South Carolina CTE

Fundamentals of Computing (2019): Fundamentals of Computing

Safety	1	Review school safety policies and procedures. A1
	2	Review classroom safety rules and procedures. A2
	3	Review safety procedures for using equipment in the classroom. A3
	4	Identify major causes of work-related accidents in office environments. A4
	5	Demonstrate safety skills in an office/work environment. A5
Student Organizations	1	Identify the purpose and goals of a Career and Technology Student Organization (CTSO). B1
	2	Explain how CTSOs are integral parts of specific clusters, majors, and/or courses. B2
	3	Explain the benefits and responsibilities of being a member of a CTSO. B3
	4	List leadership opportunities that are available to students through participation in CTSO conferences, competitions, community service, philanthropy, and other activities. B4
	5	Explain how participation in CTSOs can promote lifelong benefits in other professional and civic organizations. B5
Technology Knowledge	1	Demonstrate proficiency and skills associated with the use of technologies that are common to a specific occupation (e.g., keying speed). C1
	2	Identify proper netiquette when using e-mail, social media, and other technologies for communication purposes. C2
	3	Identify potential abuse and unethical uses of laptops, tablets, computers, and/or networks. C3
		xplain the consequences of social, illegal, and unethical uses of technology (e.g., yberbullying, piracy; illegal downloading; licensing infringement; inappropriate

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		uses of software, hardware, and mobile devices in the work environment). C4
	5	Discuss legal issues and the terms of use related to copyright laws, fair use laws, and ethics pertaining to downloading of images, photographs, documents, video, sounds, music, trademarks, and other elements for personal use. C5
	6	Describe ethical and legal practices of safeguarding the confidentiality of business-and personal-related information. C6
	7	Describe possible threats to a laptop, tablet, computer, and/or network and methods of avoiding attacks. C7
	8	Evaluate various solutions to common hardware and software problems. C8
PERSONAL QUALITIES AND EMPLOYABILITY SKILLS	1	Demonstrate punctuality. D1
	2	Demonstrate self-representation. D2
	3	Demonstrate work ethic. D3
	4	Demonstrate respect. D4
	5	Demonstrate time management. D5
	6	Demonstrate integrity. D6
	7	Demonstrate leadership. D7
	8	Demonstrate teamwork and collaboration. D8
	9	Demonstrate conflict resolution. D9
	10	Demonstrate perseverance. D10
	11	Demonstrate commitment. D11
	12	Demonstrate a healthy view of competition. D12
	13	Demonstrate a global perspective. D13
	14	Demonstrate health and fitness. D14
	15	Demonstrate self-direction. D15
	16	Demonstrate lifelong learning. D16
PROFESSIONAL KNOWLEDGE	1	Demonstrate effective speaking and listening skills. E1
		)emonstrate effective reading and writing skills. E2

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	3 **Demonstrate mathematical reasoning.** E3
	4 **Demonstrate job-specific mathematics skills.** E4
	5 **Demonstrate critical-thinking and problem-solving skills.** E5
	6 **Demonstrate creativity and resourcefulness.** E6
	7 **Demonstrate an understanding of business ethics.** E7
	8 **Demonstrate confidentiality.** E8
	9 **Demonstrate an understanding of workplace structures, organizations, systems, and climates.** E9
	10 **Demonstrate diversity awareness.** E10
	11 **Demonstrate job acquisition and advancement skills.** E11
	12 **Demonstrate task management skills.** E12
	13 **Demonstrate customer-service skills** E13
EVOLUTION OF COMPUTING	1 **Define key computing terms (e.g. hardware, software, data, etc.).** F1
	2 **Identify key individuals and their impact on the field of computing.** F2
	3 **Discuss the progression of computing and explain its impact on society (e.g. hardware, programming languages, applications, Internet, emerging technologies, etc.).** F3
	4 **Explain Moore's Law.** F4
COMPUTING SYSTEMS	1 **Identify and define the key functional components (input devices, output devices, processor, operating system, software applications, memory, storage, etc.).** G1
	2 **Understand the terms and units that are used to describe major hardware components (RAM, ROM, Peta-, Tera-, Giga-, Mega- Kilo-, Hz, Bit, Byte, Binary, etc.).** G2
	3 **Describe how software and hardware interact.** G3
	4 **Discuss how and why binary is used to represent data in a computer.** G4
	5 **Describe how a picture, sound/song, and video are digitized and represented in a computer.** G5
	:ompare and contrast operating systems (e.g., Mac, Windows, Linux, ChromeOS,)S, Android). G6

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	7	Evaluate hardware and software configuration to meet situational and budgetary requirements (e.g. gaming, Internet browsing, student, graphic designer, etc.). G7
	8	Make hardware and software recommendations to improve a computer system. G8
PROBLEM SOLVING AND COMPUTATIONAL THINKING (TO BE IMPLEMENTED THROUGHOUT THE COURSE)	1	Describe how computer programs and apps can be used to solve various problems (e.g., desktop, mobile, enterprise). H1
	2	Solve a problem by applying appropriate problem solving techniques (understand the problem, plan the solution, carry out the plan, review and discuss). H2
	3	Define algorithm (a set of clearly defined, logical steps to solve a problem). H3
	4	Demonstrate an understanding of algorithms and their practical applications. H4
	5	Create, evaluate, and adjust algorithms to solve a variety of problems. H5
FUNDAMENTALS OF PROGRAMMING	1	Express the design of a program using representations such as flowcharts and pseudocode. I1
	2	Analyze and explain how a particular program functions. I2
	3	Solve problems of increasing complexity using visual block-based programming individually and collaboratively. I3
	4	Write code that uses variables, events, functions, operators (i.e. arithmetic, relational, logical), conditional control structures (e.g., if, if-else) and repetition/iteration control structures (e.g., while, for). I4
	5	Differentiate between text and numerical data. 6. Edit, compile/run, test, and debug a program. I5
FUNDAMENTALS OF WEB DESIGN	1	Evaluate the results of Internet searches and the reliability of information found on Web sites. J1
	2	Describe how Web sites are used to communicate and exchange data. J2
	3	Plan a web page considering subject, devices, audience, layout, color, links and graphics. J3
	4	Create a web page that contains a variety of HTML elements (e.g., hyperlinks, ordered and unordered lists, images, headings, paragraph) and CSS styles. J4
ETHICAL, LEGAL & SOCIAL ISSUES OF CO	1	Examine the consequences resulting from issues involving ethics around security, privacy, copyright, fair use, intellectual property, social media and licensing. K1
		xplain the importance of Acceptable Use Policies. K2

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	3 **Explain the importance of data security and physical security.** K3
	4 **Explain the concepts of confidentiality, integrity, and availability (CIA).** K4
	5 **Identify computing threats (e.g., spyware, adware, malware, viruses, ransomware, phishing, hacking, software piracy, identity theft, etc.) and their potential impacts on society.** K5
	6 **Explain the concept of encryption and how it is used on a daily basis.** K6
COMPUTING CAREERS	1 **Compare and contrast the five disciplines of computing: computer science, software engineering, information technology, information systems, and computer engineering.** L1
	2 **Compare and contrast careers in computing along with their education, training requirements, industry certifications and salary ranges.** L2
	3 **Identify gender, diversity and geographic related issues in computing.** L3
	4 **Describe how computing enhances other career fields.** L4