Introduction to Python

Department: Fudan International Summer Session 2025

<table>
<tr><td>Course Code</td><td colspan="7">ECON170031</td></tr>
<tr><td>Course Title</td><td colspan="7">Introduction to Python</td></tr>
<tr><td>Credit</td><td>2</td><td>Experiment (including Computer) Credit</td><td></td><td>Practice Credit</td><td></td><td>Aesthetic Education Credit</td><td></td></tr>
<tr><td>Credit Hours Per Week</td><td>9 credit hours per week, 36+3 tutorial hours in total (one credit hour is 45 minutes)</td><td>Education on The Hard-Working Spirit Credit Hours</td><td></td><td>Language of Instruction</td><td></td><td>Honors Course</td><td>□Yes
☑No</td></tr>
<tr><td rowspan="2">Course Type</td><td colspan="3" rowspan="2">□Core General Education Course
☐Specific General Education Course
□Basic Course in General Discipline
☑Others</td><td colspan="4">2+X Major ：
□Professional Core Course
□Professional Advanced Course</td></tr>
<tr><td colspan="4">Non 2+X Major ：
□Professional Compulsory Course
□Professional Elective Course</td></tr>
<tr><td>Course Objectives</td><td colspan="7">• 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.</td></tr>
<tr><td>Course Description</td><td colspan="7">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.</td></tr>
<tr><td colspan="8">Course Requirements:
Prerequisites: No prior programming experience is needed. High school level algebra is required.</td></tr>
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Teaching Methods:
Lecture and lab

Course Director's Academic Background:

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

Members of Teaching Team

Name	Gender	Professional Title	Department	Responsibility
Paul Cao	Male		Engineering	Instructor of the course

Course Schedule:

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.

If you need a TA, please indicate the assignment of assistant:

Grading & Evaluation :

- Class participation: 10%
- Labs (drop the lowest lab): 40%

  Final Exam (open-book): 50%

Usage of Textbook： □Yes(complete textbook information form below) ☑No

Textbook Information (No more than two textbooks) **:**

Title	Author	ISBN	Publishing Time	Publisher	Type I	Type II
					□Self-compiled Textbook (Published) □Non-mainland Textbook □Other Textbook (Published)	□National Planning Textbook □Provincial and Ministerial Planning Textbook □School Level Planning Textbook □Others
					□Self-compiled Textbook (Published) □Non-mainland Textbook □Other Textbook (Published)	□National Planning Textbook □Provincial and Ministerial Planning Textbook □School Level Planning Textbook

						□Others