



## Python Programming 7-9 Syllabus

### Course Goals

#### 1 Learn Basic Programming

Students learn basic programming concepts such as variables, loops, functions, dictionaries, and classes using the intuitive and beginner-friendly language Python.

#### 2 Develop Problem Solving Skills

Students learn to use programming as a tool to solve problems that would be difficult otherwise.

#### 3 Prepare for More Advanced Programming

Students practice basic concepts of programming that they can go on to apply to other programming languages and environments, giving them a head start in future courses.

### Course Topics

#### 1 Introduction to Programming

Students learn about how programming works and are introduced to the Python programming language. Students learn about basic components of Python syntax, such as key words and indentation.

#### 2 Hello World

Students are introduced with a general explanation both for how computers process information as well as how students should model it.

#### 3 Variables

Students learn to use variables, the core building blocks of code, to their advantage.

#### 4 If Statements

Students learn how to model their code through if-statements, which provide the framework for the logic intrinsic in software.

#### 5 Loops

Students practice the use of both for loops and while loops, the slightly more involved cousin of if statements when it comes to logically laying out an idea.

#### 6 Functions

Students practice the use of functions, which are used to keep code neat and to organize a coder's thoughts.

#### 7 Lists

Students learn to write lists, which store values together in a logical and meaningful way, and to iterate through the contents of lists.

#### 8 Dictionaries

Students practice the use of dictionaries, which are similar to lists except dictionaries can use anything rather than just numbers to access an element. Students also learn how to iterate through dictionaries.

#### 9 Classes

Students practice the use of classes, a type of object with both variables and methods, as well as writing the methods within

classes and subclasses.

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