



LINCOLN-WOODSTOCK COOPERATIVE SCHOOL DISTRICT

COURSE SYLLABUS

Course Name: ICT:Introduction to Computer Science

Length: Half-Year

Teacher: Dave Webster

Course Description:

This curriculum introduces students to computer science concepts, computational thinking, and hands-on technology integration. Students will gain experience in coding, hardware design, and real-world applications using platforms such as TinkerCAD, Glowforge, and EduDrones. Specific coding lessons will utilize CodeHS to build a solid foundation in programming and problem-solving. Fridays are dedicated to portfolio development to document progress.

Competencies or Standards Assessed:

ICT (Information and Communication Technology) Standards:

1. Creativity and Innovation: Use technology to create and develop innovative projects and solutions.
2. Critical Thinking, Problem Solving, and Decision-Making: Employ computational thinking to solve real-world problems.
3. Technology Operations and Concepts: Demonstrate a sound understanding of technology systems, concepts, and operations.
4. Digital Citizenship: Practice responsible use of technology and digital resources.
5. Research and Information Fluency: Evaluate and use information from various digital resources effectively.

ISTE Standards for Students

1. Empowered Learner: Develop problem-solving skills through technology and coding.
2. Innovative Designer: Apply design thinking to build functional prototypes.
3. Computational Thinker: Develop algorithms to solve real-world problems.
4. Creative Communicator: Showcase knowledge via digital portfolios.

CSTA K–12 Computer Science Standards

- 2-AP-10: Develop programs with sequences, loops, and conditionals.
- 2-IC-23: Evaluate the societal impact of computing technologies.

- 2-CS-02: Describe internal components of a computing system.

Anchor Texts or Major Curriculum:

Reference: Ed 306.42 contains the minimum requirements districts must use in order to establish an ICT Literacy program for all students in grades K through 12. The standards require districts to provide all K-12 students with opportunities to use and learn about a wide variety of digital tools through an integrated approach, in which the learning of content standards is enhanced through the use of information and communication technologies. New Hampshire Educational Technology reviews and supports districts and schools as they enhance and update their ICT Literacy Programs. The NH ICT Literacy Standards are based on the National Educational Technology Standards (NETS), which were developed by the International Society for Technology in Education (ISTE)

Resources Needed:

- CodeHS Platform
- TinkerCAD and Glowforge Access
- EduDrones and the corresponding software
- Chromebooks or Laptops
- Internet Access

Course Outline (major units of study):

Unit Title	Essential Question or Overarching Understanding
Unit 1: Introduction to Computer Science and Problem-Solving (<i>Days 1–15</i>) • ICT Standards: Creativity and Innovation, Technology Operations and Concepts • Topics: ○ Overview of computer science careers and applications. ○ Introduction to algorithms and computational thinking. ○ CodeHS.org Unit: <i>Ardiono and Python</i> • Edudrone Day: Program drones to solve basic challenges.	How can we use computer science to solve real-world problems effectively?



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Portfolio Focus: Document/Create base Webpage (templates)	
Unit 2: Programming Fundamentals (<i>Days 16–30</i>) - ICT Standards: Critical Thinking, Problem Solving, and Decision-Making - Topics: - Basic programming concepts: variables, loops, conditionals. - Introduction to block-based programming. - CodeHS.org Unit: <i>Ardiono and Python</i> - Edudrone Day: Code drones to perform a sequence of maneuvers based on logic. - Portfolio Focus: Include coding projects and document reflections.	How do programming languages enable us to communicate instructions to a computer?
Unit 3: Real-World Applications of Technology (<i>Days 31–45</i>) - ICT Standards: Creativity and Innovation, Digital Citizenship - Topics: - Ethics in technology and cybersecurity basics. - Introduction to data representation (binary, ASCII). - CodeHS.org Unit: <i>Ardiono and Python</i> - Edudrone Day: Explore real-world drone applications, such as data collection.	How does technology transform the way we live, work, and solve problems in our daily lives

Portfolio Focus: Include reflections on all course artifacts	
Unit 4: Advanced Programming Concepts (Days 46–60) - ICT Standards: Technology Operations and Concepts, Critical Thinking - Topics: - Functions and modular programming. - Debugging and error handling. - CodeHS.org Unit: <i>Ardiono and Python</i> - Edudrone Day: Program drones to respond to dynamic inputs or conditions. - Portfolio Focus: Include reflections on all course artifacts	
Unit 5: Innovation and Project-Based Learning (Days 61–75) - ICT Standards: Creativity and Innovation, Research and Information Fluency - Topics: - Brainstorming and designing technology-based solutions. - Using APIs and integrating hardware/software. - CodeHS.org Unit: <i>Ardiono and Python</i> - Edudrone Day: Test and demonstrate project integration with drones. - Portfolio Focus: Include reflections on all course artifacts	How can we use creativity and collaboration to design solutions for real-world challenges?



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Unit 6: Career Preparation and Final Projects (Days 76–90)

- ICT Standards: All standards integrated
- Topics:
 - CodeHS.org Unit: *Ardiono and Python*
- Edudrone Day: Showcase drone-integrated projects to an audience.
- Portfolio Focus: Finalize portfolio with a collection of all major works, including project documentation, videos, and self-assessments.

How can we apply our skills and knowledge to create a project that showcases our readiness for future careers?

Portrait of a Learner

Independent Learner

I make thoughtful plans and do my best to reach personal goals using feedback to work through challenges.

Responsible Collaborator

I work with others to achieve shared goals by listening actively, contributing ideas, and managing conflict.

Critical Thinker

I analyze information, ask thoughtful questions, and apply reasoning skills to solve problems and make decisions.

Effective Communicator

I express ideas clearly, adapting strategies based on the audience, setting, and/or purpose.

Global Citizen

I show that I care and take responsibility by helping in my community and the world around me.

Additional Classroom Expectations: