

Syllabus: HS Computer Programming I v9 (GS)

Below is the syllabus for your course.

Estimated Completion Time: This HS Computer Programming I course is scheduled for 2 semesters, completed within 32-36 weeks at the traditional pace.

Description:

How can you control the most powerful tool ever invented if you cannot speak its language? Computer Programming 1 is a two-semester course which enables students to learn two modern programming languages, Python and Java. The course teaches programming using real-world, practical examples. You will learn Python by controlling the motion and sensory capabilities of a robot. You will learn Java by manipulating graphics, images, and audio. Programming is easier than you think and perhaps best of all, you get to show what you know by choosing projects that are of interest to you. Major colleges and universities are now using this approach to teach introductory computer programming, so you will learn the skills necessary to tackle advanced work.

Course Assessment and Participation Requirements:

Besides engaging students in challenging curriculum, the course guides students to reflect on their learning and to evaluate their progress through a variety of assessments. Assessments can be in the form of self-checks, practice lessons, multiple choice questions, projects, essays, oral assessments, and discussions. Instructors evaluate progress and provide interventions through the variety of assessments built into a course, as well as through contact with the student in other venues.

Segment 1: Python programming language in the context of robotics

Topics Covered:

- Hardware and Software
- Processing Text and Numeric Information
- Predefined Math Functions
- Procedural Program Design
- Algorithmic Thinking
- User-Defined Functions
- Loops
- Decision Statements
- List Data Structures
- Simple Graphics
- Simple Audio Processing

- Technology and Society
- Computer Careers

Segment 2: Java programming language in the context of media computing (graphics, images, and audio)

Topics Covered:

- The Nature of Computer Science
- Primitive and Reference Data Types
- Black Box Methods
- User Friendliness
- Object Oriented Programming
- User-Defined Methods
- Loops
- Decision Statements
- Array Data Structures
- Turtle Graphics
- Image Processing
- Advanced Audio Processing
- Reading From the Web
- Intellectual Property Rights