, MA.A.4.4, MA.B.1.4, MA.B.3.4, MA.B.4.4, SC.H.1.4, SC.H.3.4
  - 08.05 Develop and produce a product or system using a design process. STL.11.Q
  - 08.06 Evaluate final solutions and communicate observation, processes, and results of the entire design process, using verbal, graphic, quantitative, virtual, and written means, in addition to three-dimensional models. STL.11.R, LA.B.2.4, LA.C.3.4, MA.B.4.4, MA.D.2.4, MA.E.1.4, MA.E.2.4, MA.E.3.4, SC.H.1.4, SC.H.3.4
- 09.0 DEMONSTRATE THE ABILITIES TO USE AND MAINTAIN TECHNOLOGICAL PRODUCTS AND SYSTEMS--The student will be able to:
- 09.01 Document processes and procedures and communicate them to different audiences using appropriate oral and written techniques. STL.12.L, LA.B.1.4, LA.B.2.4, LA.C.3.4
  - 09.02 Diagnose a system that is malfunctioning and use tools, materials, machines, and knowledge to repair it. STL.12.M
  - 09.03 Troubleshoot, analyze, and maintain systems to ensure safe and proper function and precision. STL.12.N
  - 09.04 Operate systems so that they function in the way they were designed. STL.12.O
  - 09.05 Use computers and calculators to access, retrieve, organize, process, maintain, interpret, and evaluate data and information in order to communicate. STL.12.P, LA.A.2.4, MA.E.1.4
- 10.0 DEMONSTRATE THE ABILITIES TO ASSESS THE IMPACT OF PRODUCTS AND SYSTEMS--The student will be able to:

- 10.01 Collect information and evaluate its quality. STL.13.J, LA.A.2.4, SC.H.1.4
  - 10.02 Synthesize data, analyze trends, and draw conclusions regarding the effect of technology on the individual, society, and environment. STL.13.K, LA.A.2.4, SC.G.1.4, SC.G.2.4, SC.H.1.4
  - 10.03 Apply assessment techniques, such as trend analysis and experimentation to make decisions about the future development of technology. STL.13.L, LA.A.2.4, MA.E.1.4, MA.E.2.4, MA.E.3.4
  - 10.04 Design forecasting techniques to evaluate the results of altering natural systems. STL.13.M, MA.E.3.4, SC.G.2.4
- 11.0 DEMONSTRATE AN UNDERSTANDING OF AND BE ABLE TO SELECT AND USE INFORMATION AND COMMUNICATION TECHNOLOGIES--The student will be able to:
- 11.01 Discuss information and communication technologies including the inputs, processes, and outputs associated with sending and receiving information. STL.17.L
  - 11.02 Classify information and communication systems that allow information to be transferred from human to human, human to machine, machine to human, and machine to machine. STL.17.M
  - 11.03 Use information and communication systems to inform, persuade, entertain, control, manage, and educate. STL.17.N
  - 11.04 Identify components of a communication system, including source, encoder, transmitter, receiver, decoder, storage, retrieval, and destination. STL.17.O
  - 11.05 Identify many ways to communicate information, such as graphic and electronic means. STL.17.P
  - 11.06 Communicate technological knowledge and processes using symbols, measurement, conventions, icons, graphic images, and languages that incorporate a variety of visual, auditory, and tactile stimuli. STL.17.Q
- 12.0 DEMONSTRATE SAFE AND APPROPRIATE USE OF TOOLS, MACHINES, AND MATERIALS IN COMMUNICATIONS TECHNOLOGY--The student will be able to:
- 12.01 Select appropriate tools, procedures, and/or equipment needed to produce a product.
  - 12.02 Demonstrate the safe usage of appropriate tools, procedures, and operation of equipment needed to manufacture a product.
  - 12.03 Follow laboratory safety rules and procedures.
  - 12.04 Demonstrate good housekeeping at workstation within total laboratory.
  - 12.05 Identify color-coding safety standards.
  - 12.06 Explain fire prevention and safety precautions and practices for extinguishing fires.
  - 12.07 Identify harmful effects/potential dangers of familiar hazardous substances/devices to people and the environment.
- 13.0 DEMONSTRATE TECHNICAL KNOWLEDGE AND SKILLS IN THE AREA OF DESIGN--The student will be able to:
- 13.01 Describe how a project's purpose, mood and audience affect the design process. LA.B.1.4, LA.B.2.4
  - 13.02 Demonstrate advanced typographic principles and operations.
  - 13.03 Demonstrate advanced organizational structures in layout and design. LA.B.2.4

- 14.0 DEMONSTRATE TECHNICAL KNOWLEDGE AND SKILLS IN THE AREA OF IMAGE GENERATION--The student will be able to:
- 14.01 Troubleshoot and correct problems associated with the production of photographic images. LA.1.1.2, LA.1.2.1, SC.1.1.3, SC 2.1.2, SC.2.1.4, SC.8.3.6, SS.1.1, VA 1.1.1, VA 1.1.2, VA 1.2.3
  - 14.02 Access digital images from a variety of sources.
  - 14.03 Create various graphs from statistical information.
  - 14.04 Create a technical drawing from a photograph.
  - 14.05 Demonstrate advanced digital image generation and modification techniques.
  - 14.06 Choose the correct resolution for a given output device.
  - 14.07 Troubleshoot and correct problems related to 'preflight operations' in a layout.
- 15.0 DEMONSTRATE AN UNDERSTANDING OF THE USE OF PHOTONICS IN COMMUNICATION--The student will be able to:
- 15.01 Define terminology associated with photonics.
  - 15.02 Demonstrate safe use of lasers and related equipment.
  - 15.03 Apply the principals of holography and associated wave theory used to produce holographic images.
  - 15.04 Demonstrate understanding of the principals of optics and how they relate to communications technology.
  - 15.05 Apply basic theories of wavelength, light and optics to a variety of industries using lasers, including: manufacturing, engineering, telecommunications, entertainment, medicine, construction, and art.
- 16.0 EXPRESS TECHNICAL KNOWLEDGE AND UNDERSTANDING USING MAJOR PRINTING PROCESSES--The student will be able to:
- 16.01 Explain major technological advances in the printing industry.
  - 16.02 Use proper technical skills in the layout, preparation, production, and finishing of a printed project. MA.2.2.1, MA.3.1, HE.2.1.1, VA 2.1.2, VA 2.1.4, VA 4.1.3
  - 16.03 Analyze and choose appropriate materials for complex printing applications.
  - 16.04 Demonstrate advanced understanding of a variety of printing processes.
- 19.0 DEMONSTRATE TECHNICAL KNOWLEDGE AND SKILLS IN DIGITAL AND ELECTRONIC COMMUNICATION--The student will be able to:
- 19.01 Plan, organize, design, and produce an internet web site.
  - 19.02 Develop and use strategies for web site management.
  - 19.03 Troubleshoot web site problems.
  - 19.04 Explore and utilize alternative Internet formats.
  - 19.05 Demonstrate basic techniques for shooting video.
  - 19.06 Demonstrate basic video editing techniques.
  - 19.07 Demonstrate basic audio editing techniques.
  - 19.08 Use multi-media software to integrate a variety of text, graphic, video, and animated media elements into a presentation.
- 20.0 DEMONSTRATE AND PRESENT A RESEARCH AND DESIGN PROJECT--The student will be able to:

- 20.01 Identify and research a design problem related to a developing technology. LA.A.1.4, LA.A.2.4, SC.A.1.4, SC.D.2.4, SC.E.2.4, SC.H.1.4, SC.H.3.4
- 20.02 Identify criteria and constraints for a design project. LA.A.1.4, SC.H.3.4
- 20.03 Produce a detailed design and plan for the production of the solution. MA.B.4.4, SC.E.2.4, SC.H.3.4
- 20.04 Complete an advanced communications project. MA.E.3.4, SC.H.1.4, SC.H.3.4
- 20.05 Deliver a professional quality presentation of the design process and solution. LA.A.1.4, LA.A.2.4, LA.C.3.4

21.0 DEMONSTRATE AN UNDERSTANDING OF CAREER OPPORTUNITIES AND REQUIREMENTS IN THE FIELD OF COMMUNICATIONS TECHNOLOGY--The student will be able to:

- 21.01 Discuss individual interests related to a career in communications technology. LA.B.2.4
- 21.02 Explore career opportunities related to a career in communications technology. LA.A.1.4, LA.A.2.4, LA.B.2.4
- 21.03 Explore secondary education opportunities related to communications technology. LA.A.1.4, LA.A.2.4, LA.B.2.4
- 21.04 Conduct a job search. LA.A.1.4, LA.A.2.4
- 21.05 Complete a job application form correctly. LA.B.2.4
- 21.06 Demonstrate competence in job interview techniques. LA.C.1.4, LA.C.3.4, LA.D.1.4
- 21.07 Create a professional resume and letter of introduction. LA.A.1.4, LA.A.2.4, LA.B.1.4, LA.B.2.4
- 21.08 Solicit awards, letters of recommendation and recognition. LA.A.1.4, LA.A.2.4, LA.C.3.4, LA.D.1.4
- 21.09 Organize work samples in a professional, presentable format. LA.B.2.4, LA.C.3.4, LA.D.1.4