

# Course Syllabus

## **Description:**

Do you want to learn higher-level coding skills? This course teaches advanced programming concepts using the computer language Python. You will learn techniques and processes associated with computer programming and software development. This course provides honors-level elective credit. Digital Information Technology, Foundations of Programming, and Procedural Programming make up the Web Application and Development Program of Study.

**Estimated Completion Time:** 2 segments / 32-36 weeks.

## **Major Topics and Concepts:**

### **Segment I:**

#### **Getting Started**

- 00.01 Let's Get Started
- 00.02 Navigation
- 00.03 Lessons and Assessments
- 00.04 Course Specifics
- 00.05 Online Learning 101
- 00.06 Pace
- 00.07 Academic Integrity

#### **Collaboration**

- Collaboration
- Segment One Collaboration
- Segment Two Collaboration

### **Module 1**

#### **Welcome to Procedural Programming**

- 01.00 Welcome to Procedural Programming
- 01.01 Introduction to Procedural Programming
- 01.02 Algorithms
- 01.03 Data Structures
- 01.04 Documenting and Debugging
- 01.05 Module One Exam

### **Module 2**

#### **Changing the World with Shopping**

- 02.00 Changing the World with Shopping
- 02.01 Variables and Function
- 02.02 Mathematical Operators
- 02.03 Input and Selection Structures
- 02.04 Python Libraries
- 02.05 Discussion-Based Assessment
- 02.06 Module Two Project

## **Module 3**

### **Changing the World with Entertainment**

- 03.00 Changing the World with Entertainment
- 03.01 Repetition
- 03.02 Iterative Loops
- 03.03 Recursion
- 03.04 APIs and IDEs
- 03.05 Discussion-Based Assessment
- 03.06 Segment One Exam

## **Segment II**

### **Module 4**

#### **Changing the World with Data**

- 04.00 Changing the World with Data
- 04.01 Functions
- 04.02 Modularity
- 04.03 Data Analysis
- 04.04 Data Exercise
- 04.05 Discussion-Based Assessment
- 04.06 Module Four Project

### **Module 5**

#### **Changing the World with Computer Security**

- 05.00 Changing the World with Computer Security
- 05.01 Computer Vulnerabilities
- 05.02 Cryptography
- 05.03 Encryption
- 05.04 Security, Careers, and Beyond
- 05.05 Module Five Exam

### **Module 6**

#### **How will YOU change the world?**

- 06.00 Capstone Project
- 06.01 Capstone Introduction
- 06.02 Decomposition and Pattern Recognition
- 06.03 Algorithmic Design with Pseudocode
- 06.04 Algorithmic Design with Python Code
- 06.05 Generalize and Assess
- 06.06 Discussion-Based Assessment
- 06.07 Segment Two Exam

#### **Course Assessment and Participation Requirements:**

To achieve success, students are expected to submit work in each course weekly. Students can learn at their own pace; however, “any pace” still means that students must make progress in the course every week. To measure learning, students complete self-checks, practice lessons, multiple choice questions, projects,

discussion-based assessments, and discussions. Students are expected to maintain regular contact with teachers; the minimum requirement is monthly. When teachers, students, and parents work together, students are successful.

