Bentonville Schools

Course Name: Introduction to Computer Science
Last Updated: Summer 2025

Course Description: This course provides an introduction to computer science encompassing programming concepts, career paths, and computational thinking. Students will explore data analysis, visualization, and emerging technology in the field of computer science.

Overview of Student Outcomes	
Two Weeks (5 Days)	**Unit 1: Careers and Professionalism** The student can/will ● Demonstrate understanding of various career paths in computer science (1.1.1) ● Describe the importance of ethical considerations in computer science and how they apply to professional practice (1.1.3) ● Evaluate the concept and importance of a professional online presence in computer science careers and explore ways to showcase skills and projects (1.1.4) ● Identify key elements of a professional portfolio and explain the purpose of a portfolio (1.1.5)
Three Weeks (7 Days)	**Unit 2: Computational Thinking** The student can/will ● Recognize situations where leveraging computational approaches would be beneficial for solving real-world problems (2.1.1) ● Apply the core computational thinking principles - abstraction, decomposition, algorithm development, and pattern recognition - to designing effective problem-solving strategies (2.1.2) ● Perform operations that encode and decode data from one form into another form (2.2.5)
Four Weeks (10 Days)	**Unit 3: Computer Systems** The student can/will ● Identify and explain the purpose of key hardware components within various computing platforms and how they work together to enable the overall system operation (5.2.1) ● Define software and distinguish between system software and application software (5.2.2) ● Explain the basic functions of an operating system and its importance in computer operations (5.2.3) ● Use the console for basic data input and output operations within a program (2.4.1) and Explain the structure and purpose of different file types (e.g., txt, csv, bmp, and json) (2.4.2) ● Craft clear and concise comments within the code to explain the purpose of different code sections, algorithms used, and non-obvious logic (2.5.2)

Bentonville Schools

2 Weeks (5 Days)	**Unit 4: Variables and Data Types** The student can/will • Implement consistent formatting and naming conventions within the code to improve code readability and maintainability (2.5.1) • Use various data types appropriately within a program (2.2.1) • Create and use variables to store and manage data within a program (2.2.2) • Convert between different data types when necessary within a program (2.2.4)
1 Week (2 Days)	**Unit 5: Major Technologies** The student can/will • Define artificial intelligence (AI), identify its key subfields, and explain its benefits and potential drawbacks in real-world applications (4.1.1) • Explain cloud computing, its service models, and discuss how it has transformed the IT Landscape, including its advantages and challenges (4.1.2) • Define the Internet of Things(IoT), recognize its real-world applications, and discuss its impact on data generation, automation, and interconnectedness (4.1.3) • Explain the concept of big data, its defining characteristics, and its impact on data analysis, decision-making, and various industries (4.1.4) • Summarize the concept of open-source software, its benefits, and its impact on software development and distribution (5.2.4)
2 Weeks (5 Days)	**Unit 6: Python Operators** The student can/will • Construct expressions using arithmetic operators and numeric data types to perform calculations within a program (2.2.3) • Construct Boolean expressions using relational operators within a program (2.3.2) • Create programs that implement selection control structures to make decisions and execute different code paths based on conditions (2.3.4) • Debug errors within a program to ensure program functionality (2.3.7)
3 Weeks (7 Days)	**Unit 7: Decision Making** The student can/will • Analyze a program in terms of steps of execution and expected outcomes (2.3.1) • Create programs that implement selection control structures to make decisions and execute different code paths based on conditions (2.3.4)
Two Weeks (5 Days)	**Unit 8: Robotics** The student can/will • Identify potential sources of data based on the type of data needed (3.1.2) • Review Units 1-7 • Construct Boolean expressions using logical operators within a program (2.3.3)
Five Weeks (12 Days)	**Unit 9: Domain 3 - Data Analysis and Visualization** The student can/will • Design basic data collection methods appropriate for a specific purpose (3.1.4)

Bentonville Schools

	• Analyze data sets utilizing appropriate descriptive statistics and visualizations (3.2.2) • Visually inspect and use exploratory analysis techniques to discern patterns, trends, and relationships within the data (3.2.3) • Create programs to generate suitable visualizations for the data and question at hand (3.2.5)
Two Weeks (5 Days)	**Unit 10: Functions** The student can/will • Create subroutines to modularize code for reusability and organization within a program (2.3.6)
Two Weeks (5 Days)	**Unit 11: Iteration** The student can/will • Implement data structures to organize, store, manipulate, and perform operations on collections of data within a program (2.2.6) • Create programs that implement iteration control structures to repeat code blocks a specific number of times or until a condition is met (2.3.5)
Four Weeks (10 Days) **Capture the Flag** **(Hack-A-Thon)** **Tentative Date: Thursday, April 30 and Friday, May 1**	**Unit 12: Cybersecurity & Networking** The student can/will • Analyze the core principles for establishing comprehensive information security strategies when using data and information systems (5.1.1) • Describe common cyber threats and how these threats can compromise data and information systems (5.1.2) • Describe essential cybersecurity practices and technologies implemented to safeguard information (5.1.3) • Analyze the impact of best practices in maintaining a secure digital environment (5.1.4) • Explain the importance of software updates and patches in maintaining security and improving functionality (5.2.5) • Define and explain the significance of common network concepts (5.3.1) • Identify and describe the functionalities of common network hardware used in networks (5.3.2) • Explain how basic network security principles are used to safeguard networks (5.3.3) • Analyze the relationship between computer systems, software, and networks in creating interconnected computing environments (5.3.4)
Three Weeks (7 Days)	**Unit 13: Emerging Technologies** The student can/will • Define quantum computing, explaining its basic principles and potential to revolutionize computing power and cryptography (4.2.1) • Describe edge computing and its role in processing data closer to the source, discussing its advantages in reducing latency and enhancing privacy (4.2.2) • Explain the concept of extended reality and its potential applications across various industries (4.2.3) • Describe the capabilities of blockchain technology and assess its potential uses across

	different sectors (4.2.4)

Available Student Support for Learning:
Refer to the teacher's Course Syllabus and Google Classroom for resources and course specific opportunities.

Student Textbook/Online Learning Platform:
Visual Studio Code
Python Language

Link to Course Standards on ADE Website:
https://drive.google.com/file/d/1K5mpWYjmikN1ZJ11qW_uJP_sSWFsj1m2/view

Certifications or State/National Assessments: Students will be expected to take
IT: Computational Thinking

Check your grade on Home Access Center for up-to-date information.