Computer Science
Course Overview and Syllabus

Course Number: EL5722 & EL5723
Grade level: 6–10

Prerequisite Courses: None
Credits: 0.5

Course Description

Computer Science introduces students to the basics of computer science through a series of Python® programming projects that encourage creativity and experimentation. In its second half, the course advances the student’s knowledge of Python software and programming skills through a series of complex programming projects that require creative thinking and problem solving. Students create a diverse portfolio of projects as they learn commands and functions, values and variables, Graphical User Interface, modular and object-oriented programming, and events and event-driven processes. Students learn loops, debugging techniques, software development processes (including iterative and incremental models), arrays and sets, generators and namespaces, loops, packages and libraries, randomness, and file handling. Students also learn to program simple games. Throughout the course, students explore careers in programming, including profiles from a wide variety of programming professionals.

Course Objectives

Throughout the course, you will receive instruction on the following topics:

- Python (command line) window, shell, and IDLE text editor
- Programming languages
- Python’s turtle program
- Turtle
- Modules
- Commands
- Functions
- Variables
- Values
- Operators
- Loops
- Commenting
- Coordinates and grids
- Events
- Bugs and debugging techniques
- Interactivity
- Graphical user interfaces
- Software development
- Open source software
- Manipulating strings and lists
- Slicing, striding, and concatenating
- Help systems
- List methods
- Slicing and striding
- Stacks, queues, and deque objects
- If, else, and elif statements
- Callback functions
- Local and global variables
- Tuple unpacking
- While and infinite loops
- Nested and flat codes
- Pass, continue, and break statements
- Replacement fields
- Format specifiers
- Alignment and fill characters
- Rounding errors, rounding, and fixed point numbers
- Formatting floating point numbers
- Parts of a bill
- Responding to user input
- Creating methods, classes, and instances
- Coding collection items
- Randomness and pseudorandomness
- The __init__() method
- Coordinates and cardinal directions
- Careers in computer programming
Student Expectations

This course requires the same level of commitment from you as a traditional classroom course would. Throughout the course, you will spend time on the following activities:

- Interactive lessons that include a mixture of instructional segments and tasks
- Assignments in which you apply and extend learning in each lesson
- Assessments including quizzes, tests, and cumulative exams

Communication

Your teacher will communicate with you regularly through discussions, e-mail, chat, and system announcements. You will also communicate with classmates, either via online tools or face to face, as you collaborate on projects, ask and answer questions in your peer group, and develop your speaking and listening skills.

Grading Policy

You will be graded on the work you do online and the work you submit electronically to your teacher. The weighting for each category of graded activity is listed below.

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<th>Grading Category</th>
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<td>Assignments</td>
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<tr>
<td>Essays</td>
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<td>Labs</td>
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<td>Lesson Quizzes</td>
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<td>Tests</td>
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<tr>
<td>Cumulative Exams</td>
<td>0%</td>
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<tr>
<td>Projects</td>
<td>50%</td>
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**Scope and Sequence**

When you log into Edgenuity, you can view the entire course map—an interactive scope and sequence of all topics you will study. The units of study are summarized below:

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