

UCLA Computer Science 30: Principles and Practices of Computing

Overview

This course is intended for students who do not have prior programming experience, as a precursor to the existing introductory course sequence (CS31, CS32, and CS33). The course aims to illustrate the power and fun of computing through a variety of applications. It also aims to teach students how to use computers as a tool for problem solving, creativity, and exploration via the design and implementation of computer programs.

CS30 will use the popular Python programming language as a vehicle for introducing students to programming and the broader field of computing. Students will learn how to design, implement, and test programs that solve computational problems. Key concepts learned will include:

- functional decomposition: the ability to break a task into an appropriate set of subtasks, each implemented as a function
- usage of common data types: integers, booleans, strings, and lists and similar container data structures
- usage of common control structures: conditionals and loops

Textbook

We will be using the textbook [CS For All](#). It is available at the UCLA Bookstore, including a digital version I believe. Readings will be assigned from this book throughout the quarter.

Homework

Programming assignments constitute the majority of the course workload, and they are the primary means by which you actually learn the concepts taught in lecture.

Grading

- homeworks: 60%
- final exam: 30%
- participation: 10%

Academic Integrity

I trust you, and I take violations of this trust quite seriously. Both SEAS and the university as a whole have strict policies on academic integrity. Our course additionally has its own policy on

academic honesty, which can be found on the course web page. **We will adhere to these policies strictly.**

CAPS

UCLA Counseling and Psychological Services (CAPS) provides mental health care and resources for all registered students, including short-term individual and/or group treatment, urgent services and referrals when needed. Your well-being is the #1 priority of UCLA CAPS. Counselors are available by phone at (310) 825-0768 24/7. Learn more at [this website](#).

Tentative Schedule

- Morning sessions are taught by instructors
- Afternoon sessions are led by undergrad tutors in small cohort (8-10)

Schedule

Week 1

	Morning (9:00 -- 11:50)	Afternoon (1:00 -- 4:00)
6/23: Monday	Lecture: <ul style="list-style-type: none">• Introduction: Computer System• What is program made of?• Common elements in programming languages	Discussion Session / Homework
6/24: Tuesday	Lecture <ul style="list-style-type: none">• Functions• Lists	Discussion Session / Homework
6/25: Wednesday	Lecture <ul style="list-style-type: none">• Conditional Statements	Discussion Session / Homework
6/26: Thursday	Lecture <ul style="list-style-type: none">• Random Class	Discussion Session / Homework
6/27: Friday	Lecture <ul style="list-style-type: none">• Recursive functions	Lab Touring / Seminar

Week 2

	Morning (9:00 -- 11:50)	Afternoon (1:00 -- 4:00)
6/30: Monday	Lecture <ul style="list-style-type: none">• Recursive functions (continued)• Sorting algorithms	Discussion Session / Homework
7/1: Tuesday	Lecture Sorting algorithms (continued)	Discussion Session / Homework

SAMPLE SYLLABUS. Enrolled students will receive the finalized syllabus prior to the start of the institute.

7/2: Wednesday	Lecture <ul style="list-style-type: none">• Turtle	Discussion Session / Homework
7/3: Thursday	Lecture <ul style="list-style-type: none">• While loop / for loop	Lab Touring / Seminar
7/4: Friday	Holiday – No Class	

Week 3

	Morning (9:00 -- 11:50)	Afternoon (1:00 -- 4:00)
7/7: Monday	Lecture <ul style="list-style-type: none">• Lambda, map, list	Discussion Session / Homework
7/8: Tuesday	Lecture <ul style="list-style-type: none">• Filter, reduce	Discussion Session / Homework
7/9: Wednesday	Lecture <ul style="list-style-type: none">• Files Read-Write	Discussion Session / Homework
7/10: Thursday	Lecture <ul style="list-style-type: none">• Review	Discussion Session / Homework
7/11: Friday	Final Exam	Hackathon / Closing