Introduction to Python

Department: Fudan International Summer Session 2024

Course Code	ECON170031		
Course Title	Introduction to Python		
Credit	2	**Credit Hours**	36+3 tutorial hours (one credit hour is 45 minutes)
Course Nature	□Specific General Education Courses □Core Courses ☑General Education Elective Courses □Basic Courses in General Discipline □Professional Compulsory Courses □Professional Elective Courses □Others		
Course Objectives	• Read a computational problem and formulate an algorithm to solve that problem. • Implement a program in Python that performs specific tasks. • Use abstractions such as variables and functions to manage complexity in your programs. • Describe the functionality of a program that you or someone else has written. Find and fix errors in programs that you or someone else has written.		
Course Description	This class focus on the fundamentals of Python programming and will cover variables, branching, loops, lists, 2D list, and dictionary. The applications of Python coding include image processing and csv file processing.		

Course Requirements:

Prerequisites: No prior programming experience is needed. High school level algebra is required.

Teaching Methods:

Lecture and lab

Instructor's Academic Background:

Paul Cao received his Ph.D. in Computer Engineering from Duke University (Durham, NC, USA). His primary research interest is Computer Science Education with a focus on collaborative learning. He is also involved in more traditional research on network data analysis and distributed learning. Dr. Cao has taught Python related programming courses over the past 10 years and have extensive teaching experience at the undergraduate level. He has been teaching in the Department of Computer Science & Engineering at the University of California, San Diego since 2015.

Email: yic242@eng.ucsd.edu

Course Schedule (Please supply the details about each lesson)**:**

Day	Material
Day 1	Course intro, Logistics, Hello world, data types, Variables, expressions, Type conversions
	Lab 1
Day 2	Interpret errors, using functions, user input, Defining functions, boolean types and conditional statements / More conditional statements
	Lab 2

Day 3	Strings and Lists, How to get started with coding, Range, for loops	
	Lab 3	
Day 4	While loops, break and continue Reference, objects, methods, Object mutations, stack frame	
	Lab 4	
Day 5	Scope of variables, argument passing to functions, exercises	
	Lab 5	
Day 6	Memory model exercises, Debugging and testing	
	Lab 6	
Day 7	Nested for loops and 2D lists, tuples, Images and basic image transformations	
	Lab 7	
Day 8	Image transformation using functions, Modifying images in functions, steganography intro	
	Lab 8	
Day 9	bitwise operations and image encryption/decryption, Dictionaries	
	Lab 9	
Day 10	More about dictionaries, Data and csv file processing	
	Lab 10	
Day 11	Data visualization	
	Wrap up and final review	
Day 12	Final Exam	

The design of class discussion or exercise, practice, experience and so on:

The class will mostly base on lectures and in class labs. Students will be working on basic coding projects in Python.

Grading & Evaluation:

- Class participation: 10%
- Labs (drop the lowest lab): 40%
- Final Exam (open-book): 50%

Teaching Materials & References:

See above.