Solving Engineering Problems with Code
ISE 150 (3 Units)

Spring 2019

Description
While teaching critical thinking skills, this class will use engineering examples as a platform to introduce a programming approach to problem solving.

Objective
This course is an introduction to the Python programming language from an engineer's perspective. By the conclusion of this course, students will understand:
1. Core Python functional programming
2. Core Python object oriented programming
3. Using Python for data manipulation

Concepts
Programming fundamentals including variables, control statements, loops, and arrays, pointers, functions and object-oriented programming.

Prerequisites
None. This class is intended for students with no prior programming experience.

Instructor	Listed on Blackboard under Contacts
Office Hours	Listed on Blackboard under Contacts
Lecture / Lab	See online schedule of classes for exact times 1 hour 50 minutes twice weekly

Textbook
Head First Python, 2nd Edition. Paul Barry. O'Reilly Media Inc. ISBN: 9781491919538.
This book is available through USC Libraries Safari account
(https://libproxy.usc.edu/login?url=http://proquest.safaribooksonline.com)

Course website
All course material will be on Blackboard (http://blackboard.usc.edu).
We will use Piazza (http://piazza.com/) as an online question and discussion forum.

Course Structure

Topics covered during lecture will be applied to about 10 homework assignments spread throughout the semester. All homework assignments must be completed *individually* and outside of regularly scheduled class meetings.

Regular class meetings will feature a 60-minute lecture followed by an in-class lab assignment. These "labs" must be completed *individually* and are due at the end of the class period. These "labs" will immediately apply material from lecture and serve as an introduction to the other programming assignments.

There is a midterm and cumulative final exam in this course

Grading

The following percentage breakdown will be used in determining the grade for the course.

Lab assignments	10%
Homework assignments	50%
Midterm exam	20%
Final exam	20%
Total	**100%**

Grading Scale

The following shows the grading scale to be used to determine the letter grade.

93% and above	A
90% - 92%	A-
87% - 89%	B+
83% - 86%	B
80% - 82%	B-
77% - 79%	C+
73% - 76%	C
70% - 72%	C-
67% - 69%	D+
64% - 66%	D
63% and below	F

Policies

Lab assignments

Each lab assignment must be completely *individually*. There are no group projects in this class.

There will be lab assignments after most lectures. These assignments will be an immediate application of the material presented in lecture. These assignments will be graded as pass/fail. For credit on each lab you must complete and submit the lab before class time has ended. Each lab will contribute to your overall grade. There is no way to make up a missed lab.

Policies (continued)

Homework assignments

Each homework assignment must be completely *individually*. There are no group projects in this class.

Each homework assignment will include instructions, a due date, and can be found on the Blackboard site for this course.

It is your responsibility to submit your all homework assignments on or before the due date. Homework assignments turned in one day late will have 20% of the total points deducted from the graded score. Homework assignments turned in two days late will have 50% of the total points deducted from the graded score. After two days, submissions will not be accepted and you will receive a 0.

All homework assignments must be digitally submitted through Blackboard except when otherwise specified by the course staff. Do not email homework assignments to the course staff.

Homework assignment questions should be posted to the online question forum. Questions about specific code should be private posts while general class questions can be public posts. Class time is for lecture and lab assignments only. Do not send any email to the instructor regarding homework assignments or ask specific homework questions during the lecture sessions. You are encouraged to attend the office hours for homework related questions.

Exams

Make-ups are only allowed under extraordinary circumstances. Students must provide a satisfactory reason (as determined by the instructor) along with proper documentation. There are two exams: a midterm and a final. These exams are comprehensive of all topics covered.

Lab facilities

You are encouraged to save your work using a USB flash drive or a website such as Dropbox. You must keep a copy of all coursework. You will not be able to save your work on the school's lab computers. Any work saved to the computer will be erased after restarting the computer.

The course staff is not responsible for any work lost.

Incomplete and Missing Grades

Excerpts for this section have been taken from the University Grading Handbook, located at http://www.usc.edu/dept/ARR/grades/gradinghandbook/index.html. Please see the link for more details on this and any other grading concerns.

A grade of Missing Grade (MG) "should only be assigned in unique or unusual situations… for those cases in which a student does not complete work for the course before the semester ends. All missing grades must be resolved by the instructor through the Correction of Grade Process. One calendar year is allowed to resolve a MG. If an MG is not resolved [within] one year the grade is changed to [Unofficial Withdrawal] UW and will be calculated into the grade point average a zero grade points."

A grade of Incomplete (IN) "is assigned when work is no completed because of documented illness or other 'emergency' **occurring after the twelfth week** of the semester (or 12th week equivalency for any course scheduled for less than 15 weeks)."

Academic Conduct and Support Systems

Academic Conduct

Plagiarism – presenting someone else's ideas as your own, either verbatim or recast in your own words – is a serious academic offense with serious consequences. Please familiarize yourself with the discussion of plagiarism in SCampus in Section 11, Behavior Violating University Standards https://scampus.usc.edu/1100-behavior-violating-university-standards-and-appropriate-sanctions/. Other forms of academic dishonesty are equally unacceptable. See additional information in SCampus and university policies on scientific misconduct, http://policy.usc.edu/scientific-misconduct/.

Discrimination, sexual assault, and harassment are not tolerated by the university. You are encouraged to report any incidents to the Office of Equity and Diversity http://equity.usc.edu/ or to the Department of Public Safety http://capsnet.usc.edu/department/department-public-safety/online-forms/contact-us. This is important for the safety whole USC community. Another member of the university community – such as a friend, classmate, advisor, or faculty member – can help initiate the report, or can initiate the report on behalf of another person. The Center for Women and Men http://www.usc.edu/student-affairs/cwm/ provides 24/7 confidential support, and the sexual assault resource center webpage sarc@usc.edu describes reporting options and other resources.

Academic Conduct and Support Systems (continued)

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Support Systems:

Student Counseling Services (SCS) - (213) 740-7711 – 24/7 on call
> Free and confidential mental health treatment for students, including short-term psychotherapy, group counseling, stress fitness workshops, and crisis intervention. https://engemannshc.usc.edu/counseling/

National Suicide Prevention Lifeline - 1-800-273-8255
> Provides free and confidential emotional support to people in suicidal crisis or emotional distress 24 hours a day, 7 days a week. http://www.suicidepreventionlifeline.org

Relationship & Sexual Violence Prevention Services (RSVP) - (213) 740-4900 - 24/7 on call
> Free and confidential therapy services, workshops, and training for situations related to gender-based harm. https://engemannshc.usc.edu/rsvp/

Sexual Assault Resource Center
> For more information about how to get help or help a survivor, rights, reporting options, and additional resources, visit the website: http://sarc.usc.edu/

Office of Equity and Diversity (OED)/Title IX compliance – (213) 740-5086
> Works with faculty, staff, visitors, applicants, and students around issues of protected class. https://equity.usc.edu/

Bias Assessment Response and Support
> Incidents of bias, hate crimes and microaggressions need to be reported allowing for appropriate investigation and response. https://studentaffairs.usc.edu/bias-assessment-response-support/

Student Support & Advocacy – (213) 821-4710
> Assists students and families in resolving complex issues adversely affecting their success as a student EX: personal, financial, and academic. https://studentaffairs.usc.edu/ssa/

Diversity at USC – https://diversity.usc.edu/
> Tabs for Events, Programs and Training, Task Force (including representatives for each school), Chronology, Participate, Resources for Students

Academic Conduct and Support Systems (continued)

All submissions will be compared with current, previous, and future students' submissions using a code plagiarism identification program. If your code significantly matches another student's submission, you will be reported to SJACS with the recommended penalty of an F in the course.

You may discuss solutions to specific problems with other students, but you should not look through another's code. The code can be from an online forum or another student, the source is immaterial – all code submitted in this course must be your own. Do not share your code with anyone else in this or future sections of the course, as allowing someone to copy your code carries the same penalty as copying the code yourself.

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ISE 499 (3 Units)

Course Outline
Note: Schedule subject to change

W	Topic(s)	Read	Lab	Homework
1	Introduction	Ch. 1	None	Homework 1
	Variables		LP1	Due in week 2
2	Booleans and conditionals		LP2	Homework 2
	More conditionals		LP3	Due in week 3
3	MLK Day		None	Homework 3
	Loops		LP4	Due in week 4
4	About collections	Ch. 2	LP5	Homework 4
	Strings		LP6	Due in week 5
5	Lists		LP7	Homework 5
	Lists (cont.)		LP8	Due in week 6
6	Dictionaries	Ch. 3	LP9	
	Dictionaries and tuples		MT Prep	
7	Presidents' Day		None	
	Midterm		None	
8	Using functions	Ch. 4	LP10	Homework 6
	Writing functions		LP11	Due in week 9
9	Modules		LP12	Homework 7
	Web app example	Ch. 5	LP13	Due in week 10
SB	Spring Break		None	
10	File I/O	Ch. 6	LP14	Homework 8
	Strings revisited		LP15	Due in week 11
11	Databases	Ch. 7	LP16	Homework 9
	Databases (cont.)		LP17	Due in week 13
12	Objects	Ch. 8	LP18	
	Objects (cont.)		LP19	
13	Object timelines		LP20	Homework 10
	Integrating objects		LP21	Due in week 15

W	Topic(s)	Read	Lab	Homework
14	Decorators	Ch. 9	LP22	
	Using decorators		LP23	
15	Exceptions	Ch. 10	LP24	
	Exception handling		None	
	FINAL EXAM – as according to the final exam schedule			