Computer Science Discoveries

Why Computer Science? Every 21st century student should have the opportunity to learn computer science. The basics of computer science help nurture creativity and problem-solving skills, and prepare students for a future in any field or career.

What is Computer Science Discoveries?

Computer Science Discoveries (CS Discoveries) is an introductory computer science course that empowers students to create authentic artifacts and engage with computer science as a medium for creativity, communication, problem solving, and fun.

K-12 curriculum pathway

CS Discoveries fits naturally between our CS Fundamentals course (for K-6th grade) and our AP/Honors CS Principles course (for high school). This allows districts, teachers, and students to complete a K-12 pathway of CS courses that build on each other and cohesively flow together.

Flexible implementation

We built the CS Discoveries curriculum for students in grades 7-9, so teachers can implement in either middle school or high school classrooms. The two semesters spiral upon each other, allowing the course to be taught as a single semester (Units 1-3), two sequential semesters, a full-year course, or even integrated into existing technology classes.
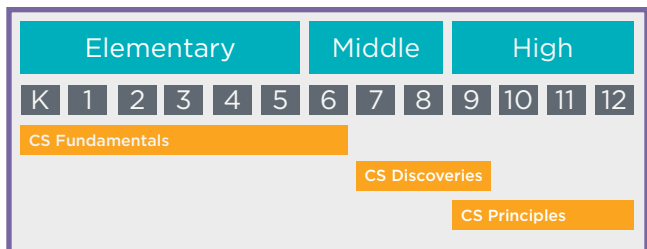
Professional Learning Program

Teachers implementing CS Discoveries as a semester or full-year course can apply to participate in a one-year professional learning program. The program involves:

- **Summer:** Teachers attend a 5-day in-person, conference style workshop designed to introduce CS concepts from the curriculum and core teaching practices. (Travel may be required.)

- **School Year:** Teachers continue with job-embedded workshops and online modules focused on supporting their first year of implementation.

Designed for equity

By providing students opportunities to engage with culturally and personally relevant topics in a wide variety of CS related fields, we hope to show all students that CS can be for them. That's why we designed this course from the ground up to be accessible and engaging for all students, regardless of background or prior experience.

| Elementary						Middle			High			
K	1	2	3	4	5	6	7	8	9	10	11	12

CS Fundamentals

CS Discoveries

CS Principles

Curriculum features:

- Daily instructional lesson plans that include inquiry- and equity-based pedagogy and background content

- Formative and summative assessments, exemplars and rubrics

- Videos for students and teachers including concept tutorials, instructional guides, and lesson tips

- Code Studio, a learning platform that organizes lesson plans and activities with student and teacher dashboards

Curriculum tools:

- **App Lab:** JavaScript programming environment in Code Studio, designed for creating event driven web apps with block-to-text workspace and debugging capabilities

- **Game Lab:** JavaScript programming environment in Code Studio, designed for creating object oriented sprite-based games and animations with block-to-text workspace and debugging capabilities

- **Circuit Playground:** Adafruit's new Arduino-based microcontroller that has a number of components and sensors built right onto the board and is used as the hardware for Unit 6: Internet of Things

- **Maker APIs:** Enables students to program their Circuit Playground boards right from App Lab with easy-to-understand JavaScript commands and blocks

- **Web Lab:** HTML/CSS programming environment in Code Studio used for website development
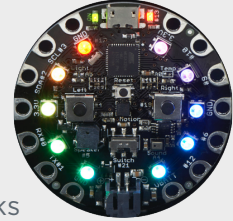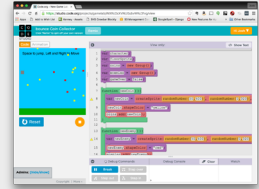
CS Discoveries unit overview

Semester 1: Exploration and Expression

Unit 1: Problem Solving Computers and Logic	Explore the problem-solving process and the different ways humans and computers solve problems.
Unit 2: The Internet Web Development	Discover the languages powering the web. Build your own websites in HTML and CSS using Web Lab.
Unit 3: Programming Interactive Games and Animations	Learn the powerful constructs underlying programming languages. Build interactive animations and games in JavaScript using Game Lab.

Semester 2: Innovation and Impact

Unit 4: Problem Solving The Design Process	Follow a design process to identify and empathize with problems faced by a target audience. Prototype an app to help solve that problem using App Lab.
Unit 5: The Internet Data and Society	Collect, analyze, and visualize data using a spreadsheet tool. Investigate how data is collected online and weigh the potential benefits and harms to individuals and society at large.
Unit 6: Programming Internet of Things	Explore the relationship between hardware and software while building interactive projects on Adafruit's Circuit Playground.

Learn more: https://code.org/csd

Monthly updates: https://code.org/educate/csd/status

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