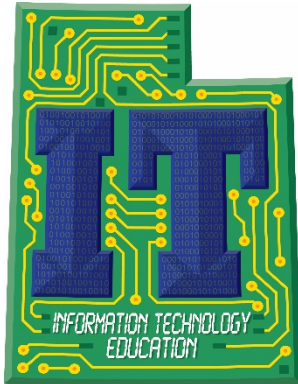# STRANDS AND STANDARDS
INTRODUCTION TO INFORMATION TECHNOLOGY

Course Description

The Intro to IT course is for students interested in pursuing a career in the field of Information Technology. Students will be introduced to the different aspects of information technology to determine where their interests. Students will complete assignments and projects in IT careers, digital media, hardware & operating systems, communications & networks, software development, databases, and new & emerging technologies.

Intended Grade Level	9-12
Units of Credit	0.5
Core Code	35.02.00.00.005
Concurrent Enrollment Core Code	35.02.00.13.005
Prerequisite	Digital Literacy
Skill Certification Test Number	801
Test Weight	0.5
License Type	CTE and/or Secondary Education 6-12
Required Endorsement(s)	
Endorsement 1	Introduction to Information Technology, or
Endorsement 2	A+ (Computer Repair/Maintenance)

CTE® Learning that works for Utah

STRAND 1

Introduction to Information Technology-Students will develop an understanding of current issues related to Information Technology.

Standard 1

Students are introduced to the importance of ethics and ethical behavior.
- Understand and follow an Acceptable Use Policy (AUP).
- Explain the difference between legal and ethical.
- Explain how some online behaviors can be harmful personally and to a business. (Pornography, social networking, gaming, pirating software, illegal hacking, etc.)
- Follow copyright and fair use guidelines.

Standard 2

Understand the importance of information privacy and security.
- Viruses, spoofing, phishing, cookies, spam, etc.
- Explain kinds of anti-virus software and how they work.

Standard 3

Identify the skills needed by employers to be an effective and valued employee.
- List employable skills: passion, teamwork, communication, collaboration, friendly, asks questions, meets deadlines, self-motivated, desire to learn new things, creative, problem solver, basic office suite skills, etc.
- Model employable skills in the classroom.

Standard 4

Understand the levels of education needed to be successful in a specific area of Information Technology.
- Understand IT industry certifications, education, boot camps, and work experience.
- Explain how certifications, education, boot camps, and work experience can affect employability.

Standard 5

Participate in an IT interest survey.
- Identify different areas and careers in IT.
- Identify areas of strength and weakness based on an IT interest survey.

Standard 6

Identify the organizational structure of a business and the role that Information Technology plays in the success of business.
- Identify different IT careers in business (CEO, CIO, System Analysts, tech support, etc.)

Standard 7

Identify trends in the world of information technology.
- Discuss the pros and cons of cell phones, texting and driving.
- Discuss the use of portable digital devices.
- Discuss the use of wearable devices.
- Identify the values and problems with social networking.
- Explore the impact of cloud computing.
- Explore the impact of new Web technologies.

Performance Skills
- Demonstrated ethical behavior
- Completed an on-line IT interest survey

STRAND 2

Digital Media Assets-Students will complete projects and assignments in the area of Digital Media.

Standard 1

Understand the different types of media included in a multimedia and Web projects.
- Understand and use text
- Understand and use graphics
- Understand and use audio
- Understand and use video
- Understand and use animation

Standard 2

Utilize fonts in interactive projects.
- Change a font family, size, and color.
- Identify serif and san serif fonts.

Standard 3

Obtain, create, and edit digital 2D graphics.
- Obtain 2D graphics from clipart or photo collections.
- Scan photos and/or take photos with a digital camera.
- Use software to draw and edit bitmap and vector drawings.
- Understand and identify bitmap and vector graphic formats.

Standard 4

Obtain, create, and edit digital audio.
- Capture digital audio from a microphone, midi, or imported file.
- Obtain digital audio from royalty free sources. (Soundzabound, youtube music, etc .)
- Record, edit, and export digital audio.
- Understand the use and importance of audio in digital media productions.
- Understand and identify different audio formats. (WAV, mp3, wma, m4a, etc.)

- Publish audio in a project.

Standard 5

Obtain, create, and/or edit digital video.
- Edit or render a digital video from photos or video clips.
- Understand and identify different video formats & codecs. (mov, wmv, mp4, webm, ogg, etc.)
- Use or embed video in a document or presentation.
- Publish video project or in a project.

Standard 6

Create, edit, and utilize 2D animations.
- Draw a flip book with at least 10 pages.
- Create and edit a digital frame (cel) animation.
- Create and edit a path or tween animation.

Standard 7

Utilize a design model or process to plan and implement to interactive or a Web project.
- Describe the project and the problem it addresses.
- Address the needs of the audience or customer.
- Plan the organization for the project and design the screen layouts.
- Storyboard the plan.
- Write a proposal for the project.

Standard 8

Use software to create and implement an interactive or Web project from a plan. (Software used could include: PowerPoint, Presentations, Google Presentations, Microsoft Sway, LucidPress, Prezi, etc.)
- Include in the project: audio, animation, graphics and navigation links for user input.
- Create or prepare assets for the project.
- Build the project.
- Evaluated the project by testing and debugging it.
- Publish or distribute the project.

Standard 9

Create web pages using a GUI HTML editor.
- Include a main page with links to other pages,
- Include a page with semantic structure: header, nav, main, aside, and footer.
- Include a page with bullets or a numbered list.
- Include photos or graphics in at least one page.
- Use CSS to change fonts, colors, layout, etc.

Standard 10

Explore to careers and educational options in digital media and Web development.

- Understand different career options in digital media and web development.
- Identify different specialties or team members that can be involved in a project. Web: Front-end developer, backend developer, or full stack developer. Digital Media: Graphic Designer (UX/UI), Animator, Audio engineer, Game Designer, and videographer.

Performance Skills

- Created original digital graphics through scanning, editing, and illustration
- Created original digital audio through capture and narration
- Created an interactive multimedia project using a design model that includes audio, animation, graphics and links
- Created a web page using an HTML editing program

STRAND 3

Information Support & Services-The student will complete projects and assignments in the area of Information Support and Services.

Standard 1

Understand the input/output, processing and storage of data in a personal computer system.

- Identify and label the five parts of computer system. (input, output, storage, memory, processing)
- Explain the function of each of the parts of a computer system.
- List examples of each of the parts of the computer system.

Standard 2

Understand different kinds of computing devices.

- Desktops, laptops, phones, tablets, Internet of Things (IoT), etc.
- Understand how hardware components function on a computer.
- Explain the function of firmware as a computer component.
- Explain the function of software on a computer.

Standard 3

Understand the purpose and function of power on a computer.

- Identify storage and input/output devices.
- Understand hardware: parts, functions, handling, safety, assembly, and troubleshooting.
- List basic hardware components. (motherboard, hard drive, memory, processor, power supply, expansion slot, etc.)
- Describe functions of basic components of a computer system. (Processor, Motherboard, RAM/ROM, Hard Drive, Input/Output Adaptors and Removable Storage Devices.)

- Demonstrate proper handling and safety considerations for hardware components, including ESD or static electricity & devices that hold a high voltage when powered off such as a monitor or laser printer.
- Assemble and disassemble parts of a computer system.
- Follow the basic troubleshooting steps for solving problems with a personal computer system. (1. Identify the problem, 2. Establish an idea of probable cause, 3. Test your idea, 4. Plan of action to implement the solution, 5. Verify solution worked, 6. Document your findings, actions, and outcomes.)

Standard 4

Understand the basic functions of a computer operating system.
- Identify different common OS's, (Windows, Mac OS, Linux, Android, iOS, etc.)
- List the functions of an operating system. (Controls hardware, controls software, controls GUI, file-system.)
- Understand the difference be a GUI OS and the command line of an OS.
- Understand the history of OS's on a personal computer.

Standard 5

Understand basic kinds and uses of application software.
- Identify the uses of application software (word processor, spreadsheet, presentation, accounting, database, digital media editors, accounting, development, etc.)
- Identify different sources and licensing of software. (commercial, open source, freeware, shareware, creative commons, etc.)

Standard 6

Explore the use of software controlled hardware devices. (Raspberry Pi, Arduino, robotics, Internet of Things (IoT), etc.)

Standard 7

Understand careers and educational options in technical support field.
- Explore certifications in Information Support and Services.
- Explore educational opportunities in the IT Support area.

Performance Skills

- Demonstrated proper handling techniques of hardware components
- Disassembled and rebuilt a computer system either individually, in teams or with the instructor.

STRAND 4

Networks & Communication-Students will complete projects and assignments in the area of Network Systems.

Standard 1

Understand the uses of computer networks in today's society.
- Explore the impact of home, school, and business networks.
- Explore the impact of the Internet on society.

Standard 2

Identify functions & common network operating systems (NOS).
- Identify the functions of a NOS. (file storage, printing, security, etc.)
- Identify some common NOS's. (Microsoft Server, Linux, Internet, etc.)

Standard 3

Understand networking in a local and remote environment.
- Examine the uses of a local network.
- Compare and contrast wired, wireless, and cell networks.
- Explore remote communications through the use of webinars, collaborative tools, remote desktop, etc.

Standard 4

Define the media transmission required for successful network communication.
- Understand how media, medium, message are related.
- Understand transfer rates and bit rates.

Standard 5

Identify and describe the communication devices and protocols required for successful networking.
- Identify & describe network connection devices. (Routers, switches, modem, cable modem, DSL, MAC address, network interface card (NIC) etc.)
- Identify & describe network medium types. (twisted pair, unshielded twisted pair (UTP), CAT 6, wireless, Bluetooth, fiber optic, cellular LTE, etc.)
- Describe how packets are used to send and receive data.
- Describe what is meant by network protocols.
- Identify common network protocols. (TCP/IP, FTP, HTTP, HTTPS, etc.)

Standard 6

Understand and describe how the Internet is a network system.

Standard 7

Explore Cloud computing and its impact on computing today. Including: online storage, Web apps, software as a service, etc.

Standard 8

Understand the responsibilities of Digital Citizenship in today's world.

Standard 9

Learn about careers and educational options in network administration.
- Explore certifications in Networking.
- Explore education and work experience that can lead to IT network careers.
- Identify network career opportunities. (Network Administrators, security, network analysis, etc. and the roles of each).

Performance Skills
- Accessed and used network resources such as files and printers on the school's LAN
- Accessed Internet resources
- Created a diagram of a LAN, WAN and MAN
- Pinged a network

STRAND 5

Coding & Software Development-Students will complete projects and assignments in the area of Programming and Software Development.

Standard 1

Understand the uses of programming concepts in the development of software applications.
- Identify and describe kinds of developed software. (Generic, custom, etc.)
- Describe the source code of a program.
- Describe the difference between for interpreted and compiled languages.
- Identify basic kinds of programming. (spaghetti, modular, procedure, object oriented programming (OOP), etc.)

Standard 2

Understand and use the basic structures and controls used in programming. (Sequence, Loops, Decisions/Conditions, Events, and Functions)

Standard 3

Understand the process to software/program design.
- Understand the concepts in "Computational Thinking".
- Follow software design steps. (1. Describe the problem, 2. Develop an algorithm or solutions, 3. Code the project, 4. Test & debug the project, 5. Provide internal & external document.)
- Use walk through steps to see all the steps to describe a problem solution.
- Design a flowchart or step to solve a basic problem.
- Develop an algorithm to solve a simple problem.

Standard 4

Create applications using a programming language. (MIT Scratch, C#, Python, AppLab, PencilCode, JavaScript, TouchDevelop, Java, Swift, etc.).

- Use a software design process to plan a software program.
- Understand and use good principles of design for the user experience (UX) and the user interface (UI).
- Understand and use programming conventions. (indentation, capitalization, etc.)
- Understand and in a program use: variables, data types, constants, calculations, operators, decisions, loops, functions, comments, etc.
- Design the screen layout for an app or a software program.
- Understand how GUI software development environments are used.
- Design and develop a software program that gets input, processes the data, and displays output.
- Publish or share your project with others.

Standard 5

Create a web pages using HTML5 and Cascading Style Sheets (CSS) and JavaScript.

- Understand the basic parts of HTML syntax. (tags, attributes, values)
- Understand the W3C standards for HTML5 web pages.
- Understand how CSS is used for formatting web pages.
- Create web pages using a text editor, HTML5 standards, and CSS.
- Understand and use scripting to create interactive web pages.

Standard 6

Use Agile/Scrum for project management.

- Understand the terms associated with Scrum project management.
- Understand the roles in Scrum project management.
- Work on a team to develop a software project.

Standard 7

Students will be introduced to careers and educational options in computer programming and software development.

- Explore education and work experience that can lead to careers as a coder or software developer.
- Identify Software Development career opportunities. (coder, programmer, system analyst, STACK developer, Web developer, etc.).

Performance Skills

- Created an application using a programming language
- Created a web page using HTML code with Java Script

STRAND 6

Databases, Big Data, GIS-Students will understand the basic concepts of databases, their use, and development

Standard 1

Understand how databases are used in society
- Identity several databases that they may be part of. (school SIS, bank, SSN, IRS, state driver's license, etc.)
- Identify several databases that can be accessed on the Internet. (search engines, white pages, Facebook, real estate listings, eBay, etc.)
- Understand crowd sourcing to collect data.

Standard 2

Understand database concepts to create and use a database.
- Understand basic vocabulary associated with a database. (flat file, record, field, table, search, query, select, sort, report, etc.)
- Create a flat file database, enter, edit, and delete records.
- Search and sort the database.
- Create reports to extract information from the database.
- Explore basic SQL database commands.

Standard 3

Data visualization of big data
- Do analysis on data from public databases.
- Use GIS software to map data visually
- Analyze data to determine trends

Performance Skills
- Created a flat-file database
- Performed a database query

STRAND 7

New & Emerging Technologies- Explore new technologies in the IT area

Standard 1

Create a work portfolio, an end-of-course project on an information technology topic, or an IT career.
- Plan the IT or career project so it could be cross curricular or used in another class if possible.
- Plan the project as part of a team member. (2-3 team members)
- Make the project interactive. (Use web pages, presentation software, or programming software.)
- Prepare to give an oral presentation about your project.

Standard 2

Explore the new trends in information technology. Like: TED talks, Twitter feeds, etc. that are focused on newer concepts not covered within this course: Cybersecurity, AR/VR, UX/UI, Quality Assurances, Cloud Computing, Artificial Intelligence, and how these are configured with or without the concepts explored within this course.

Standard 3

Optional: Participate in a work-based learning (WBL) activity.

- Listen to a guest speaker.
- Attend a field trip or tour an IT business.
- Participated in a job shadowing.
- Plan your own work-based learning activity.

Performance Skills

- Created end-of-course project on an IT topic or career (It is recommended that this project be completed as a team project)
- Optional: Attended a work-based learning activity

Work Place Skills

Communication, Problem Solving, Teamwork, Critical Thinking, Dependability, Accountability, Legal requirements/expectations

Skill Certificate Test Points by Strand

Test Name	Test #	Number of Test Points by Strand										Total Points	Total Questions
		1	2	3	4	5	6	7	8	9	10		
Intro to IT	801	15	11	13	11	12	6	1				69	67