

# Introduction to Information Technology

<b>Levels:</b>	<b>Grades 9-12</b>
<b>Units of Credit:</b>	<b>0.5</b>
<b>CIP Code:</b>	<b>11.0101</b>
<b>Core Code:</b>	<b>35020000005</b>
<b>Prerequisite:</b>	<b>Keyboarding Proficiency, and Computer Technology</b>
<b>Skill Test:</b>	<b>#801 Introduction to Information Technology</b>

## COURSE DESCRIPTION

This course is for students interested in pursuing a career in the field of Information Technology. Students will be introduced to the four career clusters in information technology to determine where their interests lie. Students will complete assignments and projects in interactive media, information support and services, network systems and, programming and software development. Other topics and skills needed for a student be successful in the information technology field like ethics, security, privacy and SCANS skills will also be discussed.

## CORE STANDARDS, OBJECTIVES, & INDICATORS

### STANDARD 1

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

**Objective 1:** introduced to the importance of ethics and ethical behavior.

- a. Understand and follow an Acceptable Use Policy (AUP).
- b. Explain the difference between legal and ethical.
- c. Explain how some online behaviors can be harmful personally and to a business. (pornography, social networking, gaming, etc.)
- d. Follow copyright and fair use guidelines.

**Objective 2:** Understand the importance of information privacy and security.

- a. Viruses, spoofing, phishing, cookies, etc.
- b. Explain kinds of anti-virus software is and how they work.

**Objective 3:** Identify the skills needed by employers to be an effective and valued employee.

- a. List employable skills:
- b. Model employable skills in the classroom.

**Objective 4:** Understand the levels of education needed to be successful in the area of Information Technology that they are interested in pursuing.

- a. Understand IT industry certifications, education, and work experience.
- b. Explain how certifications, education, and work experience can affect employability.

**Objective 5:** Participate in an on-line IT interest survey.

- a. Identify different areas and careers in IT.
- b. Identify their strength and weaknesses based on an IT interest survey.
- c. Understand how different multiple intelligences can affect their skill level and interests.

**Objective 6:** Identify the organizational structure of a business and the role that Information Technology plays in the success of business.

- a. Identify different IT careers in business (CEO, CIO, System Analysts, tech support, etc.)

**Objective 7:** Identify trends in the world of information technology.

- a. Discuss the pros and cons of cell phones, texting and driving
- b. Discuss the use of portable digital devices,
- c. Identify the values and problems with social networking,
- d. Explore the impact of cloud computing
- e. Explore the impact of Web 2.0 technology,

## **STANDARD 2**

**Student will complete projects and assignments in the area of Interactive Media.**

**Objective 1:** Understand the different types of media included in an interactive multimedia project.

- a. Understand and use text
- b. Understand and use graphics
- c. Understand and use audio
- d. Understand and use video
- e. Understand and use animation

**Objective 2:** Utilize fonts in interactive projects.

- a. Change a font family, size, and color.
- b. Identify serif, and san serif fonts.

**Objective 3:** Obtain, create, and edit digital 2D graphics.

- a. Obtain 2D graphics from clipart or photo collections.
- b. Scan photos and/or take photos with a digital camera.
- c. Use software to draw and edit a bitmap and a vector drawing.

**Objective 4:** Obtain, create, and edit digital audio.

- a. Capture digital audio from a CD, record, or tape.
- b. Obtain digital audio from royalty free sources. (Soundzabound, etc.)
- c. Record, edit, and export digital audio.
- d. Understand the use and importance of audio in digital media productions.
- e. Understand and identify different audio formats. (WAV, AAC, mp3, wma, ogg, m4a, etc.)

**Objective 5:** Obtain, create, and/or edit digital video.

- a. Edit or render a digital video from photos or video clips.
- b. Understand and identify different video formats & codecs. (mov, wmv, m4a, mp4, H.264, etc.)
- c. User or embed video in a document or presentation.

**Objective 6:** Create, edit, and utilize 2D animations.

- a. Draw a flip book with at least 10 pages.
- b. Create and edit a digital frame (cel) animation.
- c. Create and edit a path or tween animation.

**Objective 7:** Utilize a design model or process to plan and implement an interactive project. (ADDIE, Adobe, Rapid Deployment Design, etc)

- a. Describe the project and the problem it address.
- b. Address the needs of the audience or customer.
- c. Plan the organization for the project and design the screen layouts.
- d. Storyboard the plan.
- e. Write a proposal for the project.

**Objective 8:** Use interactive software to create and implement an interactive project from a plan. (Software used could include: PowerPoint, Presentations, Google Presentations, OpenOffice Presentations, etc.)

- a. Include in the project: audio, animation, graphics and navigation links for user input.
- b. Create or prepare assets for the project.
- c. Build the project.
- d. Evaluated the project by testing and debugging it.
- e. Publish or distribute the project.

**Objective 9:** Create web pages using a GUI HTML editor. (Dreamweaver, Microsoft Web Expressions, Kompozer, NVU, etc.)

- a. Include a main page with links to other pages,
- b. Include a page with a table.
- c. Include a page with bullets or a numbered list.
- d. Include photos or graphics in at least one page.
- e. Use CSS to change fonts, colors, layout, etc.

**Objective 10:** Explore to careers and educational options in interactive media and Web development.

- a. Understand different career options in digital & interactive media.
- b. Identify different specialties or team members that can be involved in a project.

### **STANDARD 3**

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

**Objective 1:** Understand the input/output, processing and storage of data in a personal computer system.

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

**Objective 2:** Understand the basic components of a modern computer system.

- a. Understand how hardware components function on a computer..
- b. Explain the function of firmware as a computer component.
- c. Explain the function of software on a computer.
- d. Understand the purpose and function of power on a computer.

**Objective 3:** Understand hardware: parts, functions, handling, safety, assembly, and troubleshooting.

- a. List basic hardware components. (motherboard, hard drive, memory, processor, power supply, expansion slot, etc.)
- b. Describe functions of basic components of a computer system. (Processor, Motherboard, RAM/ROM, Hard Drive, Input/Output Adaptors and Removable Storage Devices.)
- c. Demonstrate proper handling and safety considerations for hardware components.
- d. Assemble and disassemble parts of a computer system.
- e. Follow the basic troubleshooting steps for solving problems with a personal computer system. (1. Identify the problem, 2. Establish a 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.)

**Objective 4:** Understand the basic functions of a computer operating system.

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

**Objective 5:** Understand basic kinds and uses of application software.

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

**Objective 6:** Understand introduced to careers and educational options in technical support.

- a. Explore certifications in Information Support and Services.
- b. Explore education and work experience that can lead to IT careers.

## **STANDARD 4**

**Students will complete projects and assignments in the area of Network Systems.**

**Objective 1:** Understand the uses of computer networks in today's society.

- a. Explore the impact of home, school, and business networks.
- b. Explore the impact of the Internet on society.

**Objective 2:** Identify functions & common network operating systems (NOS).

- a. Identify the functions of a NOS. (file storage, printing, security, etc.)
- b. Identify some common NOS's. (Novell Netware, Microsoft Server, Linux, etc.)

**Objective 3:** Understand networking in a local and remote environment..

- a. Examine the uses of a local network.
- b. Compare and contrast wired, wireless, and cell networks.
- c. Explore remote communications through the use of webinars, collaborative tools, online storage, cloud computing, remote desktop, etc.

**Objective 4:** Define the media transmission required for successful network communication..

- a. Understand how media, medium, message are related.

**Objective 5:** Identify and describe the communication devices and protocols required for successful networking.

- a. Identify & describe network connection devices. (Routers, switches, modem, cable modem, DSL, etc.)
- b. Identify & describe network medium types. (twisted pair, CAT 6, wireless, G3, Bluetooth, fiber optic, etc.)
- c. Describe how packets are used to send and receive data.
- d. Describe what is meant by network protocols.
- e. Identify common network protocols. (TCP/IP, FTP, HTTP, HTTPS, etc.)

**Objective 6:** Learn about careers and educational options in network administration.

- a. Explore certifications in Network Services.
- b. Explore education and work experience that can lead to IT network careers.
- c. Identify network career opportunities. (Network Administrators, security, network analysis, etc.).

## **STANDARD 5**

**Students will complete projects and assignments in the area of Programming and Software Development.**

**Objective 1:** Understand the uses of programming concepts in the development of software applications.

- a. Identify and describe kinds of developed software. (Generic, custom, etc.)
- b. Identify and describe levels of programming languages. (low level, mid level, high level, 4GL)
- c. Describe the difference between interpreted and compiled languages.
- d. Identify basic kinds of programming. (spaghetti, modular, procedure, object oriented programming (OOP), etc.)

**Objective 2:** Understand the process to software/program design.

- a. Follow software design steps. (1. State the problem, 2. Develop an algorithm or solutions, 3. Code the project, 4. Test & debug the project, 5. Provide internal & external document.)
- b. Use walk through steps to see all the steps to describe a problem solution.
- c. Design a flowchart to solve a basic problem.
- d. Develop an algorithm to solve a simple problem.
- e. Understand how UML is used in OOP.

**Objective 3:** Create applications using a programming language. (MIT Scratch, Alice, QBASIC, Visual Basic, C++, Java, Scheme, etc.).

- a. Use a software design process to plan a software program.
- b. Understand and use programming conventions. (indentation, capitalization, etc.)
- c. Understand and in a program use: variables, data types, constants, calculations, operators, decisions, loops, functions, etc.
- d. Design the screen layout for a software program.
- e. Understand how GUI software development environments are used.
- f. Design and develop a software program that gets input, processes the data, and displays output.

**Objective 4:** Create a web pages using XHTML & Cascading Style Sheets (CSS).

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

**Objective 5:** Students will be introduced to careers and educational options in computer programming and software engineering.

- a. Explore education and work experience that can lead to careers in Software Development.
- b. Identify Software Development career opportunities. (programmer, system analyst, etc.).

## **STANDARD 6**

**Students will understand the basic concepts of databases, their use, and development**

**Objective 1:** Understand how databases are used in society

- a. Identify several databases that they may be part of.(school SIS, bank, SSN, IRS, state drivers license, etc.)
- b. Identify several databases that can be accessed on the Internet. (search engines, white pages, Facebook, real estate listings, eBay, etc.)

**Objective 2:** Understand database concepts to create and use a database.

- a. Understand basic vocabulary associated with a database. (flat file, record, field, table, search, select, sort, report, etc.)
- b. Create a flat file database, enter, edit, and delete records.
- c. Search and sort the database.
- d. Create reports to extract information from the database.

## **STANDARD 7**

**Students will complete an end-of-course project and participate in work-based learning activities.**

**Objective 1:** Create an end-of-course project on an information technology topic or career of their choice.

- a. Plan the IT or career project so it could be cross curricular or used in another class if possible.
- b. Plan the project as part of a team member. (2-3 team members)
- c. Make the project interactive. (Use web pages, presentation software, or programming software.)
- d. Prepare to give an oral presentation about your project.

**Objective 2:** Optional: Participate in a work-based learning (WBL) activity.

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