

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: Gutttag 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: Gutttag 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](#)