

IM 2011: Programming for Business Computing

Fall 2020 (109-1)

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In recent years, information technology (IT) has transformed the way people do commerce and business. Some obvious examples are online channels, digital marketing, automatic replenishment, program trading, display advertisement, social networking sites, business analytics, just to name a few. Understanding the capability of IT obviously brings in huge advantage to a business decision maker: Either you do it by yourself when you are junior, or you know who are the right people to delegate to when you are senior. Being able to communicate with (or even lead) IT people is also critical.

In this course, we will introduce how to write computer programs for business computing. We cannot make you a software engineer, who build software products to sell to consumers. Instead, we plan to enable you to write programs to facilitate your own works (e.g., analyze a huge data set that cannot be done with MS Excel). More importantly, you will know how a computer program works, the ways computer scientists and software engineers think, and how to leverage IT to bring in competitive advantages to your organization and yourself.

The programming language we will introduce is Python, one of the most popular and powerful high-level programming language nowadays. The language Python is just something that facilitates the delivery of the principles of computer programming. What really matter are the conceptual principles, not the syntax or rules. Our objective is not to teach you how to write Python programs; we want to make you be able to learn other programming languages (like R, SAS, Javascript, etc.) in the future.

This is an elective course for everyone. We do not assume any background in computer programming, and there is no prerequisite for this course. Auditing is welcome if and only if the classroom is not full. This course is taught in Chinese.

Basic information

Instructors.

- Ling-Chieh Kung (孔令傑): lckung(AT)ntu.edu.tw; Room 413, Management Building 2.
- Hsin-Min Lu (盧信銘): luim(AT)ntu.edu.tw; Room 509, Management Building 2.

Teaching Assistants.

- Kelly Wang (王逸庭): r08725032(AT)ntu.edu.tw.
- Jane Liao (廖梓妘): r08725046(AT)ntu.edu.tw.
- Ruby Chen (陳珮如): b06406009(AT)ntu.edu.tw.
- And many others.

Meetings.

- Lectures: 9:10–12:10, Monday. Grand Lecture Hall, Multi-purpose Building (綜合大講堂).
- Office hour: 9:10–12:10, Monday. Room 101, Liberal Education Building (博雅 101).
- Labs:

Time	Tuesday	Wednesday	Thursday	Friday
12:20–14:10	(A) 社科 404	(C) 管二 201	(G) 管二 201	(J) 社科 404
18:25–20:10	(B) 計中 212	(D) 管一 103 (E) 普通 504 (F) 普通 505	(H) 管一大電 (I) 普通 304	

Textbook. A. Downey, *Think Python 2* (<http://greenteapress.com/wp/think-python-2e/>).

On-line Resources.

- Course website: NTU COOL (<https://cool.ntu.edu.tw/>).
- To submit homework: PDOGS (<http://pdogs.ntu.im>).

Grading

Breakdown.

- Homework: 40%.
- One quiz: 5%.
- Two exams: 25% (15% for the higher and 10% for the lower).
- Final project: 30%.

Conversion rule. The final letter grades will be given according to the following conversion rule:

Letter	Range	Letter	Range	Letter	Range	Letter	Range	Letter	Range
F	[0, 60)	C–	[60, 63)	C	[63, 67)	C+	[67, 70)	B–	[70, 73)
B	[73, 77)	B+	[77, 80)	A–	[80, 85)	A	[85, 90)	A+	[90, 100]

Regrading. The TAs will grade everything except the final project and regrade them upon request. If you have a regrading request, please contact the TAs directly.

Tentative schedule

Week	Date	Lecture subject or event	Textbook	Instructor(s)
1	9/14	Course overview and the basics*	Chs. 1 & 2	Kung
2	9/21	Computers and conditionals*	Appen. B & Ch. 5	Kung
3	9/28	Conditionals and iterations*	Ch. 7	Kung
4	10/5	Lists and algorithms*	Ch. 10	Kung
5	10/12	Computational thinking and <i>quiz</i>	N/A	Kung
6	10/19	Midterm exam 1	N/A	Kung
7	10/26	Functions and fruitful functions*	Chs. 3 & 6	Lu
8	11/2	Strings*	Ch. 8	Lu
9	11/9	Data structures, file I/O, and exceptions*	Chs. 11, 12, & 14	Lu
10	11/16	Applications in Finance	Chs. 15–17	Lu
11	11/23	Midterm exam 2	N/A	Lu
12	11/30	Classes and plotting*	Chs. 18	Kung
13	12/7	Graphical user interface*	N/A	Kung
14	12/14	Crawlers and/or machine learning*	N/A	Kung
15	12/21	Advanced topics and closing remarks	N/A	Kung
16	12/28	(No class: thanks to online lectures)	N/A	N/A
17	1/4	Final project presentations	N/A	Kung & Lu
18	1/11	(No class: thanks to online lectures)	N/A	N/A

For those dates where the lecture subject is starred, the lectures will be given in on-line videos before the lecture dates. There will be NO lecture during the lecture time. Please see the “Policy” section for more details.

Policies

Lectures in videos. Most lectures will be given in the format of online videos. Before most lectures, the instructor will upload videos containing some materials to be studied by the students themselves. The total length of those videos for one lecture will be around 60 to 90 minutes.

Office hour.

- For those Mondays without a lecture or event, some TAs will hold office hour in the classroom at 9:10–12:10. If she/he wants, a student may discuss her/his questions with the instructing team. The classroom will be open at 9:10. Students are welcome to use the classroom to do discussions or study whatever they like. No booking is required, and we welcome everyone.
- One may always contact the instructor to schedule a private meeting. You may ask him to clarify some concepts, give hints for homework problems, or discuss the final project. Discussions not related to course materials are also welcome.

Note. Because one must have enough painful experiences in debugging and revising programs, the instructor (and TAs) may (and actually should) refuse to debug for any student. The office hour on Monday is the only exception.

Homework. For most weeks, one homework will be assigned on Monday or Tuesday and due in one week. Please upload your Python source codes (and other files, if required) to the online grading system PDOGS by the due time. No submission in class or in lab. No hard copy. No late submission. While discussions are highly encouraged, each student must turn in her/his own homework. Cheating will result in severe penalty for everyone involved. The lowest one homework grade will be dropped (i.e., you may skip one homework if you want).

PDOGS. For homework of this course, we rely heavily on the Programming Design Online Grading System (PDOGS, or P-Dogs). After a student uploads her/his Python source file, the system will automatically compile and run the program with respect to some testing data, calculate grades, and display the grades to the student. One may repeatedly modify his program and upload again and again until she/he is satisfied. Only the grades for the last submission before the deadline will be recorded.

Labs. Though not required, students are encouraged to attend labs. In labs, the TAs may review materials covered in lectures, discuss past homework, and give students on-site practices. These practices do not count for any grade. However, attending labs can be as important as attending lectures if you are a beginner. Each student will be assigned to one out of the ten labs, and she/he should attend that lab.

Attendance and class participation. We do not count attendance. If you have something more important to do, feel free to drop a lecture or a lab. Nevertheless, we encourage class participation. During lecture time or office hour, you are more than welcome to ask or answer questions and provide comments. You are also encouraged to use NTU COOL for after-class discussions.

Final project. Students should form teams to do one final projects. For the final project, the instructor will only specify a rough direction. Each team then decides its own topic, build a program for its own objective, and demonstrate its program to the class publicly.

A quiz and two exams. For three weeks we will have a quiz and two exams during the lecture time. Students will be asked to write several Python programs during the exam time. Students are expected to use their own laptops, but those who do not have one may contact the instructors (in advance, not on-site) for help. The Internet will remain active throughout the exams, and one is allowed to search whatever she/he wants online. However, no communication with any living person is allowed. Cheating will result in a severe penalty for everyone involved.