Materials

Here you will find a listing of lesson materials for the course such as slides, assignments, and similar.

1. Welcome Weeks

- **Activity 01**: README.md Due Date: Wednesday 3 Sept 2025 (by the end of class)
- GitHub Classroom Link (Used to setup your workspace and repository for your assignment submission.)

2. Getting Started

- Installing necessary software for the course. Python, Visual Studio Code and GitHub.
- Required Reading: Guttag Chapter 1
- **Lab 01**: Working with the UV package manager to run Python code.
  - GitHub Classroom Link
  - **README** Lab 01 documentation

3. Crash Course I: Python

- Required Reading: Guttag Chapter 2
- **Literals, Variables, Conditionals, Strings, etc.**
  - HTML Slides
  - PDF The slide's material as a pdf.
- **Lab 02**: Refactoring (Restructuring) a *Rock, Paper, Scissors* Python game.
  - GitHub Classroom Link
  - **README** Lab 02 documentation
- **Activity 02**: Building a morse code translator in Python and UV
  - GitHub Classroom Link

4. Crash Course II: Python

- **Literals, Variables, Conditionals, Strings, etc.**
  - HTML Slides
  - PDF The slide's material as a pdf.
- **Activity 03**: Coding using literals, lists and conditionals
  - GitHub Classroom Link
- **Lab 03**: Completing smaller Python programs.
  - GitHub Classroom Link
- **Guest Speaker**: Form

5. Chapter 2: Lists and Dictionaries

- **Return to Programming Challenges of Activity 03**
  - README
  - Note: *This time only: Changed Due Date. Now set to 22nd Sept 2025, 11:30pm*
- **Lists and Dictionaries at Work**
  - **PlayGround demonstrations**: Demonstration
  - **Finish slides from last week** (Check the challenges)
    - HTML Slides
- **Lab04**: For loops and While Loops
  - GitHub Classroom link
- **Activity 04**: Fixing code for finding approximations
  - GitHub Classroom Link

6. Chapter 3: Exhaustive Enumeration and Approximation

- **Some Approximation Techniques in Python**
  - HTML Slides
  - PDF The slide's material as a pdf.
- **A Study of the General nth Root Algorithm**
  - HTML Slides
  - PDF The slide's material as a pdf.

- **Lab05**: Approximations By the Taylor Series
  - GitHub Classroom link

7. Chapter 5: STRUCTURED TYPES AND MUTABILITY

- **Some Fundamental Programming in Python**
  - HTML Slides
  - PDF The slide's material as a pdf.
- **Midterm Preparation Guide**
  - Midterm exam: During lab on Thursday, 23rd October 2025
  - HTML Slides
  - PDF The slide's material as a pdf.

8. Chapter 4: A Return to Functional Programming

- **Lambda and Higher Order Functions**
  - HTML Slides
  - PDF The slide's material as a pdf.
- **Classes and Decorators Functions**
  - HTML Slides
  - PDF The slide's material as a pdf.
- **Lab06**: Midterm Practice Test
  - GitHub Classroom link

9. Chapter 11: Algorithm Complexity and Big-O

- **Activity 05**: Algorithm Performance Analysis through Doubling Experiments
  - GitHub Classroom Link
- **An informal Introduction to Complexity**: About Big Big-O
  - HTML Slides
  - PDF The slide's material as a pdf.
- **Activity 06**: Algorithm Performance Analysis Through Doubling Experiments
  - GitHub Classroom Link

10. Chapter 11 (continued): O(1), O(logN), O(2^N)

- **O(1) (Constant Time)**
  - HTML Slides
  - PDF The slide's material as a pdf.
- **O(logN) (Logarithmic Time)**
  - HTML Slides
  - PDF The slide's material as a pdf.
- **O(2^n) (Exponential Time)**
  - HTML Slides
  - PDF The slide's material as a pdf.
- **Supplement Slides: Heap Sorting (Logarithmic Time)**
  - HTML Slides
  - PDF The slide's material as a pdf.
- **The Travelling Salesman**
  - HTML Slides
  - PDF The slide's material as a pdf.
- **Activity 07**: Traveling Salesman Problem and Coding
  - GitHub Classroom Link

11. Chapter 6. Modules

- **Modules and Imports**
  - HTML Slides
  - PDF The slide's
- **Lab07**: Using Modules to Do Analysis
  - GitHub Classroom link
- **Activity 08**: Exploring Python Modules Through Mathematical Animation!
  - GitHub Classroom Link

11. Chapter 6. Files

- **Working With Files**
  - HTML Slides
- **Lab08**: Researching Ideas for Final Project
  - GitHub Classroom link