

INTRODUCTION TO PROGRAMMING FOR WEB DEVELOPMENT

COURSE 1

Computer Programming with Python

This is the first in a series of six courses from A&D Tutoring that, taken together, are designed to give students having *no prior experience of modern computer programming or Web technologies* the threshold knowledge and skills needed to succeed at advanced formal training in software and Web development. This course plus the two that follow it, which focus on the fundamentals of HTML and CSS and on the JavaScript programming language, form the core of the series. The content of this core is aligned with four separate certifications in the *Information Technology Specialist* suite of exams from Pearson Vue.

Description

Python is a general-purpose programming language. It is one of the easiest to learn and understand, it is widely used in many fields including Web development, and it places consistently in the top two or three programming languages most in demand from employers. In this course, you will learn the fundamental concepts and techniques of computer programming — how to “think like a programmer” — by writing Python programs from scratch to solve problems of diverse types and varied complexity, working up to a major final project. You are not required to have any programming knowledge coming into the course. Duration is 100 hours of instructor contact time.

Upon successful completion of this course, you will be able to:

- evaluate arithmetic, character, and logical expressions containing integer, float, string, and Boolean variables, and compute with them following the rules of operator precedence and dot notation;
- control the flow of computer programs with conditional branching (“if...elif...then” statements), error handling (“try...except” statements), and iteration (definite “for” loops and indefinite “while” loops);
- write programs that are responsive to user input and code that performs file input/output;
- distinguish between and work correctly with different data structures (lists, tuples, dictionaries, sets);
- analyze functions, track parameters and arguments, and construct code to define your own functions;
- understand, use, and write code that creates classes and objects with methods and properties;
- employ user-defined, standard-library, and third-party modules and packages;
- analyze and debug code that has syntax and/or logical errors.

Prerequisites

- Math 10 or equivalent-level knowledge of number systems and numerical operations (including fractions and decimals, integers, exponents, and roots); functions; algebraic expressions and equations; logic and problem-solving methodologies.
- All-round familiarity with Microsoft Windows, including the customization of system settings and the user environment; an understanding of the file system structure and how to navigate it using File Explorer and context menus; finding, downloading, installing, and running third-party programs (apps) using File Explorer and the Control Panel.

Certification

The content and the level of this course are aligned explicitly with the [IT Specialist Python Exam](#), which is part of Pearson Vue’s [IT Specialist Certification Program](#). This can validate your skills to a point in between the entry-level [PCEP Certification](#) and the “associate”-level [PCAP Certification](#) from the Python Institute.