Intro to Computer Science Endorsement

Specifications, Competencies & Requirements for K12 Educators

PURPOSE

This endorsement is meant for certified teachers interested in teaching **K-12 Computer Science** courses. It is attached to a current Utah Educator License with a concentration in **Elementary**, **Secondary,** or **CTE** Education.

Upon attachment of this endorsement to a Utah educator license, educators will be approved to teach the following USBE courses:

Computer Programming 1
Introduction to Python 1
Introduction to Python 2
Creative Coding
3D Print Technology
Digital Literacy
Exploring Computer Science
Computer Science Principles
Computer Science Investigations

ENDORSEMENT TYPES

Prerequisite

Demonstrate an understanding of Career and Technical Education (CTE) basics.

CTE Knowledge

Associate Level Requirements

Applicants must complete **ONE** of the following competency requirements. The associate-level endorsement is valid for up to 3 school years before it expires. Associate-level endorsements are non-renewable.

Software Programming
Programming Language
Digital Literacy

Professional Level Requirements

The applicant must meet **ALL** the competency areas listed above.

Learning that works for Utah CTE®

Utah State Board of Education

COMPETENCY DETAILS & DESCRIPTIONS

Prerequisite

1. CTE Knowledge

Demonstrate an understanding of CTE basics:

- Explain how CTE links learning to specific Utah industries and what its main goals are.
- Know the licenses and endorsements needed to teach specific CTE courses.
- Describe how CTE is organized into clusters and pathways at the state, district (LEA), and school levels, and how this helps students succeed after graduation.
- Locate and use the state's strands and standards in lesson plans.
- Explore CTE student organizations (CTSOs) and professional groups and explain how they support students and teachers.
- Explain how advisory boards, with industry members, make sure programs meet job market needs and maintain safe learning environments.
- Understand the basics of securing funding, planning for the future of the program, and participating in the state Program of Quality Review (PQR) to ensure program excellence.

*Select **one** of the following options:*

- **USBE Course:** CTE Orientation
- **Complete THREE years of full-time CTE teaching in Utah**
- **Currently hold a professional-level CTE endorsement**

Endorsement Competencies

2. Software Programming

Demonstrate understanding of basic software programming. Must show competence in core software development skills, including object-oriented programming and web applications. This includes:

- Computer storage and data types
- Decision structures - if/else, algorithms, flowcharts, decision tables, when to use loops, recursion, data structures
- The Software Development Lifecycle
- Secure code concepts - encryption, hashing, share keys, SQL injection, etc.
- Web applications and object-oriented programming

*Select **one** of the following options:*

- **Bachelor's Degree or higher in Computer Sciences:**
  Examples:
  Utah Tech University: Computer Science BS
  Utah Valley University: Computer Science BS
  Utah Valley University: CS Education BS
- **PRAXIS**: Take and pass the PRAXIS #5652: Computer Science exam. Exam study guide.
- **Utah State University CS** Teaching Program
- **Industry Certification:**
  - Software Development Industry Exam

- NES: Test #315: Computer Science exam.
- **University Courses:** Credit from an accredited university, passing with a C or higher grade in a course similar to: UVU - CS 1400 - Fundamentals of Programming OR USU - CS 1400 - Intro to Computer Science OR WSU - CS1030 - Foundations of Computing.
- **Other**: Harvard EdX: CS50X

3. Programming Language

Demonstrate understanding of basic programming language. Demonstrate competency in writing syntactically correct, well-documented "language" code that will logically solve a given problem, correctly use data types supported by the chosen language, and use common libraries to write a program that solves a complex problem. Common competencies in various languages: data types, structures, data analysis, sequences, operators, flow, code documentation, debugging, scripts, variables, expressions, strings, etc.

*Select **one** of the following options:*

- **Bachelor's Degree or higher in Computer Sciences:**
  Examples:
  Utah Tech University: Computer Science BS
  Utah Valley University: Computer Science BS
  Utah Valley University: CS Education BS
- **PRAXIS**: Take and pass the PRAXIS #5652: Computer Science exam. Exam study guide.
- **Utah State University CS** Teaching Program (3 courses)
- **Industry Certification**:
  - NES: Test #315: Computer Science exam.
- **Industry Certification**: Take and pass ONE Programming Industry Certification in a specific language:
  - C#: Knowledge Pillars C# Coding Specialist
  - Python: Certiport ITS Python
  - Python: Knowledge Pillars Python Coding Specialist
  - Java: Certiport ITS Java
  - Java: Knowledge Pillars Java Coding Specialist
  - JavaScript: Certiport ITS JavaScript
  - JavaScript: Knowledge Pillars JavaScript Coding Specialist
- **University Courses:**
  Credit from an accredited university, passing with a C or higher grade in a course similar to: UVU - CS3270 - Python Software Development OR WSU - CS 1410 - Object-Oriented Programming
- **Other**: Choose one from the ed2go online course in a specific language:
  - ed2go - Introduction to C# Programming
  - ed2go - Introduction to C++ Programming
  - ed2go - Introduction to Java Programming
  - ed2go - Introduction to JavaScript
  - ed2go - Introduction to Python Programming
- **Other**: Harvard EdX: CS50W

4. Digital Literacy

Demonstrate knowledge of the information processing cycle, digital communication, digital citizenship, and digital tools/media.

*Select **one** of the following options:*

- **USBE Digital Literacy Methods Workshop:** Typically held in the summer. Visit the USBE CTE Calendar for more information.
- **IC3 Digital Literacy Certifications:** Successful completion of the most current version of the IC3 certification from the date of application. Certifications can be found at Certiport.com.