WeTeach CS For HS

An Introductory High School Computer Science Curriculum

Syllabus

o **WeTeach_CS For HS** is a comprehensive curriculum designed to support computer science teachers, especially those just joining the CS teaching ranks, helping them establish an entire CS program within their school, guiding them through the challenges of a first-year computer science course at the high school level. It uses several programming platforms, **Scratch**, **Jeroo**, and an option of using **Java or Python**, to lead students progressively through increasingly challenging content.

- The Java module begins a two-year path leading to either the **College Board CS "A" AP** test or to the **Oracle Certified Foundations Associate** industry-based certification.
- The Python module will provide an option for students and teachers to use this popular and much used programming language to complete this course, addressing all topics covered by the Java Module, as well any additional ones required to prepare students for the **PCEP™ – Certified Entry-Level Python Programmer (Exam PCEP-30-0x)** industry-based certification.

o The curriculum provides lessons using videos and text-based documents, practice exercises, labs, lab solutions, projects, and assessments (both formative and summative, written and lab-based) for a typical school year of approximately 160 instructional days and includes extra materials to challenge accelerated students.

o Additionally, the teacher has access throughout the year to online professional support and virtual webinars with the course developers to further provide them with the tools they need to master and effectively deliver to their students the curriculum content.

Course Outline

- **Module A – Block Based Programming with Scratch** – 15 days – With this exciting module, students begin with hands-on activities **ON DAY ONE**! It uses the block-based programming tool Scratch for ease-of-use by students and ease-of-setup for you. The online version is ideal for web-based labs.

  - o Lesson Zero – Basic Scratch Commands
  - o Lesson One – More Scratch Commands
  - o Lesson Two – Pong Game Project
  - o Lesson Three – Maze Game Project
  - o Lesson Four – Sprite Animation

- **Module B – Graphic Based Scripted Coding with Jeroo** – 15 days – The lessons in this unit use Jeroo, a programming platform that challenges students by transitioning from block-based Scratch to something scripted and object-oriented, yet with a graphic display making exploration and problem-solving fun. An online version may soon be in the works.

  - o Lesson Zero – Jeroo Basics
  - o Lesson One – Jeroo Sensors
  - o Lesson Two – Jeroo Conditionals
  - o Lesson Three – Jeroo Loops
  - o Lesson Four – Jeroo Methods

- **Module C: CS Concepts and Digital Citizenship** – 10 days – This module covers offline concepts, such as introducing your students to what computer science is and is not, as well as exploring the aspects of computer ethics and digital citizenship. Aspects of computer hardware and network security are also explored.

  - o Digital Citizenship, Ethics, Network Security
  - o Hardware, Software, Programming Languages

- **Module D1: Programming Fundamentals using Java** – 120 days – Once students have whetted their appetites on Scratch and Jeroo, they will be ready for a more rigorous and powerful programming platform. Java certainly fits the bill. The lessons in this unit will get your students up and running with the Java programming language, learning essential programming concepts using either an online development environment or a locally installed IDE.

  - o Lesson Zero – Java Basics
  - o Lesson One – Output and Formatting
  - o Lesson Two – Data, Data Types, Operators and Number Base Concepts
  - o Lesson Three – Keyboard and File Input
  - o Lesson Four – Conditional Statements, Boolean Concepts
  - o Lesson Five – Using and Writing Methods
  - o Lesson Six – Using Loops
  - o Lesson Seven – Using Arrays
  - o Lesson Eight – Primitives, Objects, Parameters, Scope and OOP Basics

- **Module D2: Programming Fundamentals using Python** - 120 days – This newly added module (Fall 2023) will provide an option for students and teachers to use Python to complete this course, covering all topics listed above for the Java Module, as well any additional ones required to prepare students for the **Certified Entry-Level Python Programmer certification (Exam PCEP-30-0x)**.