Coding in Science Syllabus

Independent, Interdisciplinary Science Modules

Course Overview and Goals

Students don't need to be in a computer science class to explore coding. There are coding applications in every subject, including art, math, science and history.

With each module in this course, students use coding to reinforce and extend their understanding of **science**! As they learn major programming concepts, they will develop science-related projects that demonstrate their proficiency in both computer science and science. These modules are a great way to introduce students to programming and show them that coding is a valuable skill in a variety of disciplines.

Learning Environment

Each module in this course is a standalone, web-based curriculum. They contain a series of lessons that introduce students to coding and extend or reinforce a particular science concept. The lessons include short video tutorials, example programs, quizzes, programming exercises, and challenge problems.

Programming Environment

Students write and run programs in the browser using the CodeHS online editor.

Assessments

Each lesson includes at least one formative short multiple choice quiz that helps reinforce major concepts. At the end of each module, students will complete a final project and/or take a summative multiple choice quiz that tests their knowledge of the concepts covered in the module.

Prerequisites

These interdisciplinary modules are designed for students with no previous background in computer science. Each module varies in topic and difficulty depending on recommended grade level. The modules are highly visual, dynamic, and interactive, making them an engaging introduction to computer science.

More information

Browse the content of this course at https://codehs.com/course/13420

Module Breakdown

The modules below are all independent of one another -- they can be used on their own, in any order. They span a variety of topics and grade levels.

Module Title	Description	Major Topics	Grade	Timing
Punnett Square Generator	Students will use Turtle Graphics in Python to create their own Punnett Square generator.	**Biology**: punnett squares **CS:** turtle graphics, variables, user input, functions, if statements, string indexing	MS/HS	2-4 hours
Exploring Collisions	Students will use JavaScript graphics to create their own elastic collision simulation using conservation of momentum and kinetic energy equations.	**Physics:** elastic collisions, conservation of momentum and energy **CS:** variables, graphics, animations, functions	HS	2-4 hours
Bouncing Ball Simulation	Students will create a bouncing ball simulation in JavaScript, complete with gravity and collisions!	**Physics:** velocity, acceleration, gravity, collisions **CS:** printing, variables, graphics, functions, timers, if statements	HS	2-4 hours