

Florida Department of Education
Curriculum Framework

Program Title: Information & Communications Technology (ICT) Essentials
Program Type: Orientation/Exploratory
Career Cluster: Information Technology

Secondary – Middle School

Program Number	9009100
CIP Number	149009100M
Grade Level	6-8
Standard Length	Year
Teacher Certification	Refer to the <u>Program Structure</u> section.
CTSO	FBLA BPA

Purpose

The purpose of this course is to provide students with the computer, digital, and information technology skills necessary for success in their future academic and occupational goals. In addition to fundamental computer information, the content includes but is not limited to digital technologies associated with web development, multimedia, word processing, spreadsheet, database, Internet communications, cybersecurity, and computer programming.

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

Program Structure

This program is a planned sequence of instruction consisting of three course(s).

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

The following table illustrates the course structure:

Course Number	Course Title	Teacher Certification	Length
9009110	Information & Communications Technology (ICT) Essentials 1	BUS ED 1 @2	Year
9009120	Information & Communications Technology (ICT) Essentials 2	COMPU SCI 6	Year
9009130	Information & Communications Technology (ICT) Essentials 3	INFO TECH 7G WEB DEV 7G	Year

Florida Standards for English Language Development (ELD)

English language learners communicate for social and instructional purposes within the school setting. ELD.K12.SI.1.1

English Language Development (ELD) Standards Special Notes:

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

Standards

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

- 01.0 Identify computer components and their functions.
- 02.0 Demonstrate knowledge of different operating systems.
- 03.0 Demonstrate an understanding of Internet safety and ethics.
- 04.0 Demonstrate proficiency using the Internet to locate information.
- 05.0 Demonstrate proficiency in using word processing software.
- 06.0 Demonstrate proficiency in using presentation software.
- 07.0 Demonstrate proficiency in using graphics software.
- 08.0 Demonstrate appropriate use of email.
- 09.0 Demonstrate knowledge of safety and privacy practices for online communication.
- 10.0 Develop and apply fundamental spreadsheet skills.
- 11.0 Develop and apply database skills.
- 12.0 Demonstrate skill in using video editing software and equipment.
- 13.0 Demonstrate proficiency in using audio editing software (e.g., Audacity).
- 14.0 Demonstrate proficiency locating, gathering, and preparing textual, graphical, and image-based web content.
- 15.0 Use Web 2.0 or Internet-based collaborative technology (e.g., Wikis, Wimba, Moodle, Edmodo, Facebook, Schoology, Goggle) to facilitate a web development or research project.
- 16.0 Demonstrate an understanding of computer networks.
- 17.0 Demonstrate proficiency in webpage development.
- 18.0 Demonstrate proficiency in game development.
- 19.0 Demonstrate proficiency in basic programming.

**Florida Department of Education
Student Performance Standards**

Course Title: Information & Communications Technology (ICT) Essentials 1
Course Number: 9009110
Course Length: Year
Grade: 6-8

Course Description:

This course introduces students to core concepts associated with computers and their use. The content includes hands-on opportunities to explore various software applications.

CTE Standards and Benchmarks	
01.0	Identify computer components and their functions. – The student will be able to:
01.01	Describe what defines a computer and ways a computer can be used.
01.02	Identify the internal components of a computer (e.g., case, CPU, RAM, power supply, hard drive, motherboard, expansion cards, cabling).
01.03	Identify and know how to connect various computer input devices (e.g., mouse, keyboard, phone, camera, scanner, microphone, game controller, stylus, barcode reader, finger print scanner, GPS device, touch pad, graphics tablet) and describe their use.
01.04	Identify and know how to connect various computer output devices (e.g., monitor, printer, projector, speakers, headphones) and describe their use.
01.05	Identify and know how to connect various storage devices (e.g., flash drive, external hard drive (SSD, network drive), memory card, discs, cloud).
02.0	Demonstrate knowledge of different operating systems. – The student will be able to:
02.01	Compare and contrast various operating systems used in a computer and mobile devices (i.e., Windows, OS (Apple), UNIX, Android, iOS).
02.02	Describe and use conventional file naming conventions.
02.03	Demonstrate proficiency with file management tasks (e.g., folder creation, file creation, backup, copy, delete, open, save).
02.04	Be able to identify file types by extension (e.g., .doc, .txt, .wav, xls).
02.05	Demonstrate proficiency in using gadgets, icons, and taskbars and other pre-loaded operating system programs. (e.g., calculator, text editor, clock, volume controls, adding icons and shortcuts to taskbar and shortcut menus).
03.0	Demonstrate an understanding of Internet safety and ethics. – The student will be able to:

03.01	Describe risks associated with social networking sites (e.g., FaceBook, Snapchat, Instagram, Twitter) and ways to reduce these risks.
03.02	Define “privacy” and relate it to the term “digital footprint”.
03.03	Practice cybersafety techniques to protect your personal information when using internet searches, email, chat rooms, and social network websites.
03.04	Describe cyberbullying, its impact on perpetrators and victims and ways to respond.
03.05	Describe risks associated with sexting (including legal issues, social consequences), and discuss methods for response, reporting, and prevention.
03.06	Describe risks associated with online gaming, and identify ways to reduce these risks.
03.07	Discuss issues related to downloading music or videos from the Internet, including unethical vs. illegal actions.
03.08	Compare and contrast rules for copyright and fair use, especially in relation to using online resources for school and educational purposes.
03.09	Distinguish between viruses and malware and discuss their impact on personal privacy and computer operation.
03.10	Describe common threats used to spread malware and viruses, including phishing, pharming, Trojans, spyware, malicious sites, “free” downloads.
03.11	Perform an antivirus scan on a computer system to check for viruses and malware.
03.12	Describe strong password practices.
03.13	Practice cyber safety techniques to protect your computer system when using Internet searches, email and social network websites.
03.14	Identify security issues related to mobile phones, including personal information compromised if a phone is lost or stolen.
03.15	Adhere to Acceptable Use Policies when accessing the Internet.
04.0	Demonstrate proficiency using the Internet to locate information. – The student will be able to:
04.01	Identify and use web terminology (WWW, Web Browser, Internet, Web Server, Web Page, Address Bar, Hyperlinks, Navigation Buttons, Search Bar, Bookmarks/Favorites, Tab, Downloading, Plug-ins, Social Media Plug-ins).
04.02	Define Universal Resource Locators (URLs) and associated protocols (e.g., http, ftp, telnet, mailto).
04.03	Compare and contrast the types of Internet domains (e.g., .com, .org, .edu, .gov, .net, .mil).
04.04	Demonstrate proficiency using search engines, including Boolean search techniques.
04.05	Demonstrate proficiency using various web tools (e.g., downloading of files, transfer of files, telnet, PDF).
04.06	Compare and contrast the roles of web servers and web browsers.

04.07	Evaluate online information for relevance, credibility and quality using basic guidelines and indicators (e.g. authority, affiliation, purpose, bias, date).
04.08	Identify and apply copyright and fair use guidelines, and explain plagiarism as an ethical and legal violation.
04.09	Incorporate results from Internet searches into a research project (e.g., report, summary).
04.10	Download images as needed to support a research project, complying with copyright notices.
04.11	Properly cite Internet sources used to obtain information for a research project.
05.0	05.0 Demonstrate proficiency in using word processing software. – The student will be able to:
05.01	Describe the general functions of word-processing software, including benefits for document creation, commonly used word-processing applications.
05.02	Define the term “cloud computing,” and explain benefits of creating and storing word-processing documents online.
05.03	List and describe common word processor interface tools and features.
05.04	Identify common keyboard shortcuts used in word processors, and explain the benefits of using shortcuts.
05.05	Format the page setup of a document, including margins, line spacing, indents, headers vs. footers, orientation.
05.06	Explain printing options in a word processor, including shrink-to-fit, 2-sided printing, and document orientation.
05.07	Copy, paste and move text within a document using mouse, menu and keyboard techniques.
05.08	Copy, paste and move text among multiple documents using mouse, menu and keyboard techniques.
05.09	Modify document view settings to display close-up, single and multiple pages.
05.10	Define the term “format” as it relates to word processing.
05.11	Format text using styles and font tools in a word processor.
05.12	Format a document using multi-level heading styles to enable an outline view (e.g. document map, navigation pane) in a word processor.
05.13	Create a table of contents using auto-generation tools and techniques in a word processor.
05.14	Insert page breaks in a document.
05.15	Create source citations and/or a bibliography in a document.
05.16	Insert a current date and time stamp into a document.

05.17	Use word processor tools to determine the number of pages, words and characters in a document.
05.18	Use spell check, grammar check, thesaurus, and find & replace to edit a document.
05.19	Insert and modify sizing of images in a word-processing document.
05.20	Position an image relative to text in a document, using various text-wrapping options (inline, square, tight).
05.21	Use word-processing drawing tools to create pre-formatted shapes that enhance a document's content.
05.22	Use word-processor drawing tools to create a visual representation of information (e.g. SmartArt), such as diagram, flow chart.
05.23	Apply a column layout to text in a document as appropriate for the content (e.g., article, newsletter).
05.24	Apply simple numbered and bulleted lists in a document to make content easier to read and understand.
05.25	Format numbered and bulleted lists to produce multi-level outline in a document.
05.26	Create a simple brochure and/or flyer using a template.
05.27	Create a table in a word-processing document, and enter and move data in the table.
05.28	Convert a body of text into a table structure in a document to make content easier to read and understand.
05.29	Define "collaboration" and explain ways that users can collaborate on word-processing documents, including installed software vs. cloud-based software, real-time collaboration, auto save, sharing tools, revision history.
05.30	Use the translation tool in a word processor to translate text in a document from English into another language, and vice versa.
05.31	Add comments to a document when reviewing and/or editing content.
05.32	Revise a document using editing tools (e.g. Track Changes) in a word processor, and accept or reject changes as appropriate.
06.0	Demonstrate proficiency in using presentation software. – The student will be able to:
06.01	Describe presentation software and the ways it can be used.
06.02	Create and/or modify a "slide master" or template to apply a consistent appearance to a presentation.
06.03	Add and format titles, subtitles and talking points in presentation slides.
06.04	Add slide numbers and/or date and time codes to presentation slides.
06.05	Insert and format images/graphics in presentation slides.
06.06	Insert new or duplicate slides in a presentation.

06.07	Modify slide transitions in a presentation to include animation.
06.08	Insert and/or modify sound settings and timing in a presentation.
06.09	Modify the sequence of slides in a presentation.
06.10	Produce a presentation that includes text, graphics and images, and present it.
06.11	Modify a presentation's setup to repeat (i.e., loop) the presentation continuously.
07.0	Demonstrate proficiency in using graphics software. – The student will be able to:
07.01	Describe graphics software and the ways it can be used.
07.02	Compare and contrast vector and raster images.
07.03	Identify image file formats for photos and graphical art (e.g., TIFF, BMP, PSD, EPS, JPEG, GIF, PNG), and specify which formats are supported on the web.
07.04	Define terms related to the creation and display of graphical images (e.g., raster, vector, transparency, opacity, cropping, lasso, magic wand, marquee, canvas size, flattened, blur, dodge, sharpen, staking order, free transform, lossless, adjustments, move, clone, zoom, layers, filter, distort).
07.05	Create images with effects using different tools, brushes, adjustments and filters available in graphics software.
07.06	Copy and paste graphical images.
07.07	Modify shapes and colors in a graphical image.
07.08	Save and export a digital photograph in a format that provides the best image quality and file size for Internet use.
07.09	Create a progressive slide presentation using graphical design/layout template features (e.g., SmartArt) and animated transitions.
07.10	Use a portable digital video device (e.g., mobile phone, flip camera) or similar online tools to shoot video files, and transfer them to a computer.
07.11	Use video-editing software to produce a slide show or movie.
07.12	Create a multimedia presentation that incorporates edited video, animation, music and/or narration, and that applies principles of good design, smooth transitions and effective message delivery.
08.0	Demonstrate appropriate use of email. – The student will be able to:
08.01	Define "email "and describe the functions and advantages as a form of communication.
08.02	Identify components of an email message.
08.03	Explain the format of an email address (i.e., user name, @ symbol, domain).

08.04 Attach a file to an email message.

08.05 Reply to and forward an email message to one or more addressees.

08.06 Use the Internet to perform email activities (i.e., web-based email).

08.07 Identify the appropriate use of email and demonstrate related email etiquette.

08.08 Perform email organization and cleanup (e.g., trash, flags, create folders).

**Florida Department of Education
Student Performance Standards**

Course Title: Information & Communications Technology (ICT) Essentials 2
Course Number: 9009120
Course Length: Year
Grade: 6-8

Course Description:

This course builds on the previous course and provides greater depth and more complex concepts and the skills/knowledge to master these concepts. Students will be provided opportunities to extend their skills with various software applications by creating more complex documents and using more complex functions.

CTE Standards and Benchmarks	
09.0	Demonstrate knowledge of safety and privacy practices for online communication. The student will be able to:
09.01	Define “privacy” and relate it to the term “digital footprint.”
09.02	Describe the risks of communicating on social networking sites (e.g. Facebook, Twitter, Instagram) and identify ways to communicate safely.
09.03	Distinguish between copyright infringement, plagiarism and fair use in an educational setting and in relation to school projects, especially with music and pictures.
09.04	Describe online communication practices that contribute to cyberbullying.
09.05	Practice safe online communication techniques with Internet searches, email, chat rooms, and other social network websites.
09.06	Follow an Acceptable Use Policy (AUP) when accessing the Internet.
10.0	Develop and apply fundamental spreadsheet skills. – The student will be able to:
10.01	Define “spreadsheet” and describe ways it may be used.
10.02	Identify the parts of the spreadsheet display, including cells, columns and rows, cell references, cell range.
10.03	Create and navigate through multiple spreadsheets in a file.
10.04	Insert and format various types of data (text, numeric, date/time) in a spreadsheet cells.

CTE Standards and Benchmarks

10.05	Select multiple cells, including adjacent and non-adjacent ranges, using mouse and keyboard techniques.
10.06	Cut, copy, and paste information from one or more cells to another part of the spreadsheet.
10.07	Use the undo and redo tools in a spreadsheet.
10.08	Apply and modify cell formatting for currency, date and percentage values.
10.09	Resize column width and row height in a spreadsheet.
10.10	Insert and delete columns and rows in a spreadsheet.
10.11	Merge and unmerge cells in a spreadsheet.
10.12	Apply shading and borders to a spreadsheet.
10.13	Describe the purpose of a table and how it relates to a spreadsheet.
10.14	Create and print a table and/or range that displays and sums the values of different data types.
10.15	Identify various types of charts (e.g., line, bar, pie, scatter) and common chart components (e.g., vertical axis, horizontal axis, legend), and explain when to use each chart type.
10.16	Create a chart from existing data and format the pieces (data set), change the background color, and add appropriate titles and a legend.
10.17	Use the auto sum function to calculate the values of multiple cells.
10.18	Insert common functions (SUM, AVERAGE, COUNT, MAX, MIN) and simple mathematical formulas which include addition, subtraction, multiplication, or division into a spreadsheet.
10.19	Distinguish between absolute and relative cell references in a spreadsheet.
10.20	Use the sort function to organize information numerically or alphabetically, including multiple levels of sorting.
10.21	Use the filter function to display spreadsheet data based on specific criteria.
10.22	Use conditional formatting to highlight text in a spreadsheet.
11.0	Develop and apply database skills. – The student will be able to:
11.01	Define database and describe real-world uses (e.g. search engines, schools, drivers licenses & car registrations, hospitals, retail, law enforcement).
11.02	Distinguish between databases and spreadsheets.
11.03	Identify advantages of using a database instead of alternatives (e.g., spreadsheets, electronic documents, paper).

CTE Standards and Benchmarks

11.04 Define “Big Data” and describe how it is used in advertising.

11.05 Identify the components of a database.

11.06 Distinguish between fields and records in a database.

11.07 Describe the basic data types and formats used in a database.

11.08 Distinguish between a table and a query.

11.09 Identify database keys, including primary and foreign.

11.10 Identify the relationships between tables in databases (i.e., one-to-one, one-to-many, many-to-many).

11.11 Distinguish between a query and a report.

11.12 Identify various report types.

11.13 Describe Structured Query Language (SQL) and discuss its use with databases.

11.14 Identify and compare various database applications, including Microsoft Access, MySQL, Oracle.

11.15 Create a database table that uses multiple data types.

11.16 Add, Edit, and Delete records from a database table.

11.17 Sort records in a database query or table.

11.18 Troubleshoot common database errors, including data type errors, query syntax errors.

11.19 Create a basic select query in one table.

11.20 Create an action query to manipulate data.

11.21 Create a query using primary and foreign keys.

11.22 Create a simple table join.

11.23 Import and export data from a database into a spreadsheet.

11.24 Create relevant reports from a database.

12.0 Demonstrate skill in using video editing software and equipment. – The student will be able to:

CTE Standards and Benchmarks

12.01 Demonstrate ability to operate a video camera (e.g., Flip camera, cell phone).

12.02 Write storyboards to depict a one minute video segment.

12.03 Determine appropriate lighting needs.

12.04 Create video shots sufficient to produce a one minute video.

12.05 Identify the functions and benefits of the digital video software interface.

12.06 Demonstrate ability to edit, cut, erase, and insert video.

12.07 Edit video as needed to achieve desired message and length.

12.08 Describe a first complete run-through of the video production process.

12.09 Characterize the qualities of effective communication in a completed video.

12.10 Upload finished video files to a website.

13.0 Demonstrate proficiency in using audio editing software (e.g., Audacity). – The student will be able to:

13.01 Identify the functions and benefits of the audio editing software interface.

13.02 Demonstrate ability to edit, cut, erase, and insert audio.

13.03 Edit audio as needed to achieve desired message and length.

13.04 Prepare a 30 second to 1 minute audio commercial project.

14.0 Demonstrate proficiency locating, gathering, and preparing textual, graphical, and image-based web content. – The student will be able to:

14.01 Define the elements of a webpage and what makes a good webpage.

14.02 Describe effective text and image content for webpages based on how visitors use the web.

14.03 List guidelines and conventions for effective text on webpage.

14.04 Explain the inverted pyramid model of newspaper journalism and how it applies to web content.

14.05 Use word-processing software to create effective written content for a webpage.

14.06 Create and/or edit message-driven image content for a webpage using graphics software.

CTE Standards and Benchmarks

14.07 Access graphics through various recourses (e.g., scanner, digital camera, CD-ROM, clipart, copyright-free online graphics).

14.08 Plan the content and design of a basic webpage using strategies for effective Web communication, including brainstorming, determining audience, choosing content and media types, using white space.

**Florida Department of Education
Student Performance Standards**

Course Title: Information & Communications Technology (ICT) Essentials 3
Course Number: 9009130
Course Length: Year
Grade: 6-8

Course Description:

This course builds on the previous two courses and provides greater depth and more complex concepts and the skills/knowledge to master these concepts. In addition to working with network concepts, students will be provided opportunities to further extend their skills with various software applications by creating more complex documents and using more complex functions and technologies. Students will continue their exposure to computer programming and the creation of more complex computer programs. For the programming instruction, the use of Alice from Carnegie Mellon University is encouraged as it is a highly engaging program, includes instructional materials, and is available at no cost.

CTE Standards and Benchmarks	
15.0	Use Web 2.0 or Internet-based collaborative technology (e.g., Wikis, Wimba, Moodle, Edmodo, Facebook, Schoology, Goggle) to facilitate a web development or research project. – The student will be able to:
15.01	Create and use a collaborative environment for communicating and sharing among project team members.
15.02	Create and use a social media page (e.g., Wikis, Wimba, Moodle, Edmodo, Facebook, Schoology, Goggle) to share and publish project components (e.g., content, images, graphics, videos) for gauging visitor reaction and obtaining feedback.
16.0	Demonstrate an understanding of computer networks. – The student will be able to:
16.01	Define “network” and give examples of networks used at home, school, and work.
16.02	Compare types of networks, including LAN, WAN, MAN, VPN, intranet, extranet, the Internet.
16.03	Compare common network topologies, including bus, star, ring, mesh.
16.04	Compare various network models and their advantages, including client/server, mainframe/terminal, peer-to-peer.
16.05	Compare various methods and media for network connections, including broadband, wireless, Bluetooth, cellular, satellite.
16.06	Describe the functions of various network hardware devices, including NIC, hub, switch, router, bridge, gateway, access point.
16.07	Describe the purpose of protocols, and identify the protocols commonly used in networks, including TCP/IP, DHCP, DNS, HTTP, FTP, IMAP, POP, SMTP.

CTE Standards and Benchmarks

16.08 Describe the purpose and function of IP addressing and distinguish between public and private IP addresses.

16.09 Describe the OSI reference model and its layers, including tracing the flow of data between two network nodes through the OSI layers.

17.0 Demonstrate proficiency in webpage development. – The student will be able to:

17.01 Identify website domains, and relate a site's domain to its purpose.

17.02 Relate basic components of a webpage (e.g. color, space, written content, typography, images, links, multimedia) to aesthetic, functional and/or usable design principals.

17.03 Define aesthetic design, and explain how aesthetics can affect a visitors' perception of a website's information.

17.04 Demonstrate knowledge of color wheel concepts and effective use of color on a website.

17.05 Compare functional and usable design principles, and explain how usability can affect a website's success.

17.06 Critique the aesthetic design, usability and accessibility of sample websites.

17.07 Define multimedia, and identify its role in webpage interactivity.

17.08 Explain the primary steps of the website planning process.

17.09 Apply the website planning process to plan the design for basic website.

17.10 Build the site navigation scheme for a website.

17.11 Compare webpage creation using an HTML text editor to using a graphical user interface (GUI) editor.

17.12 Compare website creation using an online site builder, an offline site builder and a content management system (CMS).

17.13 Modify an existing webpage template to create an effective look and feel for a website.

17.14 Create a website using a template.

17.15 Define "HTML (Hypertext Markup Language)" and related terms, including tag vs. element, container vs. empty tag, block-level vs. inline element, attribute value, semantic tag.

17.16 Identify HTML elements required to create webpage structure.

17.17 Create webpages using basic HTML tags (e.g., headings, lists, character styles, text alignment, tables, comments).

17.18 Use HTML to create hyperlinks to external sites.

CTE Standards and Benchmarks

17.19 Use HTML to insert common image file formats into webpages, and use an image as a hyperlink.

17.20 Explain Cascading Style Sheet (CSS) technology.

17.21 Apply CSS styles to an HTML page.

17.22 Create and/or edit animation files, and integrate them into a webpage.

17.23 Create and/or edit video files, and integrate them into a webpage.

17.24 Use Dynamic HTML (DHTML) to enhance webpage interactivity.

17.25 Create and use a wiki or similar tool for collaborating among project team members.

17.26 Create and use a social media page (e.g., Facebook, Wimba, Edmodo) and/or a blog to share content and collaborate on projects.

17.27 Review webpage content, verify copyright restrictions, and create meta-data before publishing a site to the internet.

17.28 Test webpages for display, functionality, and accessibility before publishing a site to the Internet.

17.29 Validate webpage code using W3C validation tools before publishing a site to the Internet.

17.30 Describe network issues relating to websites, including bandwidth, compression, streaming, web hosting.

17.31 Explain the purpose of File Transfer Protocol (FTP) in accessing information on the Internet.

17.32 Publish a website using FTP.

17.33 Describe website security methods, including secure server vs. unsecured served, SSL, SSH, encryption.

18.0 Demonstrate proficiency in game development. – The student will be able to:

18.01 Describe the role of games in modern society (e.g., education, task training, social networking, therapy, recreation).

18.02 Identify various types of games (e.g., chance, skill, knowledge, role-playing, and storytelling).

18.03 Identify the steps of the design process for creating a game.

18.04 Apply the design process to solving a problem.

18.05 Analyze (deconstruct) existing games.

18.06 Identify the tools and skills needed for creating games.

CTE Standards and Benchmarks

18.07	Identify design criteria and constraints.
18.08	Create storyboards to model a game's program flow and functionality.
18.09	Identify the programmer's role in creating games.
18.10	Identify common programming languages and applications used to create computer games.
18.11	Compare sequential, iteration (loop) and selection programming structures.
18.12	Define the term algorithm (i.e., a set of repeatable steps) and how it applies to problem solving.
18.13	Create an algorithm to solve a problem or complete a task.
18.14	Use pseudo-code to model a game program's flow.
18.15	Define logic errors and identify them in a game program or model.
18.16	Explain the types and uses of variables in game programming.
18.17	Describe basic Boolean concepts, including logical operators, order of precedence, expressions.
18.18	Describe the use of events, event handlers and functions in game programming.
18.19	Describe the use of parameters and arguments in game programming.
18.20	Describe the use of objects, classes and instances in game programming.
18.21	Describe the use of properties and methods with objects in game programming.
18.22	Write appropriate code to create a simple game using structured programming.
18.23	Test and evaluate the game program you created.
18.24	Modify the game program as needed to solve a problem.
18.25	Create an animated object (i.e., sprite) to be used in a game program.
18.26	Use programming code to control the behavior of an animated object (i.e., sprite) in a game program.
19.0	Demonstrate proficiency in basic programming. – The student will be able to:
19.01	Define "programming" and discuss its role in computing.
19.02	Explain the binary representation of data and programs in computers.

CTE Standards and Benchmarks

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| 19.03 | Distinguish among the three types of programming languages (machine, assembly, high-level), and give examples. |
| 19.04 | Compare and contrast languages that are usually compiled (e.g., C++, Java) and interpreted (e.g., JavaScript, Python). |
| 19.05 | Describe the structure of a simple program, and explain why sequencing is important. |
| 19.06 | Write a program design document using pseudo-code that shows program flow. |
| 19.07 | Explain strategies used in problem-solving, and relate them to computer programming. |
| 19.08 | Define the term “algorithm,” and explain how it relates to problem-solving. |
| 19.09 | Explain the three types of programming errors (i.e., logic, syntax, runtime), and describe the forms of testing that can be used to locate and debug errors. |
| 19.10 | Solve a problem using logic by planning a strategy, designing and testing a hypothesis, and/or creating a set of step-by-step instructions to perform a task. |
| 19.11 | Define “structured programming” and discuss the advantages of this approach. |
| 19.12 | Define the three main programming control structures used in structured programming: sequential, selection (decision), and iteration (loops). |
| 19.13 | Describe iterative programming structures (e.g., while, do/while) and how they are used in programming. |
| 19.14 | Describe selection programming structures (e.g., if/then, else) and explain the logic used for if statements. |
| 19.15 | Write a simple program in pseudo-code that uses structured programming to solve a problem. |
| 19.16 | Explain the types and uses of variables in programming. |
| 19.17 | Explain basic object-oriented concepts. |
| 19.18 | Describe fundamental Boolean concepts, including Boolean algebra, operators, logic. |
| 19.19 | Create animated objects using a high-level programming environment (e.g., Alice, Greenfoot) to control their behavior. |
| 19.20 | Create a simple program that uses animated objects. |
| 19.21 | Convert a simple program from pseudo-code into a common high-level programming environment (e.g. Alice, Greenfoot). |
| 19.22 | Troubleshoot and debug errors in code. |

Additional Information

Laboratory Activities

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

Special Notes

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

Career and Technical Student Organization (CTSO)

FBLA and BPA are the intercurricular career and technical student organizations providing leadership training and reinforcing specific career and technical skills. Career and Technical Student Organizations provide activities for students as an integral part of the instruction offered.

Accommodations

Federal and state legislation requires the provision of accommodations for students with disabilities as identified on the secondary student's Individual Educational Plan (IEP) or 504 plan or postsecondary student's accommodations' plan to meet individual needs and ensure equal access. Accommodations change the way the student is instructed. Students with disabilities may need accommodations in such areas as instructional methods and materials, assignments and assessments, time demands and schedules, learning environment, assistive technology and special communication systems. Documentation of the accommodations requested and provided should be maintained in a confidential file.

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

**Florida Department of Education
Curriculum Framework**

Course Title: Coding Fundamentals
Course Type: Orientation/Exploratory
Career Cluster: Information Technology

Secondary – Middle School

Course Number	9009200
CIP Number	0511020109
Grade Level	6-8
Standard Length	Semester/Year
Teacher Certification	Refer to the <u>Course/Program Structure</u> section.
CTSO	FBLA, TSA, BPA

Purpose

The purpose of this course is to assist Information Technology students in making informed decisions regarding their future academic and occupational goals and to provide information regarding careers in the career cluster. The content includes but is not limited to foundational knowledge and skills related to computer coding and software development. Instruction and learning activities are provided in a laboratory setting using hands-on experiences with the equipment, materials and technology appropriate to the course content and in accordance with current practices.

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

Course/Program Structure

To teach the course(s) listed below, instructors must hold at least one of the teacher certifications indicated for that course. The following table illustrates the course structure:

Course Number	Course Title	Teacher Certification	Length
9009200	Coding Fundamentals	BUS ED 1@2 COMPU SCI 6 INFO TECH 7G WEB DEV 7G COMP PROG 7G	Semester/Year

Florida Standards for English Language Development (ELD)

English language learners communicate for social and instructional purposes within the school setting. ELD.K12.SI.1.1

English Language Development (ELD) Standards Special Notes:

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

For additional information on the development and implementation of the ELD standards, please contact the Bureau of Student Achievement through Language Acquisition.

Standards:

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

- 01.0 Demonstrate proficiency using specialized computer coding software.
- 02.0 Develop an awareness of programming languages.
- 03.0 Demonstrate proficiency using common software applications.
- 04.0 Demonstrate knowledge, skill, and application of information systems to accomplish job objectives and enhance workplace performance.
- 05.0 Demonstrate comprehension and communication.
- 06.0 Demonstrate knowledge of different operating systems.
- 07.0 Demonstrate proficiency in basic programming.

Florida Department of Education
Student Performance Standards

Course Title: **Coding Fundamentals**
 Course Number: **9009200**
 Course Length: **Year**

CTE Standards and Benchmarks	
01.0	Demonstrate proficiency using specialized computer coding software. – The student will be able to:
01.01	Use specialized computer coding software to solve problems. SC.68.CS-CS.4.8
01.02	Demonstrate proficiency using specialized computer software (e.g., Swift, Python). SC.912.CS-CP.3.2
02.0	Develop an awareness of programming languages. – The student will be able to:
02.01	Identify programming language design approaches. SC.68.CS-CP.2.3
02.02	Explain the components of programming languages. SC.912.CS-CP.2.5
02.03	Examine connections between elements of mathematics and computer science including binary numbers, logic, sets, and functions. SC.68.CS-CS.1.1
03.0	Demonstrate proficiency of using common software applications. – The student will be able to:
03.01	Compare and contrast the appropriate use of various software applications. SC.35.CS-CS.4.3
03.02	Demonstrate proficiency in the use of various software applications. SC.35.CS-CS.4.4
03.03	Explain why different file types exist (e.g., formats for word processing, images, music, and three-dimensional drawings). SC.912.CS-CS.3.2
03.04	Identify the kinds of content associated with different file types. SC.68.CS-CS.3.1
04.0	Demonstrate knowledge, skill, and application of information systems to accomplish job objectives and enhance workplace performance. – The student will be able to:
04.01	Develop keyboarding skills to enter and manipulate text and data. SC.35.CS-CP.2.1
04.02	Describe and use current and emerging computer technology and software to perform personal and business related tasks. SC.912.CS-CS.4.6
04.03	Perform a variety of operations such as sorting, filtering, and searching in a database to organize and display SC.K2.CS-CS.2.1

CTE Standards and Benchmarks

	information in a variety of ways such as number formats (e.g., scientific notation, percentages, and exponents) charts, tables and graphs.	
05.0	Demonstrate comprehension and communication. – The student will be able to:	
05.01	Use listening, speaking, telecommunication and nonverbal skills and strategies to communicate effectively.	SC.K2.CS-PC.2.2
05.02	Organize ideas and communicate oral and written messages.	SC.35.CS-CP.3.1
05.03	Collaborate with individuals and teams to complete tasks and solve information technology problems.	SC.35.CS-CP.3.2
05.04	Demonstrate an awareness of project management concepts and tools.	SC.912.CS-CC.1.2
05.05	Demonstrate an ability to communicate appropriately through various online tools.	SC.912.CS-CC.1.4
05.06	Recognize that more than one algorithm can solve a given problem.	SC.912.CS-CS.2.10
05.07	Create a program that implements an algorithm to achieve a given goal, individually and collaboratively.	SC.912.CS-CS.2.5
06.0	Demonstrate knowledge of different operating systems. – The student will be able to:	SC.68.CS-CS.4.2
06.01	Compare and contrast various operating systems used in a computer and mobile devices (i.e., Windows, OS (Apple), UNIX, Android, iOS).	SC.68.CS-CS.4.2
06.02	Demonstrate proficiency in using gadgets, icons, and task bars and other pre-loaded operating system programs (e.g., calculator, text editor, clock, volume controls, adding icons and shortcuts to task bar and shortcut menus).	
06.03	Use iterative development and debugging to explore the problem domain.	SC.912.CS-CS.2.11
07.0	Demonstrate proficiency in basic programming. – The student will be able to:	
07.01	Describe the structure of a simple program, and explain why sequencing is important.	SC.K2.CS-CP.2.4
07.02	Define the term “algorithm,” and explain how it relates to problem-solving.	
07.03	Describe iterative programming structures (e.g., while, do/while) and how they are used in programming.	
07.04	Describe selection programming structures (e.g., if/then, else) and explain the logic used for if statements.	SC.68.CS-CS.2.7
07.05	Explain the types and use of variables in programming.	SC.68.CS-CP.2.3
07.06	Write a simple program in pseudo-code that used structured programming to solve a problem.	
07.07	Troubleshoot and debug errors in code.	
07.08	Create, modify, and use a database (e.g., define field formats, adding new records, manipulate data) to analyze data and propose solutions for a task/problem, individually and collaboratively.	SC.K2.CS-CC.1.1

Additional Information

Laboratory Activities

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

Special Notes

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

Career and Technical Student Organization (CTSO)

FBLA, TSA and BPA are the inter-curricular career and technical student organizations providing leadership training and reinforcing specific career and technical skills. Career and Technical Student Organizations provide activities for students as an integral part of the instruction offered.

This course provides foundational knowledge toward SOC codes 15-1132.00 Software Developers, Applications and 15-1131.00 Computer Programmers.

Accommodations

Federal and state legislation requires the provision of accommodations for students with disabilities as identified on the secondary student's Individual Educational Plan (IEP) or 504 plan or postsecondary student's accommodations' plan to meet individual needs and ensure equal access. Accommodations change the way the student is instructed. Students with disabilities may need accommodations in such areas as instructional methods and materials, assignments and assessments, time demands and schedules, learning environment, assistive technology and special communication systems. Documentation of the accommodations requested and provided should be maintained in a confidential file.

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

Florida Department of Education
Curriculum Framework

Course Title: Exploring Information Technology Careers
Course Type: Orientation/Exploratory
Career Cluster: Information Technology

Secondary – Middle School

Course Number	9009350
CIP Number	149009350M
Grade Level	6-8
Standard Length	Semester
Teacher Certification	Refer to the <u>Course Structure</u> section.
CTSO	FBLA BPA

Purpose

The purpose of this course is to assist students in making informed decisions regarding their future academic and occupational goals and to provide information regarding careers in the Information Technology career cluster. The content includes but is not limited to terminology, careers, history, required skills, and technologies associated with pathways comprising the Information Technology career cluster. Reinforcement of academic skills occurs through classroom instruction and applied laboratory procedures.

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

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

Course Structure

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

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

The following table illustrates the course structure:

Course Number	Course Title	Teacher Certification	Length
9009350	Exploring Information Technology Careers	BUS ED 1 @2 COMPU SCI 6 INFO TECH 7 G WEB DEV 7 G DIGI MEDIA 7 G CYBER TECH 7 G COMP PROG 7 G	Semester

Florida Standards for English Language Development (ELD)

English language learners communicate for social and instructional purposes within the school setting. ELD.K12.SI.1.1

English Language Development (ELD) Standards Special Notes:

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

Standards

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

- 01.0 Demonstrate an understanding of the Network Systems career pathway.
- 02.0 Demonstrate an understanding of the Information Support and Services career pathway.
- 03.0 Demonstrate an understanding of the Web and Digital Communications career pathway.
- 04.0 Demonstrate an understanding of the Programming and Software Development career pathway.
- 05.0 Apply leadership and communication skills.
- 06.0 Describe how information technology is used in the Information Technology career cluster.
- 07.0 Use information technology tools.

**Florida Department of Education
Student Performance Standards**

Course Title: Exploring Information Technology Careers
Course Number: 9009350
Course Length: Semester

Course Description:

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

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

CTE Standards and Benchmarks

02.06 Describe technologies associated in careers within the Information Support and Services career pathway.

03.0 Demonstrate an understanding of the Web and Digital Communications career pathway. – The student will be able to:

03.01 Define and use proper terminology associated with the Web and Digital Communications career pathway.

03.02 Describe some of the careers available in the Web and Digital Communications career pathway.

03.03 Identify common characteristics of the careers in the Web and Digital Communications career pathway.

03.04 Research the history of the Web and Digital Communications career pathway and describe how the careers have evolved and impacted society.

03.05 Identify skills required to successfully enter any career in the Web and Digital Communications career pathway.

03.06 Describe technologies associated in careers within the Web and Digital Communications career pathway.

04.0 Demonstrate an understanding of the Programming and Software Development career pathway. – The student will be able to:

04.01 Define and use proper terminology associated with the Programming and Software Development career pathway.

04.02 Describe some of the careers available in the Programming and Software Development career pathway.

04.03 Identify common characteristics of the careers in the Programming and Software Development career pathway.

04.04 Research the history of the Programming and Software Development career pathway and describe how the careers have evolved and impacted society.

04.05 Identify skills required to successfully enter any career in the Programming and Software Development career pathway.

04.06 Describe technologies associated in careers within the Programming and Software Development career pathway.

05.0 Apply leadership and communication skills. – The student will be able to:

05.01 Discuss the establishment and history of the FBLA/BPA student organizations.

05.02 Identify the characteristics and responsibilities of organizational leaders.

05.03 Demonstrate parliamentary procedure skills during a meeting.

05.04 Participate on a committee which has an assigned task and report to the class.

05.05 Demonstrate effective communication skills through delivery of a speech, a slide presentation, or conducting a demonstration.

05.06 Use a computer to assist in the completion of a project related to the Information Technology career cluster.

06.0 Describe how information technology is used in the Information Technology career cluster. – The student will be able to:

06.01 Identify information technology (IT) careers in the Information Technology career cluster, including the responsibilities, tasks and skills they require.

CTE Standards and Benchmarks

06.02 Relate information technology project management concepts and terms to careers in the Information Technology career cluster.

06.03 Manage information technology components typically used in professions of the Information Technology career cluster.

06.04 Identify security-related ethical and legal IT issues faced by professionals in the Information Technology career cluster.

07.0 Use information technology tools. – The student will be able to:

07.01 Identify the functions of web browsers, and use them to access the World Wide Web and other computer resources typically used in the Information Technology career cluster.

07.02 Use e-mail clients to send simple messages and files to other Internet users.

07.03 Demonstrate ways to communicate effectively using Internet technology.

07.04 Use different types of web search engines effectively to locate information relevant to the Information Technology career cluster.

Additional Information

Laboratory Activities

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

Special Notes

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

Career and Technical Student Organization (CTSO)

FBLA and BPA are the intercurricular career and technical student organizations providing leadership training and reinforcing specific career and technical skills. Career and Technical Student Organizations provide activities for students as an integral part of the instruction offered.

Accommodations

Federal and state legislation requires the provision of accommodations for students with disabilities as identified on the secondary student's Individual Educational Plan (IEP) or 504 plan or postsecondary student's accommodations' plan to meet individual needs and ensure equal access. Accommodations change the way the student is instructed. Students with disabilities may need accommodations in such areas as instructional methods and materials, assignments and assessments, time demands and schedules, learning environment, assistive technology and special communication systems. Documentation of the accommodations requested and provided should be maintained in a confidential file.

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

Florida Department of Education
Curriculum Framework

Course Title: Exploring Information Technology Careers and Career Planning*
Course Type: Orientation/Exploratory
Career Cluster: Information Technology

Secondary – Middle School

Course Number	9009360
CIP Number	149009360M
Grade Level	6-8
Standard Length	Semester
Teacher Certification	Refer to the Course Structure section.
CTSO	FBLA BPA

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

Purpose

The purpose of this course is to assist students in making informed decisions regarding their future academic and occupational goals and to provide information regarding careers in the Information Technology career cluster. The content includes but is not limited to terminology, careers, history, required skills, and technologies associated with pathways comprising the Information Technology career cluster. Reinforcement of academic skills occurs through classroom instruction and applied laboratory procedures.

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

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

Course Structure

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

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

The following table illustrates the course structure:

Course Number	Course Title	Teacher Certification	Length
9009360	Exploring Information Technology Careers and Career Planning	BUS ED 1 @2 COMPU SCI 6 INFO TECH 7 G WEB DEV 7 G DIGI MEDIA 7 G CYBER TECH 7 G COMP PROG 7 G	Semester

Florida Standards for English Language Development (ELD)

English language learners communicate for social and instructional purposes within the school setting. ELD.K12.SI.1.1

English Language Development (ELD) Standards Special Notes:

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

Standards

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

- 01.0 Demonstrate an understanding of the Network Systems career pathway.
- 02.0 Demonstrate an understanding of the Information Support and Services career pathway.
- 03.0 Demonstrate an understanding of the Web and Digital Communications career pathway.
- 04.0 Demonstrate an understanding of the Programming and Software Development career pathway.
- 05.0 Apply leadership and communication skills.
- 06.0 Describe how information technology is used in the Information Technology career cluster.
- 07.0 Use information technology tools.

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

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

Florida Department of Education
Student Performance Standards

Course Title: Exploring Information Technology Careers and Career Planning
Course Number: 9009360
Course Length: Semester

Course Description:

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

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

CTE Standards and Benchmarks

02.06 Describe technologies associated in careers within the Information Support and Services career pathway.

03.0 Demonstrate an understanding of the Web and Digital Communications career pathway. – The student will be able to:

03.01 Define and use proper terminology associated with the Web and Digital Communications career pathway.

03.02 Describe some of the careers available in the Web and Digital Communications career pathway.

03.03 Identify common characteristics of the careers in the Web and Digital Communications career pathway.

03.04 Research the history of the Web and Digital Communications career pathway and describe how the careers have evolved and impacted society.

03.05 Identify skills required to successfully enter any career in the Web and Digital Communications career pathway.

03.06 Describe technologies associated in careers within the Web and Digital Communications career pathway.

04.0 Demonstrate an understanding of the Programming and Software Development career pathway. – The student will be able to:

04.01 Define and use proper terminology associated with the Programming and Software Development career pathway.

04.02 Describe some of the careers available in the Programming and Software Development career pathway.

04.03 Identify common characteristics of the careers in the Programming and Software Development career pathway.

04.04 Research the history of the Programming and Software Development career pathway and describe how the careers have evolved and impacted society.

04.05 Identify skills required to successfully enter any career in the Programming and Software Development career pathway.

04.06 Describe technologies associated in careers within the Programming and Software Development career pathway.

05.0 Apply leadership and communication skills. – The student will be able to:

05.01 Discuss the establishment and history of the FBLA/BPA student organization.

05.02 Identify the characteristics and responsibilities of organizational leaders.

05.03 Demonstrate parliamentary procedure skills during a meeting.

05.04 Participate on a committee which has an assigned task and report to the class.

05.05 Demonstrate effective communication skills through delivery of a speech, a slide presentation, or conducting a demonstration.

05.06 Use a computer to assist in the completion of a project related to the Information Technology career cluster.

06.0 Describe how information technology is used in the Information Technology career cluster. – The student will be able to:

06.01 Identify information technology (IT) careers in the Information Technology career cluster, including the responsibilities, tasks and skills they require.

CTE Standards and Benchmarks

06.02 Relate information technology project management concepts and terms to careers in the Information Technology career cluster.

06.03 Manage information technology components typically used in professions of the Information Technology career cluster.

06.04 Identify security-related ethical and legal IT issues faced by professionals in the Information Technology career cluster.

07.0 Use information technology tools. – The student will be able to:

07.01 Identify the functions of web browsers, and use them to access the World Wide Web and other computer resources typically used in the Information Technology career cluster.

07.02 Use e-mail clients to send simple messages and files to other Internet users.

07.03 Demonstrate ways to communicate effectively using Internet technology.

07.04 Use different types of web search engines effectively to locate information relevant to the Information Technology career cluster.

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

The student will be able to:

08.0 Describe the influences that societal, economic, and technological changes have on employment trends and future training.

09.0 Develop skills to locate, evaluate, and interpret career information.

10.0 Identify and demonstrate processes for making short and long term goals.

11.0 Demonstrate employability skills such as working in a group, problem-solving and organizational skills, and the importance of entrepreneurship.

12.0 Understand the relationship between educational achievement and career choices/postsecondary options.

13.0 Identify a career cluster and related pathways that match career and education goals.

14.0 Develop a career and education plan that includes short and long-term goals, high school program of study, and postsecondary/career goals.

15.0 Demonstrate knowledge of technology and its application in career fields/clusters.

Additional Information

Laboratory Activities

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

Special Notes

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

Career and Technical Student Organization (CTSO)

FBLA and BPA are the intercurricular career and technical student organizations providing leadership training and reinforcing specific career and technical skills. Career and Technical Student Organizations provide activities for students as an integral part of the instruction offered.

Accommodations

Federal and state legislation requires the provision of accommodations for students with disabilities as identified on the secondary student's Individual Educational Plan (IEP) or 504 plan or postsecondary student's accommodations' plan to meet individual needs and ensure equal access. Accommodations change the way the student is instructed. Students with disabilities may need accommodations in such areas as instructional methods and materials, assignments and assessments, time demands and schedules, learning environment, assistive technology and special communication systems. Documentation of the accommodations requested and provided should be maintained in a confidential file.

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

Florida Department of Education
Curriculum Framework

Program Title: Information & Communications Technology (ICT) Essentials Careers and Career Planning*
Program Type: Orientation/Exploratory
Career Cluster: Information Technology

Secondary – Middle School

Program Number	9009370
CIP Number	14900937MS
Grade Level	6-8
Standard Length	Year
Teacher Certification	Refer to the <u>Program Structure</u> section.
CTSO	FBLA BPA

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

Purpose

The purpose of this course is to provide students with the computer, digital, and information technology skills necessary for success in their future academic and occupational goals. In addition to fundamental computer information, the content includes but is not limited to digital technologies associated with web development, multimedia, word processing, spreadsheet, database, Internet communications, cybersecurity, and computer programming.

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

Program Structure

This program is a planned sequence of instruction consisting of three courses.

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

The following table illustrates the course structure:

Course Number	Course Title	Teacher Certification	Length
9009110	Information & Communications Technology (ICT) Essentials 1	BUS ED 1 @2	Year
9009120	Information & Communications Technology (ICT) Essentials 2	COMPU SCI 6	Year
9009140	Information & Communications Technology (ICT) Essentials Careers and Career Planning	INFO TECH 7G WEB DEV 7G	Year

Florida Standards for English Language Development (ELD)

English language learners communicate for social and instructional purposes within the school setting. ELD.K12.SI.1.1

English Language Development (ELD) Standards Special Notes:

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

For additional information on the development and implementation of the ELD standards, please contact the Bureau of Student Achievement through Language Acquisition.

Standards

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

- 01.0 Identify computer components and their functions.
- 02.0 Demonstrate knowledge of different operating systems.
- 03.0 Demonstrate an understanding of Internet safety and ethics.
- 04.0 Demonstrate proficiency using the Internet to locate information.
- 05.0 Demonstrate proficiency in using word processing software.
- 06.0 Demonstrate proficiency in using presentation software.
- 07.0 Demonstrate proficiency in using graphics software.
- 08.0 Demonstrate appropriate use of email.
- 09.0 Demonstrate knowledge of safety and privacy practices for online communication.
- 10.0 Develop and apply fundamental spreadsheet skills.
- 11.0 Develop and apply database skills.
- 12.0 Demonstrate skill in using video editing software and equipment.
- 13.0 Demonstrate proficiency in using audio editing software (e.g., Audacity).
- 14.0 Demonstrate proficiency locating, gathering, and preparing textual, graphical, and image-based web content.
- 15.0 Use Web 2.0 or Internet-based collaborative technology (e.g., Wikis, Wimba, Moodle, Edmodo, Facebook, Schoology, Goggle) to facilitate a web development or research project.
- 16.0 Demonstrate an understanding of computer networks.
- 17.0 Demonstrate proficiency in web page development.
- 18.0 Demonstrate proficiency in game development.
- 19.0 Demonstrate proficiency in basic programming.

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

- 20.0 Describe the influences that societal, economic, and technological changes have on employment trends and future training.
- 21.0 Develop skills to locate, evaluate, and interpret career information.
- 22.0 Identify and demonstrate processes for making short and long term goals.
- 23.0 Demonstrate employability skills such as working in a group, problem-solving and organizational skills, and the importance of entrepreneurship.
- 24.0 Understand the relationship between educational achievement and career choices/postsecondary options.
- 25.0 Identify a career cluster and related pathways that match career and education goals.
- 26.0 Develop a career and education plan that includes short and long-term goals, high school program of study, and postsecondary/career goals.
- 27.0 Demonstrate knowledge of technology and its application in career fields/clusters.

**Florida Department of Education
Student Performance Standards**

Course Title: Information & Communications Technology (ICT) Essentials 1
Course Number: 9009110
Course Length: Year
Grade: 6-8

Course Description:

This course introduces students to core concepts associated with computers and their use. The content includes hands-on opportunities to explore various software applications.

CTE Standards and Benchmarks	
01.0	Identify computer components and their functions. – The student will be able to:
01.01	Describe what defines a computer and ways a computer can be used.
01.02	Identify the internal components of a computer (e.g., case, CPU, RAM, power supply, hard drive, motherboard, expansion cards, cabling).
01.03	Identify and know how to connect various computer input devices (e.g., mouse, keyboard, phone, camera, scanner, microphone, game controller, stylus, barcode reader finger print scanner, GPS device, touch pad, graphics tablet) and describe their use.
01.04	Identify and know how to connect various computer output devices (e.g., monitor, printer, projector, speakers, headphones) and describe their use.
01.05	Identify and know how to connect various storage devices (e.g., flash drive, external hard drive (SSD, network drive), memory card, discs, cloud).
02.0	Demonstrate knowledge of different operating systems. – The student will be able to:
02.01	Compare and contrast various operating systems used in a computer and mobile devices (i.e., Windows, OS (Apple), UNIX, Android, iOS).
02.02	Describe and use conventional file naming conventions.
02.03	Demonstrate proficiency with file management tasks (e.g., folder creation, file creation, backup, copy, delete, open, save).
02.04	Be able to identify file types by extension (e.g., .doc, .txt, .wav, xls).
02.05	Demonstrate proficiency in using gadgets, icons, and taskbars and other pre-loaded operating system programs. (e.g., calculator, text editor, clock, volume controls, adding icons and shortcuts to taskbar and shortcut menus).

03.0	Demonstrate an understanding of Internet safety and ethics. – The student will be able to:
03.01	Describe risks associated with social networking sites (e.g., FaceBook, Snapchat, Instagram, Twitter) and ways to reduce these risks.
03.02	Define “privacy” and relate it to the term “digital footprint.”
03.03	Practice cybersafety techniques to protect your personal information when using internet searches, email, chat rooms, and social network websites.
03.04	Describe cyberbullying, its impact on perpetrators and victims and ways to respond.
03.05	Describe risks associated with sexting (including legal issues, social consequences), and discuss methods for response, reporting, and prevention.
03.06	Describe risks associated with online gaming, and identify ways to reduce these risks.
03.07	Discuss issues related to downloading music or videos from the Internet, including unethical vs. illegal actions.
03.08	Compare and contrast rules for copyright and fair use, especially in relation to using online resources for school and educational purposes.
03.09	Distinguish between viruses and malware and discuss their impact on personal privacy and computer operation.
03.10	Describe common threats used to spread malware and viruses, including phishing, pharming, Trojans, spyware, malicious sites, “free” downloads.
03.11	Perform an antivirus scan on a computer system to check for viruses and malware.
03.12	Describe strong password practices.
03.13	Practice cyber safety techniques to protect your computer system when using Internet searches, email and social network websites.
03.14	Identify security issues related to mobile phones, including personal information compromised if a phone is lost or stolen.
03.15	Adhere to Acceptable Use Policies when accessing the Internet.
04.0	Demonstrate proficiency using the Internet to locate information. – The student will be able to:
04.01	Identify and use web terminology (WWW, Web Browser, Internet, Web Server, Web Page, Address Bar, Hyperlinks, Navigation Buttons, Search Bar, Bookmarks/Favorites, Tab, Downloading, Plug-ins, Social Media Plug-ins).
04.02	Define Universal Resource Locators (URLs) and associated protocols (e.g., http, ftp, telnet, mailto).
04.03	Compare and contrast the types of Internet domains (e.g., .com, .org, .edu, .gov, .net, .mil).
04.04	Demonstrate proficiency using search engines, including Boolean search techniques.
04.05	Demonstrate proficiency using various web tools (e.g., downloading of files, transfer of files, telnet, PDF).

04.06	Compare and contrast the roles of web servers and web browsers.
04.07	Evaluate online information for relevance, credibility and quality using basic guidelines and indicators (e.g., authority, affiliation, purpose, bias, date).
04.08	Identify and apply copyright and fair use guidelines, and explain plagiarism as an ethical and legal violation.
04.09	Incorporate results from Internet searches into a research project (e.g., report, summary).
04.10	Download images as needed to support a research project, complying with copyright notices.
04.11	Properly cite Internet sources used to obtain information for a research project.
05.0	05.0 Demonstrate proficiency in using word processing software. – The student will be able to:
05.01	Describe the general functions of word-processing software, including benefits for document creation, commonly used word-processing applications.
05.02	Define the term “cloud computing,” and explain benefits of creating and storing word-processing documents online.
05.03	List and describe common word processor interface tools and features.
05.04	Identify common keyboard shortcuts used in word processors, and explain the benefits of using shortcuts.
05.05	Format the page setup of a document, including margins, line spacing, indents, headers vs. footers, orientation.
05.06	Explain printing options in a word processor, including shrink-to-fit, 2-sided printing, and document orientation.
05.07	Copy, paste and move text within a document using mouse, menu and keyboard techniques.
05.08	Copy, paste and move text among multiple documents using mouse, menu and keyboard techniques.
05.09	Modify document view settings to display close-up, single and multiple pages.
05.10	Define the term “format” as it relates to word processing.
05.11	Format text using styles and font tools in a word processor.
05.12	Format a document using multi-level heading styles to enable an outline view (e.g., document map, navigation pane) in a word processor.
05.13	Create a table of contents using auto-generation tools and techniques in a word processor.
05.14	Insert page breaks in a document.
05.15	Create source citations and/or a bibliography in a document.

05.16	Insert a current date and time stamp into a document.
05.17	Use word processor tools to determine the number of pages, words and characters in a document.
05.18	Use spell check, grammar check, thesaurus, and find & replace to edit a document.
05.19	Insert and modify sizing of images in a word-processing document.
05.20	Position an image relative to text in a document, using various text-wrapping options (inline, square, tight).
05.21	Use word-processing drawing tools to create pre-formatted shapes that enhance a document's content.
05.22	Use word-processor drawing tools to create a visual representation of information (e.g., SmartArt), such as diagram, flow chart.
05.23	Apply a column layout to text in a document as appropriate for the content (e.g., article, newsletter).
05.24	Apply simple numbered and bulleted lists in a document to make content easier to read and understand.
05.25	Format numbered and bulleted lists to produce multi-level outline in a document.
05.26	Create a simple brochure and/or flyer using a template.
05.27	Create a table in a word-processing document, and enter and move data in the table.
05.28	Convert a body of text into a table structure in a document to make content easier to read and understand.
05.29	Define "collaboration" and explain ways that users can collaborate on word-processing documents, including installed software vs. cloud-based software, real-time collaboration, auto save, sharing tools, revision history.
05.30	Use the translation tool in a word processor to translate text in a document from English into another language, and vice versa.
05.31	Add comments to a document when reviewing and/or editing content.
05.32	Revise a document using editing tools (e.g., Track Changes) in a word processor, and accept or reject changes as appropriate.
06.0	Demonstrate proficiency in using presentation software. – The student will be able to:
06.01	Describe presentation software and the ways it can be used.
06.02	Create and/or modify a "slide master" or template to apply a consistent appearance to a presentation.
06.03	Add and format titles, subtitles and talking points in presentation slides.
06.04	Add slide numbers and/or date and time codes to presentation slides.
06.05	Insert and format images/graphics in presentation slides.

06.06	Insert new or duplicate slides in a presentation.
06.07	Modify slide transitions in a presentation to include animation.
06.08	Insert and/or modify sound settings and timing in a presentation.
06.09	Modify the sequence of slides in a presentation.
06.10	Produce a presentation that includes text, graphics and images, and present it.
06.11	Modify a presentation's setup to repeat (i.e., loop) the presentation continuously.
07.0	Demonstrate proficiency in using graphics software. – The student will be able to:
07.01	Describe graphics software and the ways it can be used.
07.02	Compare and contrast vector and raster images.
07.03	Identify image file formats for photos and graphical art (e.g., TIFF, BMP, PSD, EPS, JPEG, GIF, PNG), and specify which formats are supported on the Web.
07.04	Define terms related to the creation and display of graphical images (e.g., raster, vector, transparency, opacity, cropping, lasso, magic wand, marquee, canvas size, flattened, blur, dodge, sharpen, staking order, free transform, lossless, adjustments, move, clone, zoom, layers, filter, distort).
07.05	Create images with effects using different tools, brushes, adjustments and filters available in graphics software.
07.06	Copy and paste graphical images.
07.07	Modify shapes and colors in a graphical image.
07.08	Save and export a digital photograph in a format that provides the best image quality and file size for Internet use.
07.09	Create a progressive slide presentation using graphical design/layout template features (e.g., SmartArt) and animated transitions.
07.10	Use a portable digital video device (e.g., mobile phone, flip camera) or similar online tools to shoot video files, and transfer them to a computer.
07.11	Use video-editing software to produce a slide show or movie.
07.12	Create a multimedia presentation that incorporates edited video, animation, music and/or narration, and that applies principles of good design, smooth transitions and effective message delivery.
08.0	Demonstrate appropriate use of email. – The student will be able to:
08.01	Define "email" and describe the functions and advantages as a form of communication.
08.02	Identify components of an email message.

08.03 Explain the format of an email address (i.e., user name, @ symbol, domain).

08.04 Attach a file to an email message.

08.05 Reply to and forward an email message to one or more addressees.

08.06 Use the Internet to perform email activities (i.e., web-based email).

08.07 Identify the appropriate use of email and demonstrate related email etiquette.

08.08 Perform email organization and cleanup (e.g., trash, flags, create folders).

**Florida Department of Education
Student Performance Standards**

Course Title: Information & Communications Technology (ICT) Essentials 2
Course Number: 9009120
Course Length: Year
Grade: 6-8

Course Description:

This course builds on the previous course and provides greater depth and more complex concepts and the skills/knowledge to master these concepts. Students will be provided opportunities to extend their skills with various software applications by creating more complex documents and using more complex functions.

CTE Standards and Benchmarks	
09.0	Demonstrate knowledge of safety and privacy practices for online communication. The student will be able to:
09.01	Define “privacy” and relate it to the term “digital footprint.”
09.02	Describe the risks of communicating on social networking sites (e.g. Facebook, Twitter, Instagram) and identify ways to communicate safely.
09.03	Distinguish between copyright infringement, plagiarism and fair use in an educational setting and in relation to school projects, especially with music and pictures.
09.04	Describe online communication practices that contribute to cyberbullying.
09.05	Practice safe online communication techniques with Internet searches, email, chat rooms, and other social network websites.
09.06	Follow an Acceptable Use Policy (AUP) when accessing the Internet.
10.0	Develop and apply fundamental spreadsheet skills. – The student will be able to:
10.01	Define “spreadsheet” and describe ways it may be used.
10.02	Identify the parts of the spreadsheet display, including cells, columns and rows, cell references, cell range.
10.03	Create and navigate through multiple spreadsheets in a file.
10.04	Insert and format various types of data (text, numeric, date/time) in a spreadsheet cells.
10.05	Select multiple cells, including adjacent and non-adjacent ranges, using mouse and keyboard techniques.

CTE Standards and Benchmarks

10.06	Cut, copy, and paste information from one or more cells to another part of the spreadsheet.
10.07	Use the undo and redo tools in a spreadsheet.
10.08	Apply and modify cell formatting for currency, date and percentage values.
10.09	Resize column width and row height in a spreadsheet.
10.10	Insert and delete columns and rows in a spreadsheet.
10.11	Merge and unmerge cells in a spreadsheet.
10.12	Apply shading and borders to a spreadsheet.
10.13	Describe the purpose of a table and how it relates to a spreadsheet.
10.14	Create and print a table and/or range that displays and sums the values of different data types.
10.15	Identify various types of charts (e.g., line, bar, pie, scatter) and common chart components (e.g., vertical axis, horizontal axis, legend), and explain when to use each chart type.
10.16	Create a chart from existing data and format the pieces (data set), change the background color, and add appropriate titles and a legend.
10.17	Use the auto sum function to calculate the values of multiple cells.
10.18	Insert common functions (SUM, AVERAGE, COUNT, MAX, MIN) and simple mathematical formulas which include addition, subtraction, multiplication, or division into a spreadsheet.
10.19	Distinguish between absolute and relative cell references in a spreadsheet.
10.20	Use the sort function to organize information numerically or alphabetically, including multiple levels of sorting.
10.21	Use the filter function to display spreadsheet data based on specific criteria.
10.22	Use conditional formatting to highlight text in a spreadsheet.
11.0	Develop and apply database skills. – The student will be able to:
11.01	Define database and describe real-world uses (e.g., search engines, schools, drivers licenses & car registrations, hospitals, retail, law enforcement).
11.02	Distinguish between databases and spreadsheets.
11.03	Identify advantages of using a database instead of alternatives (e.g., spreadsheets, electronic documents, paper).
11.04	Define “Big Data” and describe how it is used in advertising.

CTE Standards and Benchmarks

11.05 Identify the components of a database.

11.06 Distinguish between fields and records in a database.

11.07 Describe the basic data types and formats used in a database.

11.08 Distinguish between a table and a query.

11.09 Identify database keys, including primary and foreign.

11.10 Identify the relationships between tables in databases (i.e., one-to-one, one-to-many, many-to-many).

11.11 Distinguish between a query and a report.

11.12 Identify various report types.

11.13 Describe Structured Query Language (SQL) and discuss its use with databases.

11.14 Identify and compare various database applications, including Microsoft Access, MySQL, Oracle.

11.15 Create a database table that uses multiple data types.

11.16 Add, Edit, and Delete records from a database table.

11.17 Sort records in a database query or table.

11.18 Troubleshoot common database errors, including data type errors, query syntax errors.

11.19 Create a basic select query in one table.

11.20 Create an action query to manipulate data.

11.21 Create a query using primary and foreign keys.

11.22 Create a simple table join.

11.23 Import and export data from a database into a spreadsheet.

11.24 Create relevant reports from a database.

12.0 Demonstrate skill in using video editing software and equipment. – The student will be able to:

12.01 Demonstrate ability to operate a video camera (e.g., Flip camera, cell phone).

CTE Standards and Benchmarks

12.02 Write storyboards to depict a one minute video segment.

12.03 Determine appropriate lighting needs.

12.04 Create video shots sufficient to produce a one minute video.

12.05 Identify the functions and benefits of the digital video software interface.

12.06 Demonstrate ability to edit, cut, erase, and insert video.

12.07 Edit video as needed to achieve desired message and length.

12.08 Describe a first complete run-through of the video production process.

12.09 Characterize the qualities of effective communication in a completed video.

12.10 Upload finished video files to a website.

13.0 Demonstrate proficiency in using audio editing software (e.g., Audacity). – The student will be able to:

13.01 Identify the functions and benefits of the audio editing software interface.

13.02 Demonstrate ability to edit, cut, erase, and insert audio.

13.03 Edit audio as needed to achieve desired message and length.

13.04 Prepare a 30 second to 1 minute audio commercial project.

14.0 Demonstrate proficiency locating, gathering, and preparing textual, graphical, and image-based web content. – The student will be able to:

14.01 Define the elements of a webpage and what makes a good webpage.

14.02 Describe effective text and image content for webpages based on how visitors use the Web.

14.03 List guidelines and conventions for effective text on webpage.

14.04 Explain the inverted pyramid model of newspaper journalism and how it applies to Web content.

14.05 Use word-processing software to create effective written content for a webpage.

14.06 Create and/or edit message-driven image content for a webpage using graphics software.

14.07 Access graphics through various recourses (e.g., scanner, digital camera, CD-ROM, clipart, copyright-free online graphics).

CTE Standards and Benchmarks

14.08 Plan the content and design of a basic webpage using strategies for effective Web communication, including brainstorming, determining audience, choosing content and media types, using white space.

**Florida Department of Education
Student Performance Standards**

Course Title: Information & Communications Technology (ICT) Essentials Careers and Career Planning
Course Number: 9009140
Course Length: Year
Grade: 6-8

Course Description:

This course builds on the previous two courses and provides greater depth and more complex concepts and the skills/knowledge to master these concepts. In addition to working with network concepts, students will be provided opportunities to further extend their skills with various software applications by creating more complex documents and using more complex functions and technologies. Students will continue their exposure to computer programming and the creation of more complex computer programs. For the programming instruction, the use of Alice from Carnegie Mellon University is encouraged as it is a highly engaging program, includes instructional materials, and is available at no cost.

CTE Standards and Benchmarks	
15.0	Use Web 2.0 or Internet-based collaborative technology (e.g., Wikis, Wimba, Moodle, Edmodo, Facebook, Schoology, Gaggly) to facilitate a web development or research project. – The student will be able to:
15.01	Create and use a collaborative environment for communicating and sharing among project team members.
15.02	Create and use a social media page (e.g., Wikis, Wimba, Moodle, Edmodo, Facebook, Schoology, Gaggly) to share and publish project components (e.g., content, images, graphics, videos) for gauging visitor reaction and obtaining feedback.
16.0	Demonstrate an understanding of computer networks. – The student will be able to:
16.01	Define “network” and give examples of networks used at home, school, and work.
16.02	Compare types of networks, including LAN, WAN, MAN, VPN, intranet, extranet, the Internet.
16.03	Compare common network topologies, including bus, star, ring, mesh.
16.04	Compare various network models and their advantages, including client/server, mainframe/terminal, peer-to-peer.
16.05	Compare various methods and media for network connections, including broadband, wireless, Bluetooth, cellular, satellite.
16.06	Describe the functions of various network hardware devices, including NIC, hub, switch, router, bridge, gateway, access point.
16.07	Describe the purpose of protocols, and identify the protocols commonly used in networks, including TCP/IP, DHCP, DNS, HTTP, FTP, IMAP, POP, SMTP.

CTE Standards and Benchmarks

16.08 Describe the purpose and function of IP addressing and distinguish between public and private IP addresses.

16.09 Describe the OSI reference model and its layers, including tracing the flow of data between two network nodes through the OSI layers.

17.0 Demonstrate proficiency in webpage development. – The student will be able to:

17.01 Identify website domains, and relate a site's domain to its purpose.

17.02 Relate basic components of a webpage (e.g. color, space, written content, typography, images, links, multimedia) to aesthetic, functional and/or usable design principals.

17.03 Define aesthetic design, and explain how aesthetics can affect a visitors' perception of a website's information.

17.04 Demonstrate knowledge of color wheel concepts and effective use of color on a website.

17.05 Compare functional and usable design principles, and explain how usability can affect a website's success.

17.06 Critique the aesthetic design, usability and accessibility of sample websites.

17.07 Define multimedia, and identify its role in webpage interactivity.

17.08 Explain the primary steps of the website planning process.

17.09 Apply the website planning process to plan the design for basic website.

17.10 Build the site navigation scheme for a website.

17.11 Compare webpage creation using an HTML text editor to using a graphical user interface (GUI) editor.

17.12 Compare website creation using an online site builder, an offline site builder and a content management system (CMS).

17.13 Modify an existing webpage template to create an effective look and feel for a website.

17.14 Create a website using a template.

17.15 Define "HTML (Hypertext Markup Language)" and related terms, including tag vs. element, container vs. empty tag, block-level vs. inline element, attribute value, semantic tag.

17.16 Identify HTML elements required to create webpage structure.

17.17 Create webpages using basic HTML tags (e.g., headings, lists, character styles, text alignment, tables, comments).

17.18 Use HTML to create hyperlinks to external sites.

CTE Standards and Benchmarks

17.19 Use HTML to insert common image file formats into webpages, and use an image as a hyperlink.

17.20 Explain Cascading Style Sheet (CSS) technology.

17.21 Apply CSS styles to an HTML page.

17.22 Create and/or edit animation files, and integrate them into a webpage.

17.23 Create and/or edit video files, and integrate them into a webpage.

17.24 Use Dynamic HTML (DHTML) to enhance webpage interactivity.

17.25 Create and use a wiki or similar tool for collaborating among project team members.

17.26 Create and use a social media page (e.g., Facebook, Wimba, Edmodo) and/or a blog to share content and collaborate on projects.

17.27 Review webpage content, verify copyright restrictions, and create meta-data before publishing a site to the internet.

17.28 Test webpages for display, functionality, and accessibility before publishing a site to the Internet.

17.29 Validate webpage code using W3C validation tools before publishing a site to the Internet.

17.30 Describe network issues relating to websites, including bandwidth, compression, streaming, web hosting.

17.31 Explain the purpose of File Transfer Protocol (FTP) in accessing information on the Internet.

17.32 Publish a website using FTP.

17.33 Describe website security methods, including secure server vs. unsecured served, SSL, SSH, encryption.

18.0 Demonstrate proficiency in game development. – The student will be able to:

18.01 Describe the role of games in modern society (e.g., education, task training, social networking, therapy, recreation).

18.02 Identify various types of games (e.g., chance, skill, knowledge, role-playing, and storytelling).

18.03 Identify the steps of the design process for creating a game.

18.04 Apply the design process to solving a problem.

18.05 Analyze (deconstruct) existing games.

18.06 Identify the tools and skills needed for creating games.

CTE Standards and Benchmarks

18.07	Identify design criteria and constraints.
18.08	Create storyboards to model a game's program flow and functionality.
18.09	Identify the programmer's role in creating games.
18.10	Identify common programming languages and applications used to create computer games.
18.11	Compare sequential, iteration (loop) and selection programming structures.
18.12	Define the term algorithm (i.e., a set of repeatable steps) and how it applies to problem solving.
18.13	Create an algorithm to solve a problem or complete a task.
18.14	Use pseudo-code to model a game program's flow.
18.15	Define logic errors and identify them in a game program or model.
18.16	Explain the types and uses of variables in game programming.
18.17	Describe basic Boolean concepts, including logical operators, order of precedence, expressions.
18.18	Describe the use of events, event handlers and functions in game programming.
18.19	Describe the use of parameters and arguments in game programming.
18.20	Describe the use of objects, classes and instances in game programming.
18.21	Describe the use of properties and methods with objects in game programming.
18.22	Write appropriate code to create a simple game using structured programming.
18.23	Test and evaluate the game program you created.
18.24	Modify the game program as needed to solve a problem.
18.25	Create an animated object (i.e., sprite) to be used in a game program.
18.26	Use programming code to control the behavior of an animated object (i.e., sprite) in a game program.
19.0	Demonstrate proficiency in basic programming. – The student will be able to:
19.01	Define "programming" and discuss its role in computing.
19.02	Explain the binary representation of data and programs in computers.

CTE Standards and Benchmarks

- | | |
|-------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 19.03 | Distinguish among the three types of programming languages (machine, assembly, high-level), and give examples. |
| 19.04 | Compare and contrast languages that are usually compiled (e.g., C++, Java) and interpreted (e.g., JavaScript, Python). |
| 19.05 | Describe the structure of a simple program, and explain why sequencing is important. |
| 19.06 | Write a program design document using pseudo-code that shows program flow. |
| 19.07 | Explain strategies used in problem-solving, and relate them to computer programming. |
| 19.08 | Define the term “algorithm,” and explain how it relates to problem-solving. |
| 19.09 | Explain the three types of programming errors (i.e., logic, syntax, runtime), and describe the forms of testing that can be used to locate and debug errors. |
| 19.10 | Solve a problem using logic by planning a strategy, designing and testing a hypothesis, and/or creating a set of step-by-step instructions to perform a task. |
| 19.11 | Define “structured programming” and discuss the advantages of this approach. |
| 19.12 | Define the three main programming control structures used in structured programming: sequential, selection (decision), and iteration (loops). |
| 19.13 | Describe iterative programming structures (e.g., while, do/while) and how they are used in programming. |
| 19.14 | Describe selection programming structures (e.g., if/then, else) and explain the logic used for if statements. |
| 19.15 | Write a simple program in pseudo-code that uses structured programming to solve a problem. |
| 19.16 | Explain the types and uses of variables in programming. |
| 19.17 | Explain basic object-oriented concepts. |
| 19.18 | Describe fundamental Boolean concepts, including Boolean algebra, operators, logic. |
| 19.19 | Create animated objects using a high-level programming environment (e.g., Alice, Greenfoot) to control their behavior. |
| 19.20 | Create a simple program that uses animated objects. |
| 19.21 | Convert a simple program from pseudo-code into a common high-level programming environment (e.g. Alice, Greenfoot). |
| 19.22 | Troubleshoot and debug errors in code. |

CTE Standards and Benchmarks

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

The student will be able to:

- | | |
|------|-------------------------------------------------------------------------------------------------------------------------------------------------|
| 20.0 | Describe the influences that societal, economic, and technological changes have on employment trends and future training. |
| 21.0 | Develop skills to locate, evaluate, and interpret career information. |
| 22.0 | Identify and demonstrate processes for making short and long term goals. |
| 23.0 | Demonstrate employability skills such as working in a group, problem-solving and organizational skills, and the importance of entrepreneurship. |
| 24.0 | Understand the relationship between educational achievement and career choices/postsecondary options. |
| 25.0 | Identify a career cluster and related pathways that match career and education goals. |
| 26.0 | Develop a career and education plan that includes short and long-term goals, high school program of study, and postsecondary/career goals. |
| 27.0 | Demonstrate knowledge of technology and its application in career fields/clusters. |

Additional Information

Laboratory Activities

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

Special Notes

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

Career and Technical Student Organization (CTSO)

FBLA and BPA are the intercurricular career and technical student organizations providing leadership training and reinforcing specific career and technical skills. Career and Technical Student Organizations provide activities for students as an integral part of the instruction offered.

Accommodations

Federal and state legislation requires the provision of accommodations for students with disabilities as identified on the secondary student's Individual Educational Plan (IEP) or 504 plan or postsecondary student's accommodations' plan to meet individual needs and ensure equal access. Accommodations change the way the student is instructed. Students with disabilities may need accommodations in such areas as instructional methods and materials, assignments and assessments, time demands and schedules, learning environment, assistive technology and special communication systems. Documentation of the accommodations requested and provided should be maintained in a confidential file.

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

Florida Department of Education
Curriculum Framework

Course Title: Fundamentals of Networking and Information Support
Course Type: Orientation/Exploratory
Career Cluster: Information Technology

Secondary – Middle School

Course Number	9009400
CIP Number	149009400M
Grade Level	6-8
Standard Length	Year
Teacher Certification	Refer to the <u>Course Structure</u> section.
CTSO	FBLA BPA

Purpose

The purpose of this course is to assist students in making informed decisions regarding their future academic and occupational goals and to provide information regarding careers in the Information Technology career cluster. The content includes but is not limited to foundational knowledge and skills related to computer networks and information support structure in the information technology industry.

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

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

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

The following table illustrates the course structure:

Course Number	Course Title	Teacher Certification	Length
9009400	Fundamentals of Networking and Information Support	BUS ED 1 @2 COMPU SCI 6 INFO TECH 7G CYBER TECH 7G	Year

Florida Standards for English Language Development (ELD)

English language learners communicate for social and instructional purposes within the school setting. ELD.K12.SI.1.1

English Language Development (ELD) Standards Special Notes:

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

Standards

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

- 01.0 Demonstrate knowledge, skill, and application of information systems to accomplish job objectives and enhance workplace performance.
- 02.0 Demonstrate comprehension and communication skills.
- 03.0 Use technology to enhance the effectiveness of communication skills.
- 04.0 Demonstrate an understanding of Internet safety and ethics.
- 05.0 Perform e-mail activities.
- 06.0 Demonstrate knowledge of different operating systems.
- 07.0 Demonstrate proficiency navigating the Internet and the intranet.
- 08.0 Develop an awareness of microprocessors and digital computers.
- 09.0 Demonstrate an understanding of the Open Systems Interface (OSI) model.
- 10.0 Identify computer components and their functions.
- 11.0 Demonstrate proficiency using computer networks.
- 12.0 Demonstrate an understanding of database design, structure, and operation.
- 13.0 Demonstrate a fundamental understanding of Structured Query Language (SQL).

Florida Department of Education
Student Performance Standards

Course Title: Fundamentals of Networking and Information Support
Course Number: 9009400
Course Length: Year

Course Description:

This course provides students with opportunities to acquire foundational knowledge and skills suitable for pursuing higher level programs of study related to the information technology industry.

CTE Standards and Benchmarks	
01.0	Demonstrate knowledge, skill, and application of information systems to accomplish job objectives and enhance workplace performance. – The student will be able to:
01.01	Develop keyboarding skills to enter and manipulate text and data.
01.02	Describe and use current and emerging computer technology and software to perform personal and business related tasks.
01.03	Identify and describe communications and networking systems used in workplace environments.
01.04	Use reference materials such as on-line help, vendor bulletin boards, tutorials, and manuals available for application software.
01.05	Describe ethical issues and problems associated with computers and information systems.
02.0	Demonstrate comprehension and communication skills. – The student will be able to:
02.01	Use listening, speaking, telecommunication and nonverbal skills and strategies to communicate effectively.
02.02	Organize ideas and communicate oral and written messages appropriate for information technology environments.
02.03	Collaborate with individuals and teams to complete tasks and solve information technology problems.
02.04	Demonstrate an awareness of project management concepts and tools (e.g., timelines, deadlines, resource allocation, time management, delegation of tasks, collaboration).
03.0	Use technology to enhance the effectiveness of communication skills. – The student will be able to:
03.01	Use database, spreadsheet, presentation software, scheduling, and integrated software packages to enhance communication.
03.02	Respond to and utilize information derived from multiple sources (e.g., written documents, instructions, e-mail, voice mail) to solve problems and complete tasks.

CTE Standards and Benchmarks

04.0 Demonstrate an understanding of Internet safety and ethics. – The student will be able to:

04.01 Describe cyber-bullying and its impact on perpetrators and victims.

04.02 Differentiate between viruses and malware, specifically their sources, ploys, and impact on personal privacy and computer operation, and ways to avoid infection.

04.03 Describe risks associated with sexting, including related legal issues, social engineering aspects, prevention methods, and reporting of offenses.

04.04 Describe the risks associated with online gaming and ways to mitigate these risks.

04.05 Describe the ethics and copyright legalities of downloading music or videos from the Internet.

04.06 Describe risks associated with social networking sites (e.g., FaceBook, MySpace, Twitter) and ways to mitigate these risks.

04.07 Adhere to cyber safety practices with regard to conducting Internet searches, email, chat rooms, and other social network websites.

05.0 Perform email activities. – The student will be able to:

05.01 Describe email capabilities and functions.

05.02 Identify components of an email message.

05.03 Identify the components of an email address.

05.04 Identify when to use different email options.

05.05 Attach a file to an email message.

05.06 Forward an email message.

05.07 Use an address book.

05.08 Reply to an email message.

05.09 Use the Internet to perform email activities.

05.10 Identify the appropriate use of email and demonstrate related email etiquette.

05.11 Identify when to include information from an original email message in a response.

05.12 Identify common problems associated with widespread use of email.

CTE Standards and Benchmarks

06.0 Demonstrate knowledge of different operating systems. – The student will be able to:

06.01 Identify operating system file naming conventions.

06.02 Demonstrate proficiency with file management and structure (e.g., folder creation, file creation, backup, copy, delete, open, save).

06.03 Demonstrate a working knowledge of standard file formats.

06.04 Explain the history and purpose of various operating systems (e.g., DOS, Windows, Mac, Linux).

07.0 Demonstrate proficiency navigating the Internet and the intranet. – The student will be able to:

07.01 Identify and describe Web terminology.

07.02 Demonstrate proficiency in using the basic features of GUI browsers (e.g., setting bookmarks, basic configurations, email configurations, address book).

07.03 Define Universal Resource Locators (URLs) and associated protocols (e.g., .com, .org, .edu, .gov, .net, .mil).

07.04 Demonstrate proficiency using search engines (e.g., Yahoo!, Google).

07.05 Demonstrate proficiency downloading files.

07.06 Identify effective Boolean search strategies.

08.0 Develop an awareness of microprocessors and digital computers. – The student will be able to:

08.01 Describe the evolution of the digital computer.

08.02 Explain the general architecture of a microcomputer system.

08.03 Explain the evolution of microprocessors.

08.04 Explain software hierarchy and its impact on microprocessors.

08.05 Explain the need for and use of peripherals.

08.06 Demonstrate proficiency using peripherals.

08.07 Identify the basic concepts of computer maintenance and upgrades.

08.08 Differentiate between diagnosing and troubleshooting.

CTE Standards and Benchmarks

09.0 Demonstrate an understanding of the Open Systems Interface (OSI) model. – The student will be able to:

09.01 Describe the evolution of OSI from its inception to the present and into the future.

09.02 Explain the interrelations of the seven layers of the Open Systems Interface (OSI) as it relates to hardware and software.

09.03 Describe the purpose of the OSI model and each of its layers.

09.04 Explain specific functions belonging to each OSI model layer.

09.05 Understand how two network nodes communicate through the OSI model.

09.06 Discuss the structure and purpose of data packets and frames.

09.07 Describe the two types of addressing covered by the OSI model.

10.0 Identify computer components and their functions. – The student will be able to:

10.01 Identify the internal components of a computer (e.g., power supply, hard drive, mother board, I/O cards/ports, cabling).

10.02 Use common computer and programming terminology.

11.0 Demonstrate proficiency using computer networks. – The student will be able to:

11.01 Define networking and describe the purpose of a network.

11.02 Describe the conceptual background of digital networks including terminology and basics.

11.03 Describe various types of networks and the advantages and disadvantages of each (e.g., peer to peer, client/server, mainframe/terminal).

11.04 Describe the use, advantages, and disadvantages of various network media (e.g., thinnet cable, coaxial), twisted pair (cat 5), fiber optics).

11.05 Describe the function of various network devices (e.g., hub, switched hub or switch, router bridge, gateway, access points).

11.06 Describe how network devices are identified (i.e., IP addressing).

11.07 Explain the protocols commonly used in a network environment.

11.08 Differentiate between public and private IP addresses.

11.09 Describe the common ports and corresponding protocols used in a network.

CTE Standards and Benchmarks

11.10 Describe the difference between the Internet and intranet.

11.11 Discuss the differences between Local Area Network (LAN), Wide Area Network (WAN), Metropolitan Area Network (MAN), and Virtual Private Network (VPN).

12.0 Demonstrate an understanding of database design, structure, and operation. – The student will be able to:

12.01 Describe a relational database and its key elements.

12.02 Describe the Entity Relationship Model (ERM).

12.03 Differentiate between one-to-many, many-to-many and one-to-one relationships.

12.04 Define referential integrity and describe its importance to managing information.

13.0 Demonstrate a fundamental understanding of Structured Query Language (SQL). – The student will be able to:

13.01 List the capabilities of SQL SELECT statements.

13.02 Execute basic SQL statements, including SELECT, INSERT, and UPDATE.

13.03 Apply the concatenation operator to link columns to other columns, arithmetic expressions, or constant values to create a character expression.

13.04 Use the AS clause to define column aliases to rename columns in the query result.

13.05 Use SQL to display the structure of a table.

13.06 Apply SQL syntax to restrict the rows returned from a query.

13.07 Demonstrate application of the WHERE clause syntax.

13.08 Apply the proper comparison operator to return a desired result.

Additional Information

Laboratory Activities

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

Special Notes

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

Career and Technical Student Organization (CTSO)

FBLA and BPA the intercurricular career and technical student organizations providing leadership training and reinforcing specific career and technical skills. Career and Technical Student Organizations provide activities for students as an integral part of the instruction offered.

Accommodations

Federal and state legislation requires the provision of accommodations for students with disabilities as identified on the secondary student's Individual Educational Plan (IEP) or 504 plan or postsecondary student's accommodations' plan to meet individual needs and ensure equal access. Accommodations change the way the student is instructed. Students with disabilities may need accommodations in such areas as instructional methods and materials, assignments and assessments, time demands and schedules, learning environment, assistive technology and special communication systems. Documentation of the accommodations requested and provided should be maintained in a confidential file.

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

Florida Department of Education
Curriculum Framework

Course Title: Fundamentals of Web and Software Development
Course Type: Orientation/Exploratory
Career Cluster: Information Technology

Secondary – Middle School

Course Number	9009500
CIP Number	149009500M
Grade Level	6-8
Standard Length	Year
Teacher Certification	Refer to the <u>Course Structure</u> section.
CTSO	FBLA BPA

Purpose

The purpose of this course is to assist students in making informed decisions regarding their future academic and occupational goals and to provide information regarding careers in the Information Technology career cluster. The content includes but is not limited to foundational knowledge and skills related to web and software development in the information technology industry.

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

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

Course Structure

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

The following table illustrates the course structure:

Course Number	Course Title	Teacher Certification	Length
9009500	Fundamentals of Web and Software Development	BUS ED 1 @2 COMPU SCI 6 INFO TECH 7G WEB DEV 7G COMP PROG 7G	Year

Florida Standards for English Language Development (ELD)

English language learners communicate for social and instructional purposes within the school setting. ELD.K12.SI.1.1

English Language Development (ELD) Standards Special Notes:

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

Standards

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

- 01.0 Demonstrate knowledge, skill, and application of information systems to accomplish job objectives and enhance workplace performance.
- 02.0 Demonstrate comprehension and communication skills.
- 03.0 Use technology to enhance the effectiveness of communication skills.
- 04.0 Demonstrate an understanding of Internet safety and ethics.
- 05.0 Perform e-mail activities.
- 06.0 Demonstrate knowledge of different operating systems.
- 07.0 Demonstrate proficiency navigating the Internet and the intranet.
- 08.0 Demonstrate proficiency using HTML commands.
- 09.0 Demonstrate proficiency in webpage design.
- 10.0 Demonstrate proficiency using specialized web design software.
- 11.0 Develop an awareness of programming languages.
- 12.0 Demonstrate proficiency using common software applications.

Florida Department of Education
Student Performance Standards

Course Title: Fundamentals of Web and Software Development
Course Number: 9009500
Course Length: Year

Course Description:

This course provides students with opportunities to acquire foundational knowledge and skills suitable for pursuing higher level programs of study related to the information technology industry.

CTE Standards and Benchmarks	
01.0	Demonstrate knowledge, skill, and application of information systems to accomplish job objectives and enhance workplace performance. – The student will be able to:
01.01	Develop keyboarding skills to enter and manipulate text and data.
01.02	Describe and use current and emerging computer technology and software to perform personal and business related tasks.
01.03	Identify and describe communications and networking systems used in workplace environments.
01.04	Use reference materials such as on-line help, vendor bulletin boards, tutorials, and manuals available for application software.
01.05	Describe ethical issues and problems associated with computers and information systems.
02.0	Demonstrate comprehension and communication. – The student will be able to:
02.01	Use listening, speaking, telecommunication and nonverbal skills and strategies to communicate effectively.
02.02	Organize ideas and communicate oral and written messages appropriate for information technology environments.
02.03	Collaborate with individuals and teams to complete tasks and solve information technology problems.
02.04	Demonstrate an awareness of project management concepts and tools (e.g., timelines, deadlines, resource allocation, time management, delegation of tasks, collaboration).
03.0	Use technology to enhance the effectiveness of communication skills. – The student will be able to:
03.01	Use database, spreadsheet, presentation software, scheduling, and integrated software packages to enhance communication.
03.02	Respond to and utilize information derived from multiple sources (e.g., written documents, instructions, email, voice mail) to solve problems and complete tasks.

CTE Standards and Benchmarks

04.0 Demonstrate an understanding of Internet safety and ethics. – The student will be able to:

04.01 Describe cyber-bullying and its impact on perpetrators and victims.

04.02 Differentiate between viruses and malware, specifically their sources, ploys, and impact on personal privacy and computer operation, and ways to avoid infection.

04.03 Describe risks associated with sexting, including related legal issues, social engineering aspects, prevention methods, and reporting of offenses.

04.04 Describe the risks associated with online gaming and ways to mitigate these risks.

04.05 Describe the ethics and copyright legalities of downloading music or videos from the Internet.

04.06 Describe risks associated with social networking sites (e.g., FaceBook, MySpace, Twitter) and ways to mitigate these risks.

04.07 Adhere to cyber safety practices with regard to conducting Internet searches, email, chat rooms, and other social network websites.

05.0 Perform email activities. – The student will be able to:

05.01 Describe email capabilities and functions.

05.02 Identify components of an email message.

05.03 Identify the components of an email address.

05.04 Identify when to use different email options.

05.05 Attach a file to an email message.

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05.07 Use an address book.

05.08 Reply to an email message.

05.09 Use the Internet to perform email activities.

05.10 Identify the appropriate use of email and demonstrate related email etiquette.

05.11 Identify when to include information from an original email message in a response.

05.12 Identify common problems associated with widespread use of email.

06.0 Demonstrate knowledge of different operating systems. – The student will be able to:

06.01 Identify operating system file naming conventions.

06.02 Demonstrate proficiency with file management and structure (e.g., folder creation, file creation, backup, copy, delete, open, save).

06.03 Demonstrate a working knowledge of standard file formats.

CTE Standards and Benchmarks

06.04 Explain the history and purpose of various operating systems (e.g., DOS, Windows, Mac, Linux).

07.0 Demonstrate proficiency navigating the Internet and the intranet. – The student will be able to:

07.01 Identify and describe Web terminology.

07.02 Demonstrate proficiency in using the basic features of GUI browsers (e.g., setting bookmarks, basic configurations, email configurations, address book).

07.03 Define Universal Resource Locators (URLs) and associated protocols (e.g., .com, .org, .edu, .gov, .net, .mil).

07.04 Demonstrate proficiency using search engines (e.g., Yahoo!, Google).

07.05 Demonstrate proficiency downloading files.

07.06 Identify effective Boolean search strategies.

08.0 Demonstrate proficiency using HTML commands. – The student will be able to:

08.01 Identify elements of a Web page.

08.02 Define basic HTML terminology.

08.03 Analyze HTML source code developed by others.

08.04 Create Web pages using basic HTML tags (e.g., links, lists, character styles, text alignment, tables).

08.05 Edit and test HTML documents for accuracy and validity.

08.06 Create a website using basic functions of a WYSIWYG or GUI editor.

08.07 Use basic functions of HTML, DHTML, and XML editors and converters.

08.08 Enhance web pages through the addition of images and graphics including animation.

09.0 Demonstrate proficiency in webpage design. – The student will be able to:

09.01 Demonstrate an understanding of acceptable webpage design.

09.02 Design a website using storyboarding techniques.

09.03 Describe and apply color theory as it applies to webpage design (e.g., background and text color).

09.04 Access and digitize graphics through various resources (e.g., scanner, digital cameras, on-line graphics, clipart, CD-ROMs).

09.05 Use image design software to create and edit images.

CTE Standards and Benchmarks

09.06 Demonstrate proficiency in publishing to the Internet.

10.0 Demonstrate proficiency using specialized web design software. – The student will be able to:

10.01 Compare and contrast various specialized web design software (e.g., Dreamweaver, Flash).

10.02 Demonstrate proficiency using various specialized web design software (e.g., Dreamweaver, Flash).

11.0 Develop an awareness of programming languages. – The student will be able to:

11.01 Explain the history of programming languages.

11.02 Explain the need for and use of compilers.

11.03 Explain how compilers work.

11.04 Identify the three types of programming design approaches (e.g., top-down, structured, object-oriented).

11.05 Compare the various types or classes of programming languages (e.g., compiled, interpretive).

11.06 Differentiate among source code, machine code, interpreters, and compilers.

11.07 Characterize the major categories of programming languages and how they are used.

11.08 Create a model flowchart for a computer program.

11.09 Describe the stages in the software development life cycle.

12.0 Demonstrate proficiency using common software applications. – The student will be able to:

12.01 Compare and contrast the appropriate use of various software applications (e.g., word processing, desktop publishing, graphics design, web browser, e-mail, presentation, database).

12.02 Demonstrate proficiency in the use of various software applications (e.g., word processing, desktop publishing, graphics design, web browser, e-mail, presentation, database).

Additional Information

Laboratory Activities

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

Special Notes

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

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FBLA and BPA are the intercurricular career and technical student organizations providing leadership training and reinforcing specific career and technical skills. Career and Technical Student Organizations provide activities for students as an integral part of the instruction offered.

Accommodations

Federal and state legislation requires the provision of accommodations for students with disabilities as identified on the secondary student's Individual Educational Plan (IEP) or 504 plan or postsecondary student's accommodations' plan to meet individual needs and ensure equal access. Accommodations change the way the student is instructed. Students with disabilities may need accommodations in such areas as instructional methods and materials, assignments and assessments, time demands and schedules, learning environment, assistive technology and special communication systems. Documentation of the accommodations requested and provided should be maintained in a confidential file.

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

Florida Department of Education
Curriculum Framework

Program Title: Digital Discoveries in Society
Program Type: Orientation/Exploratory
Career Cluster: Information Technology

Secondary – Middle School

Program Number	9009600
CIP Number	0511020111
Grade Level	6-8
Standard Length	Year
Teacher Certification	Refer to the <u>Program Structure</u> section.
CTSO	FBLA BPA

Purpose

Digital Discoveries in Society is an introductory computer science course that empowers students to create authentic artifacts and engage with computer science as a medium for creativity, communication, problem solving, and fun. In addition to fundamental computer information, the content includes but is not limited to digital technologies associated with problem solving, computer components, internet safety and ethics, web development, animations and games, basic programming techniques, and physical computing. The first six units in the course encourages students to see where computer science exists around them and how they can engage with it as a tool for exploration and expression. Units seven and eight encourage the students to look outward and explore the impact of computer science on society.

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

Program Structure

This program is a planned year long course.

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

The following table illustrates the course structure:

Course Number	Course Title	Teacher Certification	Length
9009600	Digital Discoveries in Society	BUS ED 1 @2 COMPU SCI 6 INFO TECH 7G WEB DEV 7G	Year

Florida Standards for English Language Development (ELD)

English language learners communicate for social and instructional purposes within the school setting. ELD.K12.SI.1.1

English Language Development (ELD) Standards Special Notes:

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

Standards

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

- 01.0 Demonstrate an understanding of the problem solving process.
- 02.0 Identify computer components and their functions.
- 03.0 Demonstrate an understanding of internet safety and ethics.
- 04.0 Demonstrate proficiency using the Internet to locate information.
- 05.0 Demonstrate proficiency in web page development.
- 06.0 Demonstrate proficiency in animation and games.
- 07.0 Demonstrate proficiency in basic programming.
- 08.0 Demonstrate proficiency in physical computing with hardware devices.

**Florida Department of Education
Student Performance Standards**

Course Title: Digital Discoveries in Society
Course Number: 9009600
Course Length: Year
Grade: 6-8

Course Description:

Digital Discoveries in Society is an introductory computer science course that empowers students to create authentic artifacts and engage with computer science as a medium for creativity, communication, problem solving, and fun. In addition to fundamental computer information, the content includes but is not limited to digital technologies associated with problem solving, computer components, internet safety and ethics, web development, animations and games, basic programming techniques, and physical computing. The first six units in the course encourages students to see where computer science exists around them and how they can engage with it as a tool for exploration and expression. Units seven and eight encourage the students to look outward and explore the impact of computer science on society.

This course may be used with free online coding tools from Scratch.mit.edu, Code.org, Microsoft Makecode, CSfirst.withgoogle.com, CodeAcademy, Khan Academy, Code Combat, Lightbot, Pixlr, etc.

For the last unit on physical computing it is recommended that students have access to one of the following to work on in pairs or in small groups: Circuit Playgrounds, Micro:bits, Raspberry Pi’s, Arduino boards, etc.

CTE Standards and Benchmarks		CS Standards
01.0	Demonstrate and understanding of the problem solving process. The student will be able to:	Networks and the Internet
01.01	Identify and explain the four parts of the problem solving process (Define, Prepare, Try, and Reflect).	
01.02	Describe the strategies and processes to become a more effective problem solver.	
01.03	Explain how computers help people to solve problems.	
01.04	Compare and contrast how people and computers approach problems differently.	
01.05	Explain what a computer needs from people in order to solve problems effectively.	
02.0	Identify computer components and their functions. The student will be able to:	Computing Systems
02.01	Define "computer," and explain why it is important to have a basic understanding of how computers work.	

02.02	Describe the four functions of the computing cycle (i.e., input, processing, output, storage).	
02.03	Identify the internal components of a computer (e.g., case, CPU, RAM, ROM, power supply, hard drive, motherboard, expansion cards, cabling).	
02.04	Identify and know how to connect various computer input devices (e.g., mouse, keyboard, phone, camera, scanner, microphone, game controller, stylus, barcode reader, finger print scanner, GPS device, touch pad, graphics tablet) and describe their use.	
02.05	Identify and know how to connect various computer output devices (e.g., monitor, printer, projector, speakers, and headphones) and describe their use.	
02.06	Identify and know how to connect various storage devices (e.g., flash drive, external hard drive (SSD, network drive), memory card, discs, and cloud).	
02.07	Identify various computer connection ports, including USB, FireWire, parallel, serial, Ethernet (RJ-45), RJ-11, HDMI, audio.	
02.08	Illustrate and correctly label the parts of a computer system.	
02.09	Describe how people use computers at home, school and work.	
02.10	Define the term "cloud storage" and explain the advantages and disadvantages of using cloud storage.	
03.0	Demonstrate an understanding of Internet safety and ethics. The student will be able to:	Impacts of Computing
03.01	Describe strong password practices and explain why such practices are needed at school, home and work.	
03.02	Define "privacy" and relate it to the term "digital footprint."	
03.03	Practice cyber safety techniques to protect your personal information when using internet searches, email, chat rooms, and social network websites.	
03.04	Describe cyberbullying, its impact on perpetrators and victims and ways to respond.	
03.05	Describe risks associated with online gaming, and identify ways to reduce these risks.	
03.06	Discuss issues related to downloading music, videos, or images from the Internet, including unethical vs. illegal actions.	
03.07	Compare and contrast rules for copyright and fair use, especially in relation to using online resources for school and educational purposes.	
03.08	Properly cite sources used for images and information obtained from the internet for projects and research	
03.09	Review your district/school Acceptable Use Policies when accessing the Internet and adhere to the AUP while using school equipment, internet and software.	
04.0	Demonstrate proficiency using the Internet to locate information. The student will be able to:	Networks and the Internet

04.01	Identify and use web terminology (WWW, Web Browser, Internet, Web Server, Web Page, Address Bar, Hyperlinks, Navigation Buttons, Search Bar, Bookmarks/Favorites, Tab, Downloading, Plug-ins, and Social Media Plug-ins).	
04.02	Define Universal Resource Locators (URLs) and associated protocols (e.g., http, https, ftp, telnet, mailto).	
04.03	Compare and contrast the types of Internet domains (e.g., .com, .org, .edu, .gov, .net, .mil).	
04.04	Demonstrate proficiency using search engines, including Boolean and other advanced search techniques.	
04.05	Demonstrate proficiency in uploading and downloading files, images, documents and music for class projects and collaboration.	
04.06	Compare and contrast the roles of web browsers and search engines.	
04.07	Evaluate online information for relevance, credibility and quality using basic guidelines and indicators (e.g. authority, affiliation, purpose, bias, date).	
04.08	Distinguish between copyright infringement, plagiarism and fair use in an educational setting and in relation to school projects, especially with music and pictures.	
04.09	Identify and apply copyright and fair use guidelines, and explain plagiarism as an ethical and legal violation.	
04.10	Incorporate results from Internet searches into a research project (e.g., report, summary, website design, app creation, etc.).	
04.11	Download images as needed to support a research project, complying with copyright notices.	
04.12	Properly cite internet sources used to obtain information for a research project.	
04.13	Explain what creative commons licensing is and why it is important to web designers and programmers.	
05.0	Demonstrate proficiency in web page development. The student will be able to:	Algorithms and Programming
05.01	Identify website domains, and relate a site's domain name and domain category to its purpose (.gov, .mil, .org, .com, etc.)	
05.02	Relate basic components of a webpage (e.g. color, space, written content, typography, images, links, multimedia) to aesthetic, functional and/or usable design principals.	
05.03	Define aesthetic design, and explain how aesthetics can affect a visitors' perception of a website's information.	
05.04	Demonstrate knowledge of color wheel concepts and effective use of color on a website.	
05.05	Explain the CARP principles of design (contrast, alignment, repetition, proximity), and give an example of how each principle is used in designing aesthetic layouts.	
05.06	Critique the aesthetic design, usability and accessibility of sample websites.	

05.07	Define multimedia, and identify its role in webpage interactivity.	
05.08	Explain the primary steps of the website planning process.	
05.09	Apply the website planning process to plan the design for basic website.	
05.10	Build the site navigation scheme for a website.	
05.11	Define “HTML (Hypertext Markup Language)” and related terms, including tag vs. element, container vs. empty tag, block-level vs. inline element, attribute value, semantic tag.	
05.12	Identify HTML elements required to create webpage structure (!DOCTYPE, html, head, title, body)	
05.13	Create webpages using basic HTML tags (e.g., headings, lists, character styles, text alignment, tables, and comments).	
05.14	Use HTML to create hyperlinks to multiple pages in a website or to outside sources.	
05.15	Use HTML to insert common image file formats into webpages, and use an image as a hyperlink.	
05.16	Explain Cascading Style Sheet (CSS) technology.	
05.17	Apply CSS styles to an HTML page.	
05.18	Review webpage content, verify copyright restrictions, and create meta-data before publishing a site to the internet.	
05.19	Test webpages for display, functionality, and accessibility before publishing a site to the Internet.	
05.20	Validate webpage code using W3C validation tools before publishing a site to the Internet.	
05.21	Describe network issues relating to websites, including bandwidth, compression, streaming, web hosting.	
05.22	Explain the purpose of File Transfer Protocol (FTP) in accessing information on the Internet.	
05.23	Design and create a personal website using HTML and CSS with at least three different pages that are hyperlinked to the homepage.	
05.24	Publish a website.	
06.0	Demonstrate proficiency in game development. The student will be able to:	Algorithms and Programming
06.01	Describe the role of games in modern society (e.g., education, task training, social networking, therapy, recreation).	
06.02	Identify various types of games (e.g., chance, skill, knowledge, role-playing, and	

storytelling).	
06.03 Identify the steps of the design process for creating a game.	
06.04 Apply the design process to solving a problem.	
06.05 Analyze (deconstruct) existing games.	
06.06 Identify the tools and skills needed for creating games.	
06.07 Identify design criteria and constraints.	
06.08 Create storyboards to model a game's program flow and functionality.	
06.09 Identify the programmer's role in creating games.	
06.10 Identify common programming languages and applications used to create computer games.	
06.11 Compare sequential, iteration (loop) and selection programming structures.	
06.12 Define the term algorithm (i.e., a set of repeatable steps) and how it applies to problem solving.	
06.13 Create an algorithm to solve a problem or complete a task.	
06.14 Use pseudo-code to model a game program's flow.	
06.15 Define logic errors and identify them in a game program or model.	
06.16 Explain the types and uses of variables in game programming.	
06.17 Describe basic Boolean concepts, including logical operators, order of precedence, expressions.	
06.18 Describe the use of events, event handlers and functions in game programming.	
06.19 Describe the use of parameters and arguments in game programming.	
06.20 Describe the use of objects, classes and instances in game programming.	
06.21 Describe the use of properties and methods with objects in game programming.	
06.22 Write appropriate code to create a simple game using structured programming.	
06.23 Test and evaluate the game program you created.	
06.24 Modify the game program as needed to solve a problem.	
06.25 Create an animated object (i.e., sprite) to be used in a game program.	

06.26	Use programming code to control the behavior of an animated object (i.e., sprite) in a game program.	
07.0	Demonstrate proficiency in basic programming. The student will be able to:	Algorithms and Programming
07.01	Define “programming” and discuss its role in computing.	
07.02	Explain the binary representation of data and programs in computers.	
07.03	Distinguish among the three types of programming languages (machine, assembly, high-level), and give examples.	
07.04	Compare and contrast languages that are usually compiled (e.g., C++, Java) and interpreted (e.g., JavaScript, Python).	
07.05	Describe the structure of a simple program, and explain why sequencing is important.	
07.06	Write a program design document using pseudo-code that shows program flow.	
07.07	Define the term “algorithm,” and explain how it relates to problem-solving.	
07.08	Explain the three types of programming errors (i.e., logic, syntax, runtime), and describe the forms of testing that can be used to locate and debug errors.	
07.09	Solve a problem using logic by planning a strategy, designing and testing a hypothesis, and/or creating a set of step-by-step instructions to perform a task.	
07.10	Define “structured programming” and discuss the advantages of this approach.	
07.11	Define the three main programming control structures used in structured programming: sequential, selection (decision), and iteration (loops).	
07.12	Describe iterative programming structures (e.g., while, do/while) and how they are used in programming.	
07.13	Describe selection programming structures (e.g., if/then, else) and explain the logic used for if statements.	
07.14	Write a simple program in pseudo-code that uses structured programming to solve a problem.	
07.15	Explain the types and uses of variables in programming.	
07.16	Describe fundamental Boolean concepts, including Boolean algebra, operators, and logic.	
07.17	Convert a simple program from pseudo-code into a common high-level programming environment.	
07.18	Troubleshoot and debug errors in code.	
07.19	Define “programming” and discuss its role in computing.	

08.0	Demonstrate proficiency in physical computing with hardware devices. The student will be able to:	Computing Systems
08.01	View hardware as an approachable and fun topic in computing.	
08.02	Believe that anyone can contribute to innovation.	
08.03	Use physical computing (aka: Microbits, Circuit Playgrounds, Arduino, Lily pads, Makey-Makey, Piper Kits, Raspberry Pi's, etc.) to solve problems.	
08.04	Determine how computers sense and respond to their environment.	
08.05	Determine the kind of information that can be communicated with hardware outputs.	
08.06	Analyze how simple hardware can be used to develop innovative new products.	
08.07	Define prototype in relation to digital design.	
08.08	Create a prototype of an original game that can be played using a physical computing device.	

Additional Information

Laboratory Activities

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

Special Notes

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

Career and Technical Student Organization (CTSO)

FBLA and BPA are the intercurricular career and technical student organizations providing leadership training and reinforcing specific career and technical skills. Career and Technical Student Organizations provide activities for students as an integral part of the instruction offered.

Accommodations

Federal and state legislation requires the provision of accommodations for students with disabilities as identified on the secondary student's Individual Educational Plan (IEP) or 504 plan or postsecondary student's accommodations' plan to meet individual needs and ensure equal access. Accommodations change the way the student is instructed. Students with disabilities may need accommodations in such areas as instructional methods and materials, assignments and assessments, time demands and schedules, learning environment, assistive technology and special communication systems. Documentation of the accommodations requested and provided should be maintained in a confidential file.

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

Florida Department of Education
Curriculum Framework

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

Secondary – Middle School

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

Purpose

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

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

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

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

Course Structure

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

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

The following table illustrates the course structure:

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

Florida Standards for English Language Development (ELD)

English language learners communicate for social and instructional purposes within the school setting. ELD.K12.SI.1.1

English Language Development (ELD) Standards Special Notes:

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

Standards

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

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

**Florida Department of Education
Student Performance Standards**

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

Course Description:

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

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

CTE Standards and Benchmarks

03.02 Describe the types of places that employ individuals who have careers in the Architecture & Construction career cluster.

03.03 Describe the variety of tasks performed by individuals who have careers in the Architecture & Construction career cluster.

03.04 List the skills, abilities, and talents needed for careers in the Architecture & Construction career cluster.

03.05 Identify the level of training and education required for careers in the Architecture & Construction career cluster.

03.06 Research a career in the Architecture & Construction career cluster and present findings to the class.

03.07 Apply math, science, and reading skills in the completion of a project or activity related to the Architecture & Construction career cluster.

04.0 Identify and explore careers in the Arts, A/V Technology & Communication cluster – the student will be able to:

04.01 Identify the pathways in the Arts, A/V Technology & Communication career cluster and the careers in each pathway.

04.02 Describe the types of places that employ individuals who have careers in the Arts, A/V Technology & Communication career cluster.

04.03 Describe the variety of tasks performed by individuals who have careers in the Arts, A/V Technology & Communication career cluster.

04.04 List the skills, abilities, and talents needed for careers in the Arts, A/V Technology & Communication career cluster.

04.05 Identify the level of training and education required for careers in the Arts, A/V Technology & Communication career cluster.

04.06 Research a career in the Arts, A/V Technology & Communication career cluster and present findings to the class.

04.07 Apply math, science, and reading skills in the completion of a project or activity related to the Arts, A/V Technology & Communication career cluster.

05.0 Identify and explore careers in the Business, Management & Administration cluster – the student will be able to:

05.01 Identify the pathways in the Business, Management & Administration career cluster and the careers in each pathway.

05.02 Describe the types of places that employ individuals who have careers in the Business Management & Administration career cluster.

05.03 Describe the variety of tasks performed by individuals who have careers in the Business Management & Administration career cluster.

05.04 List the skills, abilities, and talents needed for careers in the Business Management & Administration career cluster.

05.05 Identify the level of training and education required for careers in the Business Management & Administration career cluster.

05.06 Research a career in the Business Management & Administration career cluster and present findings to the class.

05.07 Apply math, science, and reading skills in the completion of a project or activity related to the Business Management & Administration career cluster.

CTE Standards and Benchmarks

06.0 Identify and explore careers in the Education & Training cluster – the student will be able to:

06.01 Identify the pathways in the Education & Training career cluster and the careers in each pathway.

06.02 Describe the types of places that employ individuals who have careers in the Education & Training career cluster.

06.03 Describe the variety of tasks performed by individuals who have careers in the Education & Training career cluster.

06.04 List the skills, abilities, and talents needed for careers in the Education & Training career cluster.

06.05 Identify the level of training and education required for careers in the Education & Training career cluster.

06.06 Research a career in the Education & Training career cluster and present findings to the class.

06.07 Apply math, science, and reading skills in the completion of a project or activity related to the Education & Training career cluster.

07.0 Identify and explore careers in the Energy cluster – the student will be able to:

07.01 Identify the pathways in the Energy career cluster and the careers in each pathway.

07.02 Describe the types of places that employ individuals who have careers in the Energy career cluster.

07.03 Describe the variety of tasks performed by individuals who have careers in the Energy career cluster.

07.04 List the skills, abilities, and talents needed for careers in the Energy career cluster.

07.05 Identify the level of training and education required for careers in the Energy career cluster.

07.06 Research a career in the Energy career cluster and present findings to the class.

07.07 Apply math, science, and reading skills in the completion of a project or activity related to the Energy career cluster.

08.0 Identify and explore careers in the Finance cluster – the student will be able to:

08.01 Identify the pathways in the Finance career cluster and the careers in each pathway.

08.02 Describe the types of places that employ individuals who have careers in the Finance career cluster.

08.03 Describe the variety of tasks performed by individuals who have careers in the Finance career cluster.

08.04 List the skills, abilities, and talents needed for careers in the Finance career cluster.

08.05 Identify the level of training and education required for careers in the Finance career cluster.

08.06 Research a career in the Finance career cluster and present findings to the class.

CTE Standards and Benchmarks

08.07 Apply math, science, and reading skills in the completion of a project or activity related to the Finance career cluster.

09.0 Identify and explore careers in the Government & Public Administration cluster – the student will be able to:

09.01 Identify the pathways in the Government & Public Administration career cluster and the careers in each pathway.

09.02 Describe the types of places that employ individuals who have careers in the Government & Public Administration career cluster.

09.03 Describe the variety of tasks performed by individuals who have careers in the Government & Public Administration career cluster.

09.04 List the skills, abilities, and talents needed for careers in the Government & Public Administration career cluster.

09.05 Identify the level of training and education required for careers in the Government & Public Administration career cluster.

09.06 Research a career in the Government & Public Administration career cluster and present findings to the class.

09.07 Apply math, science, and reading skills in the completion of a project or activity related to the Government & Public Administration career cluster.

10.0 Identify and explore careers in the Health Science cluster – the student will be able to:

10.01 Identify the pathways in the Health Science career cluster and the careers in each pathway.

10.02 Describe the types of places that employ individuals who have careers in the Health Science career cluster.

10.03 Describe the variety of tasks performed by individuals who have careers in the Health Science career cluster.

10.04 List the skills, abilities, and talents needed for careers in the Health Science career cluster.

10.05 Identify the level of training and education required for careers in the Health Science career cluster.

10.06 Research a career in the Health Science career cluster and present findings to the class.

10.07 Apply math, science, and reading skills in the completion of a project or activity related to the Health Science career cluster.

11.0 Identify and explore careers in the Hospitality & Tourism cluster – the student will be able to:

11.01 Identify the pathways in the Hospitality & Tourism career cluster and the careers in each pathway.

11.02 Describe the types of places that employ individuals who have careers in the Hospitality & Tourism career cluster.

11.03 Describe the variety of tasks performed by individuals who have careers in the Hospitality & Tourism career cluster.

11.04 List the skills, abilities, and talents needed for careers in the Hospitality & Tourism career cluster.

11.05 Identify the level of training and education required for careers in the Hospitality & Tourism career cluster.

CTE Standards and Benchmarks

11.06 Research a career in the Hospitality & Tourism career cluster and present findings to the class.

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

12.0 Identify and explore careers in the Human Services cluster – the student will be able to:

12.01 Identify the pathways in the Human Services career cluster and the careers in each pathway.

12.02 Describe the types of places that employ individuals who have careers in the Human Services career cluster.

12.03 Describe the variety of tasks performed by individuals who have careers in the Human Services career cluster.

12.04 List the skills, abilities, and talents needed for careers in the Human Services career cluster.

12.05 Identify the level of training and education required for careers in the Human Services career cluster.

12.06 Research a career in the Human Services career cluster and present findings to the class.

12.07 Apply math, science, and reading skills in the completion of a project or activity related to the Human Services career cluster.

13.0 Identify and explore careers in the Information Technology cluster – the student will be able to:

13.01 Identify the pathways in the Information Technology career cluster and the careers in each pathway.

13.02 Describe the types of places that employ individuals who have careers in the Information Technology career cluster.

13.03 Describe the variety of tasks performed by individuals who have careers in the Information Technology career cluster.

13.04 List the skills, abilities, and talents needed for careers in the Information Technology career cluster.

13.05 Identify the level of training and education required for careers in the Information Technology career cluster.

13.06 Research a career in the Information Technology career cluster and present findings to the class.

13.07 Apply math, science, and reading skills in the completion of a project or activity related to the Information Technology career cluster.

14.0 Identify and explore careers in the Law, Public Safety & Security cluster–The student will be able to:

14.01 Identify the pathways in the Law, Public Safety & Security career cluster and the careers in each pathway.

14.02 Describe the types of places that employ individuals who have careers in the Law, Public Safety & Security career cluster.

14.03 Describe the variety of tasks performed by individuals who have careers in the Law, Public Safety & Security career cluster.

14.04 List the skills, abilities, and talents needed for careers in the Law, Public Safety & Security career cluster.

CTE Standards and Benchmarks

14.05 Identify the level of training and education required for careers in the Law, Public Safety & Security career cluster.

14.06 Research a career in the Law, Public Safety & Security career cluster and present findings to the class.

14.07 Apply math, science, and reading skills in the completion of a project or activity related to the Law, Public Safety & Security career cluster.

15.0 Identify and explore careers in the Manufacturing cluster – the student will be able to:

15.01 Identify the pathways in the Manufacturing career cluster and the careers in each pathway.

15.02 Describe the types of places that employ individuals who have careers in the Manufacturing career cluster.

15.03 Describe the variety of tasks performed by individuals who have careers in the Manufacturing career cluster.

15.04 List the skills, abilities, and talents needed for careers in the Manufacturing career cluster.

15.05 Identify the level of training and education required for careers in the Manufacturing career cluster.

15.06 Research a career in the Manufacturing career cluster and present findings to the class.

15.07 Apply math, science, and reading skills in the completion of a project or activity related to the Manufacturing career cluster.

16.0 Identify and explore careers in the Marketing, Sales & Service cluster – the student will be able to:

16.01 Identify the pathways in the Marketing, Sales & Service career cluster and the careers in each pathway.

16.02 Describe the types of places that employ individuals who have careers in the Marketing, Sales & Service career cluster.

16.03 Describe the variety of tasks performed by individuals who have careers in the Marketing, Sales & Service career cluster.

16.04 List the skills, abilities, and talents needed for careers in the Marketing, Sales & Service career cluster.

16.05 Identify the level of training and education required for careers in the Marketing, Sales & Service career cluster.

16.06 Research a career in the Marketing, Sales & Service career cluster and present findings to the class.

16.07 Apply math, science, and reading skills in the completion of a project or activity related to the Marketing, Sales & Service career cluster.

17.0 Identify and explore careers in Engineering and Technology Education – the student will be able to:

17.01 Identify the pathways in Engineering and Technology Education.

17.02 Describe the types of places that employ individuals who have careers in Engineering and Technology Education.

17.03 Describe the variety of tasks performed by individuals who have careers in Engineering and Technology Education.

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17.04 List the skills, abilities, and talents needed for careers in Engineering and Technology Education.

17.05 Identify the level of training and education required for careers in Engineering and Technology Education.

17.06 Research a career in Engineering and Technology Education and present findings to the class.

17.07 Apply math, science, and reading skills in the completion of a project or activity related to the Engineering and Technology Education.

18.0 Identify and explore careers in the Transportation & Logistics cluster – the student will be able to:

18.01 Identify the pathways in the Transportation & Logistics career cluster and the careers in each pathway.

18.02 Describe the types of places that employ individuals who have careers in the Transportation & Logistics career cluster.

18.03 Describe the variety of tasks performed by individuals who have careers in the Transportation & Logistics career cluster.

18.04 List the skills, abilities, and talents needed for careers in the Transportation & Logistics career cluster.

18.05 Identify the level of training and education required for careers in the Transportation & Logistics career cluster.

18.06 Research a career in the Transportation & Logistics career cluster and present findings to the class.

18.07 Apply math, science, and reading skills in the completion of a project or activity related to the Transportation & Logistics career cluster.

19.0 Describe leadership skills – the student will be able to:

19.01 Identify the Career and Technical Student Organization(s) that are appropriate for CTE programs in each of the career clusters.

19.02 Describe the leadership opportunities available to members of the CTSOs identified above.

19.03 Investigate the CTSOs at your school and/or in your school district (e.g., membership requirements, dues, activities, events).

Additional Information

Laboratory Activities

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

Special Notes

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

Career and Technical Student Organization (CTSO)

The Florida Technology Student Association (FL-TSA) is the intercurricular career and technical student organization for providing leadership training and reinforcing specific career and technical skills. Career and Technical Student Organizations provide activities for students as an integral part of the instruction offered.

Accommodations

Federal and state legislation requires the provision of accommodations for students with disabilities as identified on the secondary student's Individual Educational Plan (IEP) or 504 plan or postsecondary student's accommodations' plan to meet individual needs and ensure equal access. Postsecondary students with disabilities must self-identify, present documentation, request accommodations if needed, and develop a plan with their counselor and/or instructors. Accommodations received in postsecondary education may differ from those received in secondary education. Accommodations change the way the student is instructed. Students with disabilities may need accommodations in such areas as instructional methods and materials, assignments and assessments, time demands and schedules, learning environment, assistive technology and special communication systems. Documentation of the accommodations requested and provided should be maintained in a confidential file.

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