

## Introduction to Python

**Department:** Fudan International Summer Session 2026

<b>Course Code</b>	GEIS20005						
<b>Course Title</b>	Introduction to Python						
<b>Credit</b>	2	<b>Experiment (including Computer) Credit</b>		<b>Practice Credit</b>		<b>Aesthetic Education Credit</b>	
<b>Credit Hours Per Week</b>	9 credit hours per week, 36+3 tutorial hours in total (one credit hour is 45 minutes)	<b>Education on The Hard- Working Spirit Credit Hours</b>		<b>Language of Instruction</b>		<b>Honors Course</b>	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
<b>Course Type</b>	<input type="checkbox"/> Core General Education Course <input type="checkbox"/> Specific General Education Course <input type="checkbox"/> Basic Course in General Discipline <input checked="" type="checkbox"/> Others			2+X Major :			
				<input type="checkbox"/> Professional Core Course <input type="checkbox"/> Professional Advanced Course Non 2+X Major : <input type="checkbox"/> Professional Compulsory Course <input type="checkbox"/> Professional Elective Course			
<b>Course Objectives</b>	<ul style="list-style-type: none"> <li>• Read a computational problem and formulate an algorithm to solve that problem.</li> <li>• Implement a program in Python that performs specific tasks.</li> <li>• Use abstractions such as variables and functions to manage complexity in your programs.</li> <li>• Describe the functionality of a program that you or someone else has written.</li> </ul> Find and fix errors in programs that you or someone else has written.						
<b>Course Description</b>	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.						
<b>Course Requirements:</b>							
Prerequisites: No prior programming experience is needed. High school level algebra is required.							

**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 K12 computing education. Dr. Cao has taught undergraduate computing courses at liberal arts institutions and large state universities and has won many teaching awards. He has been teaching in the Department of Computer Science & Engineering at the University of California, San Diego since 2015.

Email: yic242@ucsd.edu

**Members of Teaching Team**

<b>Name</b>	<b>Gender</b>	<b>Professional Title</b>	<b>Department</b>	<b>Responsibility</b>
Paul Cao	Male		Engineering	Instructor of the course

**Course Schedule:**

<b>Day</b>	<b>Material</b>
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 materials will be delivered via 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 (closed book, closed notes): 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
					<input type="checkbox"/> Self-compiled Textbook (Published) <input type="checkbox"/> Non-mainland Textbook <input type="checkbox"/> Other Textbook (Published)	<input type="checkbox"/> National Planning Textbook <input type="checkbox"/> Provincial and Ministerial Planning Textbook <input type="checkbox"/> School Level Planning Textbook <input type="checkbox"/> Others
					<input type="checkbox"/> Self-compiled Textbook (Published) <input type="checkbox"/> Non-mainland Textbook <input type="checkbox"/> Other Textbook (Published)	<input type="checkbox"/> National Planning Textbook <input type="checkbox"/> Provincial and Ministerial Planning Textbook <input type="checkbox"/> School Level Planning Textbook <input type="checkbox"/> Others