

Programming with Python

Instructor Information

Instructor:

Office:

Email:

Office hours:

Course website:

Course Description

This course introduces students to programming with python. Students will learn the basics of python, data structures, loops, statements, generators, Object Oriented Programming (OOP), et cetera.

Prerequisites:

- No prior programming experience is required.

Course Objectives

This course will cover the following:

1. Programming concepts with python 3.
2. Python objects and functions.
3. Forwardpropagation and Backpropagation.
4. Activation functions.
5. Loss functions, optimization and regularization.

Learning Outcomes

Students are expected to be able to:

1. Learn the basic concepts of programming with python.
2. Write more than 100 lines of code.

3. Learn virtualization.
4. Use a version control system to manage repositories.
5. Apply what they learned to their own research.

Required Reading

- Michael Hammond. (2020). *Python for Linguists*. Cambridge University Press.

Additional Reading

Chapters from the following books will be assigned by the instructor.

- Christian Hill. (2020). *Learning Scientific Programming with Python*. Cambridge University Press. (website: <https://scipython.com>)
- Steven f. Lott and Dusty Phillips. (2021). *Python Object-Oriented Programming: Build robust and maintainable object-oriented Python applications and libraries*. Packet Publishing.

Course Structure

Assignments

Assignment	Description	
Programming Assignments	7 programming assignments that involve problems that cover the topics studied in the class.	70%
Final Project	More to be added here.	30%

Grading Policy

The university grading scheme will be used as follows:

Grade	Range
A	90-100
B	80-89
C	70-79
D	60-69
E	0-59

Schedule

Weeks	Topic	Date	Reading	Homework
Python Objects Data Types and Sequence Types				
W 1	Overview and Setup		MH ch. 1	
W 1	Variables, Numbers, Boolean		MH ch. 2	
W 2	Strings, Lists		MH ch. 2	Assignment 1
W 2	Sets, Tuples, Dictionaries		MH ch. 2	
W 3	Indexing, Slicing		MH ch. 2	
W 3	Practice			Assignment 2
Control Flow and Control Structures				
W 4	Comparison Operators		MH ch. 3	
W 4	if, else, elif		MH ch. 3	
W 5	For loops		MH ch. 3	
W 5	while loops		MH ch. 3	
W 6	break, continue, else		MH ch. 3	
W 6	Practice			assignment 3
Iterables and IO				
W 7	revisit strings, lists, dictionaries			
W 7	command line input		MH ch. 4	
W 8	File IO		MH ch. 4	
W 8	Practice			assignment 4
Functions				
W 9	Functions and Scope		MH ch. 5	
W 9	Modules		MH ch. 5	Assignment 5
Object Oriented Programming (OOP)				
W 10	Classes, Attributes, Methods		MH ch. 9	
W 10	Inheritance, Polymorphism		MH ch. 9	
W 11	Special Methods			
W 11	Practice			Assignment 6
Generators and Comprehensions				
W 12	range, if, next			
W 12	Iterables vs. Iterators		MH ch. 11	
W 13	Comprehension expressions		MH ch. 11	
W 13	Practice		MH ch. 11	Assignment 7
Advanced Topics				
W 14	Decorators			
W 14	Built-in modules			
W 15	Scientific Prog. (numpy)			
W 15	Scientific Prog. (matplotlib, pandas)			
Final Project and Presentations				
W 16	Final Project			
W 16	Final Project			

University Policies

Classroom Behavior Policy

to be added

Attendance Policy

to be added

Policies on Incomplete Grades and Late Assignments

to be added

Academic Integrity and Honesty

to be added

Accessibility and Accommodations

to be added