Colorado CTE Course – Scope and Sequence

Course Name	IT (Information Technology)	**Course Details** **Course = 0.50 Carnegie Unit Credit**	**1.0**		
Course Description	The "Foundations of Information Technology" course introduces students to the fundamental concepts and practical applications of information technology, setting the stage for future exploration. Through hands-on projects, interactive learning experiences, and an exploration of the diverse branches of computer science, students will build a solid foundation in technology and coding.				
Note:	This is a suggested scope and sequence for the course content. The content will work with any textbook or instructional resource. If locally adapted, make sure all essential knowledge and skills are covered.				
SCED Identification #		Schedule calculation based on 60 calendar days of a 90-day semester. Scope and sequence allow for additional time for guest speakers, student presentations, field trips, remediation, or other content topics.			
All courses taught in an approved CTE program must include Essential Skills embedded into the course content. The Essential Skills Framework for this course can be found at **https://www.cde.state.co.us/standardsandinstruction/essentialskills**					
Instructional Unit Topic	Suggested Length of Instruction	CTE or Academic Standard Alignment	Competency / Performance Indicator	Outcome / Measurement	CTSO Integration
Introduction to Computers and the Problem-Solving Process	5 days (1 week)	**Standard**: Identify and understand key concepts and competencies essential for students in the Introduction to Computers and the Problem-Solving Process course. May include fundamental computer skills, problem-solving strategies, and effective communication in a technical context.	Competency: Recognize and name key components of a computer system, including the central processing unit (CPU), memory, storage devices, input/output peripherals, and the motherboard. Performance Indicator: Given a diagram of a computer system, accurately label each	Outcome: Mastery of, and proficiency in Computer Fundamentals and Problem-Solving Techniques	TSA

			component and explain its function in the overall operation of the computer		
				Measurement: Showcase cumulative knowledge and skills acquired throughout the "Introduction to Computers and the Problem-Solving Process" course. Provide a comprehensive measure of readiness to apply learned skills in various academic and professional scenarios.	
Computer Hardware and Components	5 days (1 week)	**Standard**: integrates essential academic concepts into the technical content, ensuring that students not only gain practical skills but also meet academic expectations for hardware knowledge. This includes standards related to computer hardware fundamentals, assembly, maintenance, and troubleshooting.	Competency: Proficient understanding and application of computer hardware and peripheral devices. Performance Indicator: Given a computer troubleshooting scenario, accurately diagnose several hardware problems through a focused but iterative problem-solving process.	Outcome: Demonstrate an awareness and perform basic IT tasks in troubleshooting and diagnosing computer hardware and device issues. Measurement: Showcase and demonstrate computer diagnostic skills in a knowledge and performance based scenario assessment (aligned to Comptia IT Fundamentals exam objectives).	TSA
Digital Citizenship and Cybersecurity Basics	10 days (2 weeks)	**Standard**: Understand how to navigate the digital world responsibly and the	Competency: In depth awareness of digital literacy and proficient understanding of	Outcome: Mastery and proficiency in digital literacy and defensive security-oriented thinking with	TSA

		fundamental cybersecurity principles essential academic concepts in the technical content, ensuring that students not only gain practical skills but also meet academic expectations for digital literacy and cybersecurity awareness.	cybersecurity principles (multifactor authentication, adversarial thinking, encryption, social engineering, security layers and access control). Performance Indicator: Given a multi-step assessment, students will demonstrate proficiency with strong password design, security settings and awareness of common cyber attacks (phishing, malware, ransomware, and social engineering)	regard to computer systems. Measurement: Showcase a career-ready understanding of common threats to organizations in the cybersecurity space. Measurement: Demonstrate an awareness of aspects of digital literacy that encompass safe, ethical and responsible technology use.	
Web Development	14 days (2.4 weeks)	**Standard**: Understand the integration of academic and technical skills by incorporating relevant academic concepts into technical content. This includes understanding mathematical principles related to algorithms, logic, and design thinking applied in web development	Competency: Proficiency in HTML and CSS web design and scripting. Performance Indicator: Students can create a multi page website with working hyperlinks and stylesheet tags that customize fonts, colors, and other elements	Outcome: Ability to design and debug HTML webpages while also modifying page elements. Measurement: Students can design complex HTML documents that can be hosted on a webserver, such as a webpage for their school or club.	TSA

Physical Computing	13 days (2.3 weeks)	ISTE 4a, 4b, (Computational Thinker) 4a. Identify and define authentic problems for investigation. 4b. Design authentic learning activities that ask students to leverage a design process to solve problems with an awareness of technical and human constraints, and defend their design choices	Competency: Proficiency in applying basic programming concepts (block commands, loops, conditionals, and nested statements) into the physical design of circuits and robotics. Performance Indicator: Given a block based coding platform, students will program a working nested loop that generates a repetitive physical effect via lighting, sound or movement.	Outcome: Ability to connect and apply concepts in programming with physical computer hardware (circuits and robotics). Measurement: Students can program and debug physical objects using a computer language, such as robotics or circuitry.	TSA
AI and Machine Learning	13 days (2.3 weeks)	ISTE 1.5.b - Students collect data or identify relevant data sets, use digital tools to analyze them, and represent data in various ways to facilitate problem-solving and decision-making. AI4K12: BI-3 - Computers can learn from data	Competency: Understanding that computers are training on datasets provided by humans. Understanding that these datasets can be affected by individual bias and limitations. Differentiating between “supervised” and “unsupervised” learning with regards to machine learning. Performance Indicator:	Outcome: Ability to describe how Artifical Intelligence is impacting society. Understanding of how computers are trained to solve problems. Measurement: Students can train a computer AI model given a premade dataset.	TSA

			Create a model that represents a data set. Create and use data visualizations to represent data.		
Careers in IT	2-4 weeks		Identify various fields within IT fields and their respective career opportunities. a. Recognize the work typically performed, tools and technology used, and nature of work environment b. Identify potential certification opportunities c. Find membership organizations associated with the careers d. Understand the necessary education associated within the careers e. Research security clearance requirements associated within the careers		


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