Fall 2023 CS 019: Introduction to Computing

Instructor: Ayush Pandey

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For a 1-1 meeting with Ayush: schedule using this URL

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🏛️Class Discussions: Tue and Thu from 4.30pm to 5.45pm at Kolligian 217

📓Ayush's office hour: Tue 3pm to 4pm in SE2 381

🙋Altynay's office hour: Thu 1pm to 2pm in SE2 lobby

💻Labs:

11L on Wed 4.30pm to 7.30pm at COB1, 281

12L on Fri 10.30am to 1.30pm at Kolligian, 208

Too long; didn't read:

1. You will learn Python programming in this course and will be able to develop functioning and meaningful programs by the end of the course.
2. CatCourses is your best friend for all deadlines and announcements. Bring your laptop to the class to participate in the learning together with everyone.
3. Contact your TA, Altynay, for extension requests and feel free to ask for help in labs and office hours! We are here to support your learning and ensure that you can excel in Python programming.

Course prerequisites:

All UC Merced students are welcome! There are no course pre-requisites to take this class and excel in it. It is expected that all students are comfortable with middle school algebra and in using computers. This is intentionally defined in a subjective manner to welcome students from all backgrounds and experiences. This course serves as a training platform for all students interested in learning about computing and computer programming. This course will actively attempt to create a welcoming climate for everyone without relying on prior computer programming experience. If needed, feel free to discuss your preparation with the instructor or the course staff.

Course learning goals and outcomes:

By the end of this course, you will be able to demonstrate computer programming skills with Python. You will be able to create custom Python programs, investigate errors in existing programs independently, and create a functioning application with Python.

Course overview:

This course is your first introduction to "computing" and "Python" -- the computer programming language. The topics in this course are some of the most fundamental things that you will ever learn! Computing and Python literacy is increasingly becoming one of the most desirable skills, no matter what kind of education or job you are involved with in the future.

The philosophy of the course is grounded in the “CSforALL” mission (https://www.csforall.org/, https://www.nsf.gov/news/special_reports/csed/csforall.jsp). The course staff will strive to foster learning opportunities such that every student can achieve an A in this course! The assessments will be designed in a way that this is possible and there will be no grading on a curve. The course staff will try their best to support your learning throughout the semester to lower the barriers in learning computer programming.

Catalog Description:

CSE 019 is intended to present the basics of programming to the beginner. Modern topics in computer science such as object-oriented programming, recursion and data manipulation will be covered, using the Python programming language as a learning and exploration tool. CSE-019 is a 4-credit course, which includes 3 hours of lecture, 3 hours of lab, and various assignments each week.

Course policy and expectations:

1. **Lectures** will be designed as class discussions where you will be able to learn most of the key concepts required to complete the assignments successfully. So, please bring a device that you can use to write and run Python code (a laptop).

2. **Lab attendance** is not mandatory but you are encouraged to use the lab time to complete the assignments of the week with the TA’s help.

3. Try to make the best of the **office hours**, we are here to answer your questions in the office hours.

4. If you ever need an **extension**, contact your TA. All legitimate extension requests will be granted for lab assignments. The TA can decide on the length of extension based on the individual circumstances. Late work is still eligible for a 50% partial credit (no matter how late). You can also use extra credit activities to make up for lost points.

5. **Academic honesty:** You are expected to write your own code and most importantly you must understand all parts of your submissions. Asking for help in understanding a concept, learning from discussions online, and asking ChatGPT for explanations are all OK — but, you must write your own code after you have understood the concepts. Remember that learning Python programming will

enhance your future education and career, so copying code that you did not write will impede your learning and progress. With the online textbook platform that we have, it is easy for us to find out instances when you did not write your own code, so if such incidents occur you may receive a note from the course staff. The full university academic honesty policy PDF and the Computer Science department's policy are posted on CatCourses.

6. **Class Conduct and Community:** Remember that contributions from each of us can help in building a respectful, courteous, and an intellectually stimulating class environment. Language or behavior that prevents any student to participate fully in class is not acceptable. It is important to remain open to each other's thinking and engage in rigorous, challenging discussion about issues of shared concern. This is distinct from participating in oppressive behaviors — racism, sexism, homophobia, transphobia, and ableism, that are designed to keep people out of conversations, not bring them in.

7. UC Merced is committed to providing an **equal opportunity environment** for all students and employees that remains free of all forms of discrimination, harassment, and exploitation. Discrimination and harassment based on race, color, religion, creed, sex, national origin, age, disability, veteran status, or sexual orientation is a violation of state and federal law and/or University policy and will not be tolerated. Retaliation against any person who complains about discrimination is also prohibited. If you witness or experience any form of harassment, please seek support and guidance. For more information, please visit https://ophd.ucmerced.edu/

8. **Emailing:** If the syllabus does not answer your question, please reach out to the TA in the lab section or the office hour. If your question needs urgent attention, you can send an email to the TA or the instructor. Please mention the course number in the subject of your email.

Assessment structure:

1. All in-class activities and quizzes are graded for participation – 5% of your total grade.
2. All reading assignments are graded for correct completion on zyBooks (you have unlimited attempts to do these). zyBooks will provide instant feedback on errors and mistakes in your code – 10%
3. All lab assignments require more independent effort than the reading assignments and are graded for correctness (lowest scoring lab will be dropped from your final grade computation) – 25%
4. Your summative assessment consists of – a midterm, a final, and a mini project. The summative assessments total 15% for midterm 20% for final and 25% for project. Exams are open notes and open book on CatCourses while projects are individual effort on an independent problem.
5. The project problem statement is described in this PDF. **Projects that are not demonstrated will automatically get a 0 on everything related to the project.** Project grading is divided into three parts.
    a. 20% from project milestones (5 milestones to help you make progress on the project)
    b. 30% from project demonstration (oral exam with the TA**; required**)
    c. 50% from project code submission (manually graded)
6. After the grades for midterms and the finals are released on CatCourses, you can reclaim 10% of the points in the exam by writing a reflection on questions/sub-questions of your choice (that are worth a maximum of 10% of the total points for the exam). The reflection must consist of the error you made and the correct solution for the problem. You will have an opportunity to post this reflection and review of your code after each exam on CatCourses.

7. You can use extra credit activities to earn a maximum of 5% toward your total grade.
8. Grading scheme according to final score (out of 100):
    a. Score in [96, 100] is A+, [92, 96) is A, and [88, 92) is A-
    b. Score in [84, 88) is B+, [80, 84) is B, and [75, 80) is B-
    c. Score in [70, 75) is C+, [66, 70) is C, and [62, 66) is C-
    d. Score in [58, 62) is D+, [54, 58) is D, and [50, 54) is D-

The course topics for each week are described in the table below. The column for supplemental reading will be continually updated. Other changes to the syllabus may be made but I will announce to the class if something major changes.

Lecture Schedule: Tue and Thu from 4.30pm to 5.45pm at Kolligian 217

Date	Weeks	Topics	Notes and supplemental reading
Aug 24	Week 1 Lecture 1	Introduction to Python: Basics of programming	Reading 1. Browse through official Python "getting started" here and learn how to find documentation
Aug 29	Week 2 Lecture 1	Ooutputs, and errors, variables, and expressions	Reading 2.
Aug 31	Week 2 Lecture 2	Inputs in Python. Errors. Common data types: strings, lists, integers.	Reading 2. Practice advanced inputs and outputs (not for course grading).
~~Sep 5~~	~~Week 3 Lecture 1~~	–	No class (Labor Day synchronization with the other CSE 019 section)
Sep 7 SE2 381, 3pm	–	Q&A / extra office hour SE2, 381	Reading 3. Extra office hour in lieu of the cancelled lecture
Sep 7	Week 3 Lecture 2	Branching and range	Reading 3 and Google Colab for in-class work. Fun assignment: Create a grade calculator for CSE 019 using if-elif-else statements. Google Colab for restaurant suggestion.
Sep 12	Week 4 Lecture 1	String formatting	Reading 3.
Sep 14	Week 4 Lecture 2	Lists, Dictionaries	Reading 3.
Sep 19	Week 5	Dictionaries, Lists, and Tuples	Reading 4. Practice Python data

	Lecture 1		structures.
Sep 21	Week 5 Lecture 2	Data types and loops (while)	Reading 4.
Sep 26	Week 6 Lecture 1	Sets and loops (while)	Reading 5.
Sep 28	Week 6 Lecture 2	While, `break`, and `continue` statements	Reading 5.
Oct 3	Week 7 Lecture 1	For loop, nested loop, and continue statement	Revise reading 3-6. Install Python.
Oct 5	Week 7 Lecture 2	Functions in Python	Revise reading 3-6. Install Python.
Oct 10	Week 8 Lecture 1	Functions in Python (continued)	Reading 6 (on functions).
Oct 12* Guest lecture	Week 8 Lecture 2	Topic: More on strings	Reading 6 (on functions).
Oct 17	Week 9 Lecture 1	Midterm discussion	Reading 7 and Reading 8.
Oct 18	Week 9	Midterm exam	Online on CatCourses
Oct 19	Week 9 Lecture 2	Functions. More on strings, lists, and dictionaries	Reading 7 and Reading 8.
Oct 24	Week 10 Lecture 1	Strings and lists	Tic-tac-toe introduction. PDF.
Oct 26	Week 10 Lecture 2	Strings and lists	Reading 9.
Oct 31	Week 11 Lecture 1	Object oriented programming	Reading 9.
Nov 2	Week 11 Lecture 2	Inheritance	Reading 9.
Nov 7	Week 12 Lecture 1	Class overriding	Reading 10 and Reading 11.
Nov 9	Week 12 Lecture 2	Recursion	Reading 10 and Reading 11.
Nov 14	Week 13 Lecture 1	Recursion: more examples	Reading 12.
Nov 16	Week 13 Lecture 2	Files: reading and writing	Reading 13.
~~Nov 21~~	~~Week 14 Lecture 1~~	–	Thanksgiving week – No class
~~Nov 23~~	~~Week 14 Lecture 2~~	–	Thanksgiving day – No class
Nov 28	Week 15 Lecture 1	Spreadsheets with “.csv” files	Reading 13.

Nov 30	Week 15 Lecture 2	Plotting and and introduction to data science	Reading 13.
Dec 5	Week 16 Lecture 1	Data analysis with Python	Reading 14. Project demonstration deadline
Dec 7	Week 16 Lecture 2	Review	Reading 14. Project demonstrations.
Dec 12	Week 17	Final exam	Online

Lab Schedule:

11L on Wed 4.30pm to 7.30pm at COB1, 281

12L on Fri 10.30am to 1.30pm at Kolligian, 208

Date	Section	Lab focus	Due Dates
Aug 25	12L		–
Aug 30	11L	Lab 1	Reading 01 due Sep 3
Sep 1	12L	Lab 1	Reading 01 due Sep 3
~~Sep 6~~	~~11L~~	~~Lab 1~~	~~Reading 02 due Sep 10~~ Use the office hours and reach out if you need more help.
~~Sep 8~~	~~12L~~	~~Lab 1~~	~~Reading 02 due Sep 10~~ Use the office hours and reach out if you need more help.
Sep 13	11L	Lab 1	Reading 03 due Sep 17 Lab 01 due Sep 17
Sep 15	12L	Lab 1	Reading 03 due Sep 17 Lab 01 due Sep 17
Sep 20	11L	Lab 2	Reading 04 due Sep 24 Lab 02 due Sep 24
Sep 22	12L	Lab 2	Reading 04 due Sep 24 Lab 02 due Sep 24
Sep 27	11L	Lab 3	Reading 05 due Oct 1 Lab 03 due Oct 1
Sep 29	12L	Lab 3	Reading 05 due Oct 1

			Lab 03 due Oct 1
Oct 4	11L	Lab 4	Reading 06 due Oct 8 Lab 04 due Oct 8
Oct 6	12L	Lab 4	Reading 06 due Oct 8 Lab 04 due Oct 8
Oct 11	11L	Lab 5	Reading 07 due Oct 15 Lab 05 due Oct 15 Midterm exam
Oct 13	12L	Lab 5	Reading 07 due Oct 15 Lab 05 due Oct 15 Midterm exam
Oct 18	11L	Lab 6	Reading 08 due Oct 22 Lab 06 due Oct 22
Oct 20	12L	Lab 6	Reading 08 due Oct 22 Lab 06 due Oct 22
Oct 25	11L	Lab 7	Lab 07 due Oct 29
Oct 27	12L	Lab 7	Lab 07 due Oct 29
Nov 1	11L	Lab 8	Reading 09 due Nov 5
Nov 3	12L	Lab 8	Reading 09 due Nov 5
Nov 8	11L	Lab 8	Reading 10 & 11 due Nov 12 Lab 08 due Nov 12
~~Nov 10~~	~~12L~~	~~Lab 8~~	Veterans day holiday; no lab on Friday
Nov 15	11L	Lab 9	Reading 12 due Nov 19 Lab 09 due Nov 19
Nov 17	12L	Lab 9	Reading 12 due Nov 19 Lab 09 due Nov 19
~~Nov 22~~	–	–	Thanksgiving week – no due dates, no labs
~~Nov 24~~	–	–	Day after Thanksgiving – No lab
Nov 29	11L	Lab 10	Reading 13 due Dec 3 Lab 10 due Dec 3
Dec 1	12L	Lab 10	Reading 13 due Dec 3 Lab 10 due Dec 3
Dec 6	11L	Lab 11	Reading 14 due Dec 8 Lab 11 due Dec 8 Project demonstration deadline
Dec 8	12L	Lab 11	Reading 14 due Dec 8 Lab 11 due Dec 8 Project demonstration deadline
Dec 12	–	Final exam	Dec 12