



MATH106A

Computer Programming

Szu-Chi Chung

Department of Applied Mathematics, National Sun Yat-sen University

Lectures

- ▶ Lecture: Szu-Chi Chung (鍾思齊)
 - ▶ Office: 理 SC 2002-4
 - ▶ Office hours: Mon. 16:00~18:00 and Wed. 16:00~18:00
- ▶ Class hours: Wed. (9:10-12:00)
 - ▶ Classroom: 理 SC 2004
- ▶ T.A.: 廖廣筑
 - ▶ Office: 理 SC 1011-3
 - ▶ Tutorial hours: Mon. 12:10~13:00 (at 理 SC 2004)
 - ▶ TA hour: Fri. 13:00~14:00 (at 理 SC 1011-3)
- ▶ Math Runway
 - ▶ <https://hackmd.io/@jephianlin/math-runway-2024>

Textbook and requirement

- ▶ The assignment and related material will be available on the course webpage.
Course website and Facebook group
 - ▶ <https://phonchi.github.io/nsysu-math106A/>
- ▶ Textbook: *Automate the Boring Stuff with Python, 2nd Edition*
 - ▶ Authors: Al Sweigart
 - ▶ <https://automatetheboringstuff.com/#toc>
- ▶ Beyond the Basic Stuff with Python
 - ▶ Authors: Al Sweigart
 - ▶ <https://inventwithpython.com/beyond/>
- ▶ [SciPy lectures](#)
- ▶ For the exercises of each chapter, the solution is at the companion website
 - ▶ <https://automatetheboringstuff.com/2e/appendixc/>

Grading policy

▶ Grading

- ▶ Homework 24% (8~10 assignments, both conceptual and coding parts (Python))
- ▶ Participants: 6% (participates at least 10 times can get the full score. An additional point will be awarded upon completion of the student evaluation questionnaire!)
- ▶ Take home Quiz: 10% (2 times)
- ▶ Midterm exam 30% (Computer-based exam, reference materials are allowed, but internet access is not permitted)
- ▶ Final exam 30% (Computer-based exam, reference materials are allowed, but internet access is not permitted)
- ▶ Midterm (both conceptual and coding part):
 - ▶ It will be held on 2025/04/09 at 理 SC 2004
- ▶ Final (both conceptual and coding part):
 - ▶ It will be held on 2025/06/04 at 理 SC 2004

Grading policy

- ▶ Programming language: Python

- ▶ It is free and easy to learn
- ▶ Since it is one of the most popular languages and has a vibrant community support

1. Python basics

- ▶ Learn X in Y minutes
- ▶ Python for Everybody

2. Practicing

- ▶ Hackerrank
- ▶ W3C and More

3. Doing projects!

- ▶ <https://inventwithpython.com/>

What we are going to study in this semester

▶ Python fundamentals

- ▶ Introduction and Python Basics
- ▶ Flow Control
- ▶ Functions
- ▶ Sequences: Lists and Tuples
- ▶ Dictionaries
- ▶ ** Manipulating Strings
- ▶ ** Files and Exceptions

▶ Advance topics

- ▶ Object-Oriented Programming and Classes

▶ Scientific computing using Python

- ▶ Array-Oriented Programming with NumPy
- ▶ Plotting with Matplotlib
- ▶ Symbolic Mathematics in Python with SymPy

▶ Not covered

- ▶ Regular expressions
- ▶ Unit testing
- ▶ Generators, decorators
- ▶ Multiprocessing and serialization

Relate to other courses

- ▶ **Related courses**

- ▶ Introduction to computer science
- ▶ Data structures
- ▶ Algorithms
- ▶ Python and machine learning algorithms

- ▶ **Other courses**

- ▶ Advance programming
- ▶ Web programming
- ▶ Network programming
- ▶ Software engineering
- ▶ Data science/Machine learning/Artificial intelligence