Computer Science Essentials

Career Cluster	Information Technology
Course Code	10057
Prerequisite(s)	Introduction To Information Technology Careers (Recommended), Computer Applications (Recommended), Computer Hardware & Software (Recommended)
Credit	.5-1
Program of Study and Sequence	Computer Science Essentials is a Cluster course in the Information Technology cluster.
Student Organization	SkillsUSA, Future Business Leaders of America (FBLA), CyberPatriots
Coordinating Work-Based Learning	Tours, Guest Speakers, Field Trips, Job Shadows, Internships, Volunteer
Industry Certifications	None
Dual Credit or Dual Enrollment	TBD
Teacher Certification	Information Technology Cluster Endorsement; Networking Systems & Information Support Pathway Endorsement; K-12 Educational Technology Endorsement; K-12 Classroom Technology Endorsement
Resources	

Course Description:

Computer Science Essentials is a course designed to guide students in exploring a foundation of knowledge in computer science concepts. Topics covered in the class include computing systems, networks and the Internet, data and analysis, algorithms and programming, and the impacts of computing.

Program of Study Application

Computer Science Essentials is a Cluster course in the Information Technology cluster.

Course Standards

INDICATOR CSE #1 Explore computer systems and their functions.		
Webb Level	*Sub-Indicator*	*Integrated Content*
Level 1: Recall	CSE 1.1 Explain how abstractions hide the underlying implementation details of computing systems embedded in everyday objects.	
Level 2: Skill/Concept	CSE 1.2 Compare levels of abstraction and interactions between application software, system software, and hardware layers.	
Level 1: Recall	CSE 1.3 Develop guidelines that convey systematic troubleshooting strategies that others can use to identify and fix errors.	

INDICATOR CSE #2 Explore networks and the internet.		
Webb Level	*Sub-Indicator*	*Integrated Content*
Level 1: Recall	CSE 2.1 Identify network components by describing the relationship between routers, switches, servers, topology, and addressing.	
Level 2: Skill/Concept	CSE 2.2 Give examples to illustrate how sensitive data can be affected by malware and other attacks.	
Level 2: Skill/Concept	CSE 2.3 Identify security measures to address various scenarios based on the CIA Triad (confidentiality, integrity, and availability).	

| Level 2: Skill/Concept | CSE 2.4 Compare various security measures, considering tradeoffs between the usability and security of a computing system. | |

INDICATOR CSE #3 Explore data and analysis.

Webb Level	*Sub-Indicator*	*Integrated Content*
Level 2: Skill/Concept	CSE 3.1 Translate between different bit representations of real-world phenomena, such as characters, numbers, and images.	
Level 2: Skill/Concept	CSE 3.2 Evaluate the tradeoffs in how data elements are organized and where data is stored.	

INDICATOR CSE #4 Identify and define algorithms and programming and how they are used in computing.

Webb Level	*Sub-Indicator*	*Integrated Content*
Level 2: Skill/Concept	CSE 4.1 Use lists to simplify solutions, generalizing computational problems instead of repeatedly using simple variables.	
Level 1: Recall	CSE 4.2 Investigate specific control structures and tradeoffs involving implementation, readability, and program performance.	
Level 3: Strategic Thinking	CSE 4.3 Decompose problems into smaller components through systematic analysis, using constructs such as procedures, modules, and/or objects.	
Level 2: Skill/Concept	CSE 4.4 Understand the purpose of gathering feedback when creating software.	

Level 1: Recall	CSE 4.5 Examine software licenses, including copyright, freeware, and open-source licensing.	
Level 3: Strategic Thinking	CSE 4.6 Evaluate computer programs for intended outcomes.	

INDICATOR CSE #5 Explore impacts of computing.		
Webb Level	*Sub-Indicator*	*Integrated Content*
Level 1: Recall	CSE 5.1 Evaluate the ways computing impacts personal, ethical, social, economic, and cultural practices.	
Level 2: Skill/Concept	CSE 5.2. Examine and identify bias and equity deficits in existing computer programs.	
Level 2: Skill/Concept	CSE 5.3 Identify and use tools and methods for collaboration on a project to increase connectivity of people in different cultures and career fields.	
Level 2: Skill/Concept	CSE 5.4 Explore privacy concerns and intellectual property laws related to computing.	
Level 1: Recall	CSE 5.5 Explore careers in computer science.	