

PRINCIPLES OF DIGITAL TECHNOLOGY
COURSE CODE: 5270

COURSE DESCRIPTION: Principles of Digital Technology is designed to prepare students to become proficient in digital citizenship, in addition to learning concepts in computer and information technology, including hardware, software, Internet, and network systems, as well as Office productivity software. Upon successful completion of this course, a student will be prepared to earn the Internet and Computing Core Certification (IC3), an industry and state-recognized credential for career-readiness. Students who currently hold or are pursuing IC3 certification may apply for college credit through the American Council on Education (ACE) member institutions.

OBJECTIVE: Given the necessary equipment, supplies, and facilities, the student will be able to successfully complete all of the following core standards.

COMPUTER ACCESS REQUIRED: One desktop / laptop per student with cloud-based storage capabilities

COURSE CREDIT: 1 unit

PREREQUISITE: None

RECOMMENDED MAXIMUM ENROLLMENT: 24

RECOMMENDED GRADE LEVELS: 8 – 10

A. SAFETY

Effective professionals know the academic subject matter, including safety as required for proficiency within their area. They will use this knowledge as needed in their role. The following accountability criteria are considered essential for students in any program of study.

1. Review school safety policies and procedures.
2. Review classroom safety rules and procedures.
3. Review safety procedures for using equipment in the classroom.
4. Identify major causes of work-related accidents in office environments.
5. Demonstrate safety skills in an office/work environment.

B. STUDENT ORGANIZATIONS

Effective professionals know the academic subject matter, including professional development, required for proficiency within their area. They will use this knowledge as needed in their role.

The following accountability criteria are considered essential for students in any program of study.

1. Identify the purpose and goals of a Career and Technology Student Organization (CTSO).
2. Explain how CTSOs are integral parts of specific clusters, majors, and/or courses.
3. Explain the benefits and responsibilities of being a member of a CTSO.
4. List leadership opportunities that are available to students through participation in CTSO conferences, competitions, community service, philanthropy, and other activities.
5. Explain how participation in CTSOs can promote lifelong benefits in other professional and civic organizations.

C. TECHNOLOGY KNOWLEDGE

Effective professionals know the academic subject matter, including the ethical use of technology as needed in their role. The following accountability criteria are considered essential for students in any program of study.

1. Demonstrate proficiency and skills associated with the use of technologies that are common to a specific occupation.
2. Identify proper netiquette when using e-mail, social media, and other technologies for communication purposes.
3. Identify potential abuse and unethical uses of laptops, tablets, computers, and/or networks.
4. Explain the consequences of social, illegal, and unethical uses of technology (e.g., piracy; cyberbullying; illegal downloading; licensing infringement; inappropriate uses of software, hardware, and mobile devices in the work environment).
5. Discuss legal issues and the terms of use related to copyright laws, fair use laws, and ethics pertaining to downloading of images, Creative Commons, photographs, documents, video, sounds, music, trademarks, and other elements for personal use.
6. Describe ethical and legal practices of safeguarding the confidentiality of business-related information.
7. Describe possible threats to a laptop, tablet, computer, and/or network and methods of avoiding attacks.

D. PERSONAL QUALITIES AND EMPLOYABILITY SKILLS

Effective professionals know the academic subject matter, including positive work practices and interpersonal skills, as needed in their role. The following accountability criteria are considered essential for students in any program of study.

1. Demonstrate punctuality.
2. Demonstrate self-representation.
3. Demonstrate work ethic.
4. Demonstrate respect.
5. Demonstrate time management.
6. Demonstrate integrity.
7. Demonstrate leadership.

8. Demonstrate teamwork and collaboration.
9. Demonstrate conflict resolution.
10. Demonstrate perseverance.
11. Demonstrate commitment.
12. Demonstrate a healthy view of competition.
13. Demonstrate a global perspective.
14. Demonstrate health and fitness.
15. Demonstrate self-direction.
16. Demonstrate lifelong learning.

E. PROFESSIONAL KNOWLEDGE

Effective professionals know the academic subject matter, including positive work practices and interpersonal skills, as needed in their role. The following accountability criteria are considered essential for students in any program of study.

1. Demonstrate effective speaking and listening skills.
2. Demonstrate effective reading and writing skills.
3. Demonstrate mathematical reasoning.
4. Demonstrate job-specific mathematics skills.
5. Demonstrate critical-thinking and problem-solving skills.
6. Demonstrate creativity and resourcefulness.
7. Demonstrate an understanding of business ethics.
8. Demonstrate confidentiality.
9. Demonstrate an understanding of workplace structures, organizations, systems, and climates.
10. Demonstrate diversity awareness. Demonstrate job acquisition and advancement skills.
11. Demonstrate task management skills.
12. Demonstrate customer-service skills.

F. COMPUTING FUNDAMENTALS

Effective IT professionals demonstrate a fundamental knowledge of information technology in the fields of basic hardware, software, digital communications, networks, software, digital communications, security, and cloud computing. The following accountability criteria are considered essential for students preparing for IC3 certification.

1. Computer Hardware
 - a. Identify types and purposes of computers, how they process information and how individual computers interact with other computing systems and devices.
 - b. Identify the purpose and function of computer hardware/peripherals.
 - c. Identify various input devices, e.g., touchscreen, capacitive stylus, modified keyboard/mouse.
 - d. Identify system requirements that go into the decision for purchasing computer

- equipment, e.g., RAM, CPU, hard drive type, video card, and other PCI devices.
 - e. Identify how to maintain computer equipment and solve common problems relating to computer hardware.
 - f. Analyze power management options such battery life and power settings.
 - g. Differentiate between shutting down, restarting, and sleeping/hibernating a computer.
2. Networks
- a. Differentiate various network platforms, e.g., LAN, WAN, wireless, VPN, used within a business environment.
 - b. Identify the purposes of servers, routers, modems, and switches.
 - c. Differentiate connections in a network, e.g., secure, unsecure.
 - d. Identify platform limitations within a network, e.g., compatibility and application performance.
 - e. Describe bandwidth and internet connection speed, e.g., Mbps.
 - f. Describe how computers are connected to communication networks and the Internet.
 - g. Identify the purpose and format of IP addresses (IPv4, IPv6, Subnet, and Gateways).
3. Software
- a. Operating Systems
 - 1. Distinguish between common operating systems, e.g., Microsoft Windows, Linux, Mac OS X, Android, and iOS.
 - 2. Identify what an operating system is and how it works, and solve common problems related to operating systems.
 - 3. Manipulate and control the Windows desktop, files, and disks; identify how to change system settings, install and remove software.
 - b. Applications Software
 - 1. Identify how software/hardware work together.
 - 2. Identify how software is developed and upgraded.
 - 3. Identify different types of software and general concepts relating to software categories.
 - 4. Demonstrate how to customize a Microsoft Office application, e.g., Quick Access Toolbar, AutoSave, default font size, print settings
4. Digital Communications
- a. Identify various digital communication devices.
 - b. Identify features of digital communication subscriptions.
 - c. Identify the benefits and limitations of Wi-Fi and cellular connections.
 - d. Identify advantages and implications of owning a device, carrier and connection plans, and contracts.
 - e. Differentiate between SMS and MMS.
 - f. Evaluate the mechanics and basic features of instant messaging and chat when using Skype, FaceTime, Google Hangouts, etc.
 - g. Evaluate apps based on abilities and limitations of digital devices.
5. File Sharing, Backup and Restore
- a. Differentiate system backup, restore, and reformatting processes.

- b. Identify reasons for backing up files.
 - c. Identify the benefits and limitations of various backup media for saving and backing up data, e.g., the cloud, external hard drive, USB, and SD cards.
 - d. Demonstrate the ability to reformat any storage device.
 - e. Identify benefits and limitations of file sharing options, e.g., network share, cloud storage, e-mail, and portable storage drive.
 - f. Identify situations in which you should compress/zip files before transferring them.
 - g. Demonstrate compressing/zipping and extracting files.
6. Security
- a. Identify best practices in credential management, e.g., creating and storing secure and unsecure user names and passwords.
 - b. Identify best practices in personal computer security, e.g., logging off or locking a computer, clearing browser history.
 - c. Identify the different protocols used to access websites, e.g., HTTP, HTTPS, locked symbol.
 - d. Differentiate between various types of security threats, e.g., viruses, malware, Trojan programs, phishing, and social engineering.
 - e. Explain the purpose and use of antivirus, firewall, and surveillance software.
 - f. Choose and apply antivirus and firewall software, if available.
7. Cloud Computing
- a. Define cloud computing.
 - b. Differentiate between cloud storage versus cloud access.
 - c. Demonstrate collaboration and participation via the cloud.
 - d. Demonstrate the ability to grant and limit access to shared files in the cloud.
 - e. Demonstrate the ability to upload, download, and synchronize files between devices.
 - f. Evaluate various online storage apps, e.g., Dropbox, OneDrive, OneNote, Photobucket, and others.
 - g. Evaluate various online and local office apps, e.g., Google Apps, Office 365, SaaS, CRM, LMS, etc.
 - h. Compare apps within multiple platforms, e.g., browser, tablet, smartphone, desktop, and others.

G. KEY APPLICATIONS

Effective IT professionals demonstrate a basic knowledge of MS Office software. The following accountability criteria are considered essential for students preparing for IC3 certification.

1. Common Functions of Microsoft Application Software:
 - a. Be able to start and exit a program, create, save, manage files, and utilize sources of online help.
 - b. Identify and perform common editing, formatting, and layout functions.
 - c. Identify how to insert and format images.

- d. Identify and perform common printing functions.
 - e. Identify and use templates.
2. Basic Word Processing Functions:
- a. Demonstrate the ability to modify documents, including the ability to use automatic formatting tools.
 - b. Demonstrate the ability to insert, edit and format tables in a document.
 - c. Demonstrate the ability to use word processing tools to automate processes such as document review, security, and collaboration.
 - d. Configure and modify page layout, paragraph, and print options.
3. Basic Spreadsheet Functions:
- a. Identify common worksheet elements, e.g., worksheets, workbooks, columns, rows, cells, ranges, etc.
 - b. Demonstrate the ability to modify and format worksheet data.
 - c. Demonstrate the ability to sort and filter data.
 - d. Demonstrate the ability to apply formulas and functions with appropriate cell references to data.
 - e. Demonstrate the ability to add and modify charts.
 - f. Create a table, format data as a table, and apply table styles.
 - g. Demonstrate the ability to format the appearance of a worksheet, e.g., tab colors, row and column height and width.
4. Basic Presentation Software
- a. Demonstrate the ability to create, format simple presentations.
 - b. Demonstrate the ability to add, delete, and move slides.
 - c. Identify compatible file types and methods of embedding content into PowerPoint.
 - d. Identify and manage display options and connection methods that support audio and video content.
 - e. Demonstrate various uses of presentation views and layouts.
 - f. Apply animation, effects, and transition.
 - g. Insert and format images.
 - h. Insert and configure playback of audio and video files.
5. Basic Database Applications:
- a. Identify relational database elements, e.g., fields, records, tables, and database.
 - b. Demonstrate the ability to create a basic database.
 - c. Use, query, and navigate a basic database.
 - d. Identify metadata and its purpose.

H. LIVING ONLINE

Effective IT professionals demonstrate a basic knowledge of using the Internet and the World Wide Web. The following accountability criteria are considered essential for students preparing for IC3 certification.

1. Using the Internet and the World Wide Web:
 - a. Differentiate between the World Wide Web and the internet.
 - b. Describe how computers are connected to communication networks and the Internet.
 - c. Demonstrate the ability to create and locate online content.
 - d. Demonstrate the ability to use a standard web browsing application, i.e., Microsoft Internet Explorer/Edge, Mozilla Firefox, Safari, Chrome, Opera, etc.
 - e. Demonstrate the ability to search the Internet for information using a variety of search engines, e.g., Yahoo, Google, Bing, etc.
 - f. Evaluate various websites for valid information including author, content, and audience.
 - g. Describe the concept of intellectual property infringement, e.g., copyright, censorship, licensing, and plagiarism.
2. The Impact of Computing and the Internet on Society
 - a. Explain the impact of computing and the Internet on society.
 - b. Identify how computers are used in different areas of work, school, and home.
 - c. Identify the risks of using computer hardware and software.
 - d. Identify how to use the Internet safely, legally, and responsibly.
 - e. Describe threats to a computer network and online accounts, methods of avoiding attacks, and options for dealing with virus attacks.
3. Organizing Your Digital Life (Calendaring, Social Media, Online Conferencing, Streaming Media Literacy, and Digital Citizenship)
 - a. Create events and appointments through an online calendar.
 - b. Create notifications, alerts, and rules in the online calendar.
 - c. Maximize the use of multiple calendars through the use of subscriptions and sharing.
 - d. Differentiate between intranet and internet.
 - e. Demonstrate the use of various Web 2.0 tools:
 1. Blogs, wikis, and forums
 2. Audio, video, and phone conferencing
 3. Screen sharing
 4. Streaming content using various devices
 - f. Differentiate between streaming and downloading files.
 - g. Analyze the different forms of electronic communications and apply the best method to use in a specific situation.
 - h. Apply netiquette to electronic communications.
4. Electronic Mail (E-mail)
 - a. Identify e-mail applications and service providers.
 - b. Identify the components of an e-mail message.
 - c. Compose, send, and respond to an e-mail message using best practices.
 - d. Identify the purpose of an e-mail signature.
 - e. Identify, attach, and save e-mail attachments from a message.
 - f. Identify and create a contact list and records.
 - g. Create, manage, empty, move and delete folders.

[Course Materials and Resources](#)

[Course Academic Standards and Indicators](#)

[Computer Science Academic Standards and Indicators](#)