Computer Science

Junior High Computer Science

Are you fascinated by computers and wonder how they do what they do? This course will introduce students to the history of computers, cyber-security, hardware, and computer networking. Parent's permission to use the Internet is required for participation in this course.
Prerequisite: Must have completed Computer Applications with a passing grade. (Quarter)

This curriculum is based on standards taken from the Ohio Technology Curriculum Standards and the National Educational Technology Standards for Students developed by ISTE (International Society for Technology in Education).

History and Culture

Standard 1; Benchmark C:4(8): Cite examples of how transferred knowledge has impacted the development of technological systems and products.
Standard 1; Benchmark C:5(8): Describe and cite examples illustrating how different technologies require different processes.
Standard 2; Benchmark A:1(8): Explain how economic, political and cultural issues are influenced by the development and use of technology.
Standard 2; Benchmark A:2(8): Describe how societal expectations drive the acceptance and use of products and systems.
Standard 2; Benchmark A:3(8): Describe how the use of technology affects humans in various ways, including their safety, comfort, choices and attitudes about technology's development and use.
Standard 2; Benchmark C:2(7): Analyze a design or invention and explain its importance.
NETS: Identify key events, developments, and inventions in the field of computer science.

Cyber Security and Ethical Practice

NETS: Understand the ethical, cultural and societal issues related to technology.
NETS: Practice responsible use of technology systems, information and software.
Standard 1; Benchmark B:4(8): Indicate ways a system malfunction may affect the function and quality of the system.
Standard 2; Benchmark D:1(8): Demonstrate legal and ethical practices when completing projects/schoolwork.
Standard 2; Benchmark D:2(8): Adhere to copyright restrictions.

Standard 2; Benchmark D:3(8): Define Fair Use in regards to technology-generated educational materials.
Standard 2; Benchmark D:4(8): Discuss software piracy, its impact on the technology industry, and possible repercussions to individuals and/or school districts.
Standard 2; Benchmark D:5(8): Determine copyright, trademark, and trade name restrictions to consider when using the Internet or other technology resources.

Hardware/Software

NETS: Demonstrate a sound understanding of the nature and operation of technology systems.
NETS: Develop positive attitudes toward technology uses that support lifelong learning, collaboration, personal pursuits, and productivity.
Standard 1; Benchmark B:2(8): Examine parameters and constraints in the design of a product or system.
Standard 1; Benchmark C:1(8): Demonstrate ways that technological systems interrelate.
Standard 3; Benchmark A:1(8): Describe how computer and multimedia technology systems work, including asynchronous transfer mode (ATM), Internet Protocol (IP), Local Area Networks (LAN), Wide Area Networks (WAN), wireless).

Networking

Standard 1; Benchmark B:1(8): Demonstrate how technological systems can be connected to one another.
Standard 1; Benchmark B:2(8): Examine parameters and constraints in the design of a product or system.
Standard 1; Benchmark C:1(8): Demonstrate ways that technological systems interrelate.
Standard 1; Benchmark B:3(8): Utilize controls to make changes in a system resulting in a desired outcome.
Standard 1; Benchmark B:4(8): Indicate ways a system malfunction may affect the function and quality of the system.

Innovation and Design

NETS: Use telecommunications tools to collaborate, publish and interact with peers, experts, and other audiences.
NETS: Use a variety of media and formats to communicate information and ideas effectively to multiple audiences.
Standard 6; Benchmark C:3(8): Describe how invention is a process of turning ideas and imagination into devices and systems; and innovation is the process of modifying an existing product or system to improve it.
Standard 6; Benchmark C:5(8): Describe how inventions can have multiple applications, some not originally intended.
Standard 6; Benchmark C:6(8): Identify the five levels of innovation and describe their characteristics:

- Apparent or conventional solution;
- Small invention inside paradigm;
- Substantial invention inside technology;
- Invention outside technology; and discovery.

Standard 1; Benchmark A:1(8): Design technological solutions to problems generated by individual or collective needs.
Standard 1; Benchmark A:2(8): Interpret the interrelationship between technology, creativity, and innovation.
Standard 1; Benchmark A:4(8): Apply multiple factors when developing products and systems to solve problems.
Standard 3; Benchmark B:1(8): Incorporate all available technology tools and resources to research , investigate, solve and present findings in a problem situation.
Standard 3; Benchmark C:1(8): Use content- specific tools, software and simulations to support learning, and research societal and educational problems.
Standard 3; Benchmark C:2(8): Apply technology resources to support personal productivity and learning throughout the curriculum.
Standard 4; Benchmark B:1(8): Construct and publish information in printed and electronic form.
Standard 4; Benchmark B:2(8): Select appropriate file types (documents, sounds, images, and multimedia) based on communication need.
Standard 4; Benchmark C:1(8): Design collaborative interactive activities or projects.
Standard 4; Benchmark C:1(8): Select an appropriate communications tool to obtain and share information.
Standard 5; Benchmark B:6(8): Digitize information for archiving and future use (digital portfolio).
Standard 5; Benchmark B:8(8): Evaluate final product for it's adherence to project requirements.