

# CS101 - Introduction to Programming

## Fall 2017

### Instructors

Prof. In-Young Ko ([iko@cs.kaist.ac.kr](mailto:iko@cs.kaist.ac.kr), 042-350-3547, N1. 505) – Sections A and B

Prof. Sunghee Choi ([sunghee@kaist.edu](mailto:sunghee@kaist.edu), 042-350-3534, E3-1. 3404) – Sections C and D

Prof. Lee YoungHee ([yhlee@cs.kaist.ac.kr](mailto:yhlee@cs.kaist.ac.kr), 042-350-3560, N1. 802) – Sections E and F

Prof. Duksan Ryu ([dsryu@kaist.ac.kr](mailto:dsryu@kaist.ac.kr), 042-350-7856, N1. 501) – Sections G and H

Prof. Key-Sun Choi ([kschoi@kaist.ac.kr](mailto:kschoi@kaist.ac.kr), 042-350-3525, E3-1. 2435) – Sections I and J

### Teaching Assistants

5-6 TAs will be assigned to each section.

Representative TA: Ph.D. student. JinYeong Bak ([jy.bak@kaist.ac.kr](mailto:jy.bak@kaist.ac.kr), 042-350-7749, E3-1. 4417)

### Course Objective

The objective of CS101 is to teach *programming skills* and *computational thinking*. The first is important because programming skill is needed in all areas of science and engineering, although very different programming languages are used. The second is perhaps even more important, as it influences how you go about solving a problem. Fifty years ago, the solution to a problem in mathematics or engineering was often a formula. Today, it is usually an algorithm.

### Course Structure

Starting from spring 2010, CS101 uses the programming language [Python](#), a language that was *designed to be easy to learn*. Python is used by many universities worldwide for *teaching introductory programming*. It is free, open-source, and multi-platform.

*Python is not a toy*. Python is the basis for much of the programming at Google (for instance, Python is the original and main framework for the [Google App Engine](#) platform). Python is used intensively in numerical computations, for instance at NASA. The *numerical Python* library supports vectorization and is widely used in scientific computation. Python is also the language of choice for writing user interfaces for applications on high-end Nokia phones. Large portions of games (such as Civilization IV) are written in Python. Python is becoming the language of choice in mathematics, used for instance by graph algorithm libraries, or the open-source mathematics software system Sage (an open-source competitor to Maple or Mathematica).

CS101 consists of 10 sections of about 45 students each. Each section meets once a week for a *three-hour lab session* supervised by a *head TA* (a Ph.D. student); with some *helper TA's* around (undergraduate and master students). Two sections take one lecture together, which is once a week for 60~120 minutes.

Students need to attend the lab session every week. One of the tasks done during the lab has to be marked off by a TA, so that we know that you were there and did your best.

There will also be four take-home assignments where you have to program tasks that are slightly more complex.

Lab sessions will introduce students to [pair programming](#).

In CS101, the policy on being late for the lecture is as follows:

"There is no certain rule to give lecture attendance score for those who are late for the lecture. The lecture attendance score is just given by each lecture's professor."

The course webpage (<http://cs101.kaist.ac.kr/>) contains the syllabus, lecture notes, and slides for CS101, and links to all the software you need in the labs (or to do the lab tasks on your own computer).

All other information, such as lecturers, TAs, lecture and lab times, homework assignments, exams, and the bulletin boards are on the comprehensive CS101 website [cs101.kaist.ac.kr](http://cs101.kaist.ac.kr) and [kaist.elice.io](http://kaist.elice.io).

## Grading

CS101 grading consists of two parts: practice and theory.

Practice points are collected as follows:

- 100 points for lecture attendance
- 100 points for lab work
- 200 points for homework

Students need to collect at least 340 practice points. Only the students who scored 340~400 practice points are entitled to be graded. Students who did not earn 340 practice points receive a fail grade

Theory points are collected as follows:

- 100 points for midterm exam.
- 100 points for final exam.

The final score for CS101 is determined entirely by the theory points.

Repeating students: Students who have already taken advanced courses involving programming, and all students who are majoring in the following departments cannot retake CS101 if they have already passed CS101: School of Electrical Engineering, School of Computing, Information & Communications Engineering, and Industrial & Systems Engineering)

All repeating students cannot receive a grade better than A- by KAIST policy (and this applies even to students who entered KAIST before 2007).

**Cheating is strongly prohibited.** Cheating on any homework or exam will get F grade. Note that one who provides a homework/exam to his/her friend will also get F grade with his/her friend too.

## Pass exam

In the first week of the semester, we offer a "Pass Exam", which students who have already learnt programming can take to fulfill the CS101 requirement.

The pass exam consists of a 90 minutes written exam, followed by a 90 minute programming exam.

The written exam is closed book, and covers programming in Python as taught in CS101, but without the cs1robots, cs1media, and cs1graphics modules.

The programming exam is open book (only printed material). You use a computer in the lab room, but will have access only to the PyCharm or IDLE environment (no internet access).

If you pass the exam with a B- or better, you can choose to accept the score as your CS101 score, or to give up the score and take the CS101 class.

## Literature

CS101 uses the following materials:

- [Practical programming: an introduction to computer science using python 3 \(pragmatic programmers\)](#) by Paul Gries and Jennifer Campbell.
- Jason Montojo, and Greg Wilson. Pragmatic Programmers, 2009. ISBN 978-1934356272.
  - A [Korean translation](#) is also available (ISBN 978-8960771338).
- [Robot lecture notes](#) Lecture notes to be used together with *cs1robots.py*.
- [Photo processing lecture notes](#) Lecture notes to be used with *cs1media.py*.
- [Tutorial for cs1graphics](#) (The original is <http://www.cs1graphics.org/>.)

The slides used in the lectures will also be available online, and there will be slides for every lab session.

## Software

We will make use of the following freely available software: *Python 3*, *PyCharm IDE*, *Python Imaging Library (Pillow)*, *cs1graphics.py*, *cs1robots.py*, and *cs1media.py*.

We will also make use of the online programming education platform, [Elice](#).

## Lecture and Lab Schedule

Lecture Date & Time: Monday 10:30AM-12:30PM

Lecture Rooms: Creative Bldg. 101 (A & B), 103 (C & D), 203 (E & F), 210 (G & H), 301 (I & J)

Lab. Dates & Times:

	MON	TUE	WED	THU	FRI
9:00~12:00		C & D		G & H	I & J
13:00~16:00	A & B		E & F		

Schedules:

September 2017				
Mon	Tue	Wed	Thur	Fri
Lect 1 Lab 1 (A/B)	Lab 1 (C/D)	Lab 1 (E/F)	Lab 1 (G/H)	Lab 1 (I/J)
August 28	August 29	August 30	August 31	1
Lect 2 Lab 2 (A/B)	Lab 2 (C/D)	Lab 2 (E/F)	Lab 2 (G/H)	Lab 2 (I/J)
4	5	6	7	8
HW 1 Lect 3 Lab 3 (A/B)	Lab 3 (C/D)	Lab 3 (E/F)	Lab 3 (G/H)	Lab 3 (I/J)
11	12	13	14	15
Lect 4 Lab 4 (A/B)	Lab 4 (C/D)	Lab 4 (E/F) OH 1	Lab 4 (G/H) OH 2	Lab 4 (I/J) OH 3
18	19	20	21	22
HW 2 Lect 5 Lab 5 (A/B)	Lab 5 (C/D)	Lab 5 (E/F) OH 4	Lab 5 (G/H) OH 5	Lab 5 (I/J) OH 6
25	26	27	28	29

October 2017				
Mon	Tue	Wed	Thur	Fri
	National Foundation Day	Chuseok	Chuseok	Chuseok
2	3	4	5	6
Hangeul Day	OH 7	OH 8	OH 9	OH 10
9	10	11	12	13
Mid Exam				
16	17	18	19	20
Lect 6 Lab 6 (A/B)	Lab 6 (C/D)	Lab 6 (E/F)	Lab 6 (G/H)	Lab 6 (I/J)
23	24	25	26	27
Lect 7 Lab 7 (A/B)	Lab 7 (C/D)			
30	31			

November 2017				
Mon	Tue	Wed	Thur	Fri
		Lab 7 (E/F)	Lab 8 (G/H)	Lab 9 (I/J)
		1	2	3
HW 3 Lect 8 Lab 8 (A/B)	Lab 8 (C/D)	Lab 8 (E/F)	Lab 8 (G/H)	Lab 8 (I/J)
6	7	8	9	10
Lect 9 Lab 9 (A/B)	Lab 9 (C/D)	Lab 9 (E/F) OH 11	Lab 9 (G/H) OH 12	Lab 9 (I/J) OH 13
13	14	15	16	17
HW 4 Lect 10 Lab 10 (A/B)	Lab 10 (C/D)	Lab 10 (E/F)	Lab 10 (G/H)	Lab 10 (I/J)
20	21	22	23	24
Lect 11		OH 14	OH 15	
27	28	29	30	

December 2017				
Mon	Tue	Wed	Thur	Fri
				OH 16
				1
	OH 17	OH 18	OH 19	OH 20
4	5	6	7	8
Final Exam				
11	12	13	14	15

Google calendar: <https://goo.gl/tt4Ppj>

Additional announcements will be posted on the course webpage (<http://cs101.kaist.ac.kr/>) during the 2017 summer vacation.