

Information Technology Fundamentals

EXAM INFORMATION	DESCRIPTION																
<p>Exam Number 801</p> <p>Items 64</p> <p>Points 73</p> <p>Prerequisites NONE</p> <p>Recommended Course Length ONE SEMESTER</p> <p>National Career Cluster INFORMATION TECHNOLOGY</p> <p>Performance Standards INCLUDED (OPTIONAL)</p> <p>Certificate Available YES</p>	<p>The Information Technology Fundamentals 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 lie. Students will complete assignments and projects in IT careers, digital media, hardware & operating systems, communications & networks, software development, databases, and new & emerging technologies.</p> <p>EXAM BLUEPRINT</p> <table border="1"> <thead> <tr> <th>STANDARD</th> <th>PERCENTAGE OF EXAM</th> </tr> </thead> <tbody> <tr> <td>1- Current Issues in Information Technology</td> <td>14%</td> </tr> <tr> <td>2- Digital Media</td> <td>18%</td> </tr> <tr> <td>3- Information Support and Services</td> <td>19%</td> </tr> <tr> <td>4- Network Systems</td> <td>16%</td> </tr> <tr> <td>5- Programming and Software Development</td> <td>22%</td> </tr> <tr> <td>6- Databases and Development</td> <td>7%</td> </tr> <tr> <td>7- End-of-Course Project</td> <td>4%</td> </tr> </tbody> </table>	STANDARD	PERCENTAGE OF EXAM	1- Current Issues in Information Technology	14%	2- Digital Media	18%	3- Information Support and Services	19%	4- Network Systems	16%	5- Programming and Software Development	22%	6- Databases and Development	7%	7- End-of-Course Project	4%
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STANDARD 1

Students will develop an understanding of current issues related to information technology.

Objective 1 Students are introduced to the importance of ethics and ethical behavior.

1. Understand and follow an Acceptable Use Policy (AUP).
2. Explain the difference between legal and ethical.
3. Explain how some online behaviors can be harmful personally and to a business. (Pornography, social networking, gaming, etc.)
4. Follow copyright and fair use guidelines.

Objective 2 Understand the importance of information privacy and security.

1. Viruses, spoofing, phishing, cookies, etc.
2. Explain kinds of anti-virus software and how they work.

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

1. List employable skills.
2. 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.

1. Understand IT industry certifications, education, and work experience.
2. Explain how certifications, education, and work experience can affect employability.

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

1. Identify different areas and careers in IT.
2. Identify their strengths and weaknesses based on an IT interest survey.
3. 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.

1. Identify different IT careers in business. (CEO, CIO, system analysts, tech support, etc.)

Objective 7 Identify trends in the world of information technology.

1. Discuss the pros and cons of cell phones, texting, and driving.

2. Discuss the use of portable digital devices.
3. Identify the values and problems with social networking.
4. Explore the impact of cloud computing.
5. Explore the impact of Web 2.0 technology.

Standard 1 Performance Evaluation included below (Optional)

STANDARD 2

Students will complete projects and assignments in the area of digital media.

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

1. Understand and use text.
2. Understand and use graphics.
3. Understand and use audio.
4. Understand and use video.
5. Understand and use animation.

Objective 2 Utilize fonts in interactive projects.

1. Change a font family, size, and color.
2. Identify serif and san serif fonts.

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

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

Objective 4 Obtain, create, and edit digital audio.

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

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

1. Edit or render a digital video from photos or video clips.

2. Understand and identify different video formats and codecs. (mov, wmv, m4a, mp4, H.264, etc.)
3. Use or embed video in a document or presentation.

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

1. Draw a flip book with at least 10 pages.
2. Create and edit a digital frame (cel) animation.
3. Create and edit a path or tween animation.

Objective 7 Utilize a design model or process to plan and implement an interactive project.

1. Describe the project and the problem it addresses.
2. Address the needs of the audience or customer.
3. Plan the organization for the project and design the screen layouts.
4. Storyboard the plan.
5. 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, Microsoft Sway, LucidPress, Prezi, etc.)

1. Include in the project audio, animation, graphics, and navigation links for user input.
2. Create or prepare assets for the project.
3. Build the project.
4. Evaluate the project by testing and debugging it.
5. Publish or distribute the project.

Objective 9 Create web pages using a GUI HTML editor.

1. Include a main page with links to other pages.
2. Include a page with a table.
3. Include a page with bullets or a numbered list.
4. Include photos or graphics in at least one page.
5. Use CSS to change fonts, colors, layout, etc.

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

1. Understand different career options in digital and interactive media.
2. Identify different specialties or team members that can be involved in a project.

Standard 2 Performance Evaluation included below (Optional)

STANDARD 3

Students 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.
1. Identify and label the five parts of computer system (input, output, storage, memory, processing).
 2. Explain the function of each of the parts of a computer system.
 3. List examples of each of the parts of the computer system.
- Objective 2** Understand different kinds of computing devices.
1. Phones, tablets, etc.
 2. Understand how hardware components function on a computer.
 3. Explain the function of firmware as a computer component.
 4. Explain the function of software on a computer.
 5. Understand the purpose and function of power on a computer.
 6. I/O
- Objective 3** Understand hardware: parts, functions, handling, safety, assembly and troubleshooting.
1. List basic hardware components. (Motherboard, hard drive, memory, processor, power supply, expansion slot, etc.)
 2. Describe functions of basic components of a computer system. (Processor, motherboard, RAM/ROM, hard drive, input/output adaptors, and removable storage devices.)
 3. Demonstrate proper handling and safety considerations for hardware components.
 4. Assemble and disassemble parts of a computer system.
 5. 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

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

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

Objective 5 Understand basic kinds and uses of application software.

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

Objective 6 Explore the use software-controlled hardware devices. (Raspberry Pi, Arduino, robotics, etc.)

1. Raspberry Pi
2. Arduinos
3. Robotics
4. Internet of Things

Objective 7 Understand careers and educational options in technical support.

1. Explore certifications in Information Support and Services.
2. Explain how a particular program functions.
3. Justify the correctness of a program.

Standard 3 Performance Evaluation included below (Optional)

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.

1. Explore the impact of home, school, and business networks.
2. Explore the impact of the Internet on society.

- Objective 2** Identify functions and common network operating systems (NOS).
1. Identify the functions of a NOS. (File storage, printing, security, etc.)
 2. Identify some common NOS's. (Microsoft Server, Linux, etc.)
- Objective 3** Understand networking in a local and remote environment.
1. Examine the uses of a local network.
 2. Compare and contrast wired, wireless, and cell networks.
 3. 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.
1. Understand how media, medium, and message are related.
- Objective 5** Identify and describe the communication devices and protocols required for successful networking.
1. Identify and describe network connection devices. (Routers, switches, modem, cable modem, DSL, etc.)
 2. Identify and describe network medium types. (Twisted pair, CAT 6, wireless, G3, Bluetooth, fiber optic, etc.)
 3. Describe how packets are used to send and receive data.
 4. Describe what is meant by network protocols.
 5. Identify common network protocols. (TCP/IP, FTP, HTTP, HTTPS, etc.)
- Objective 6** Internet
- Objective 7** Cloud computing, online storage, Web apps
- Objective 8** Digital Citizenship
- Objective 9** Learn about careers and educational options in network administration.
1. Explore certifications in Network Services.
 2. Explore education and work experience that can lead to IT network careers.
 3. Identify network career opportunities. (Network Administrators, security, network analysis, etc.)

Standard 4 Performance Evaluation included below (Optional)

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.

1. Identify and describe kinds of developed software. (Generic, custom, etc.)
2. Describe the difference between interpreted and compiled languages.
3. Identify basic kinds of programming. (Spaghetti, modular, procedure, object-oriented programming (OOP), etc.)

Objective 2 Understand and use the basic structures and controls used in programming.

1. Sequence
2. Loops
3. Decisions/Conditions
4. Events
5. Functions

Objective 3 Understand the process to software/program design.

1. Follow software design steps.
 1. State the problem
 2. Develop an algorithm or solutions
 3. Code the project
 4. Test and debug the project
 5. Provide internal and external document
2. Use walk through steps to see all the steps to describe a problem solution.
3. Design a flowchart to solve a basic problem.
4. Develop an algorithm to solve a simple problem.

Objective 4 Create applications using a programming language. (MIT Scratch, C++, Java, etc.)

1. Use a software design process to plan a software program.
2. Understand and use programming conventions. (Indentation, capitalization, etc.)
3. Understand and use in a program: variables, data types, constants, calculations, operators, decisions, loops, functions, etc.
4. Design the screen layout for a software program.

5. Understand how GUI software development environments are used.
6. Design and develop a software program that gets input, processes the data, and displays output.

Objective 5 Create a web page using HTML5 and Cascading Style Sheets (CSS) and JavaScript.

1. Understand the basic parts of HTML syntax. (Tags, attributes, values.)
2. Understand the W3C standards for XHTML web pages.
3. Understand how CSS is used for formatting web pages.
4. Create web pages using a text editor, HTML5 standards, and CSS.
5. Understand and use scripting to create interactive web pages.

Objective 6 Use Agile/Scrum for project management.

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

Objective 7 Students will be introduced to careers and educational options in computer programming and software engineering.

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

Standard 5 Performance Evaluation included below (Optional)

STANDARD 6

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

Objective 1 Understand how databases are used in society.

1. Identify several databases that they may be part of. (School SIS, bank, SSN, IRS, state driver's license, etc.)
2. Identify several databases that can be accessed on the Internet. (Search engines, white pages, Facebook, real estate listings, eBay, etc.)
3. Understand crowd sourcing to collect data.

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

1. Understand basic vocabulary associated with a database. (Flat file, record, field, table, search, select, sort, report, etc.)
2. Create a flat file database and enter, edit, and delete records.
3. Search and sort the database.
4. Create reports to extract information from the database.
5. Explore basic SQL database commands.

Objective 3 Data visualization of big data.

1. Do analysis on data from public databases.
2. Use GIS software to map data visually.
3. Analyze data to determine trends.

Standard 6 Performance Evaluation included below (Optional)

STANDARD 7

Students will complete an end-of-year 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.

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

Objective 2 Explore the new trends in information technology.

1. Ted Talks
2. Twitter Feeds

Objective 3 Participate in a work-based learning (WBL) activity.

1. Listen to a guest speaker.
2. Attend a field trip or tour an IT business.
3. Participate in a job shadowing.
4. Plan a work-based learning activity.

Standard 7 Performance Evaluation included below (Optional)

Information Technology Fundamentals

Performance assessments may be completed and evaluated at any time during the course. The following performance skills are to be used in connection with the associated standards and exam. To pass the performance standard the student must attain a performance standard average of 8 or higher on the rating scale. Students may be encouraged to repeat the objectives until they average 8 or higher.

Student's Name: _____

Class: _____

PERFORMANCE STANDARDS RATING SCALE



STANDARD 1 - Current Issues Related to Information Technology **Score:**

- Demonstrate ethical behavior
- Complete an on-line IT interest survey

STANDARD 2 - Digital Media Projects **Score:**

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

STANDARD 3 - Information Support and Services Projects **Score:**

- Demonstrate proper handling techniques of hardware components
- Disassemble and rebuild a computer system either individually, in teams, or with the instructor
- Perform a database query

STANDARD 4 - Network Systems Projects **Score:**

- Access and use network resources such as files and printers on the school's LAN
- Access Internet resources
- Create a diagram of LAN, WAN, and MAN

- Ping a network

STANDARD 5 - Programming and Software Development Projects **Score:**

- Create an application using a programming language
- Create a webpage using HTML code with Java Scrip

STANDARD 6 - Databases and Their Use and Development **Score:**

- Create a flat-file database

STANDARD 7 - End-of-Course Project **Score:**

- Create end-of-course project on an IT topic or career (it is recommended that this project be completed as a team project)
- Attend a work-based learning activity (optional)

PERFORMANCE STANDARD AVERAGE SCORE:

Evaluator Name: _____

Evaluator Title: _____

Evaluator Signature: _____

Date: _____