

# 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): $O(1)$ , $O(\log N)$ , $O(2^N)$

- **$O(1)$  (Constant Time)**
  - [HTML](#) Slides
  - [PDF](#) The slide's material as a pdf.
- **$O(\log N)$  (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](#)