

# 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)

### Week 1

	Morning (9:00 -- 11:50)	Afternoon (1:00 -- 4:00)
<b>6/24: Monday</b>	<b>Lecture:</b> <ul style="list-style-type: none"><li>• Introduction: Computer System</li><li>• What is program made of?</li><li>• Common elements in programming languages</li></ul>	<b>Discussion Session / Homework</b>
<b>6/25: Tuesday</b>	<b>Lecture</b> <ul style="list-style-type: none"><li>• Functions</li><li>• Lists</li></ul>	<b>Discussion Session / Homework</b>
<b>6/26: Wednesday</b>	<b>Lecture</b> <ul style="list-style-type: none"><li>• Conditional Statements</li></ul>	<b>Discussion Session / Homework</b>
<b>6/27: Thursday</b>	<b>Lecture</b> <ul style="list-style-type: none"><li>• Random Class</li></ul>	<b>Discussion Session / Homework</b>
<b>6/28: Friday</b>	<b>Lecture</b> <ul style="list-style-type: none"><li>• Recursive functions</li></ul>	<b>Lab Touring / Seminar</b>

### Week 2

	Morning (9:00 -- 11:50)	Afternoon (1:00 -- 4:00)
<b>7/1: Monday</b>	<b>Lecture</b> <ul style="list-style-type: none"><li>• Recursive functions (continued)</li><li>• Sorting algorithms</li></ul>	<b>Discussion Session / Homework</b>
<b>7/2: Tuesday</b>	<b>Lecture</b> <b>Sorting algorithms (continued)</b>	<b>Discussion Session / Homework</b>
<b>7/3: Wednesday</b>	<b>Lecture</b> <ul style="list-style-type: none"><li>• Turtle</li></ul>	<b>Discussion Session / Homework</b>

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

<b>7/4: Thursday</b>	<b>Holiday: No class</b>	<b>Discussion Session / Homework</b>
<b>7/5: Friday</b>	<b>Lecture</b> <ul style="list-style-type: none"><li>• <b>While loop / for loop</b></li></ul>	<b>Lab Touring / Seminar</b>

Week 3

	<b>Morning (9:00 -- 11:50)</b>	<b>Afternoon (1:00 -- 4:00)</b>
<b>7/8: Monday</b>	<b>Lecture</b> <ul style="list-style-type: none"><li>• <b>Lambda, map, list</b></li></ul>	<b>Discussion Session / Homework</b>
<b>7/9: Tuesday</b>	<b>Lecture</b> <ul style="list-style-type: none"><li>• <b>Filter, reduce</b></li></ul>	<b>Discussion Session / Homework</b>
<b>7/10: Wednesday</b>	<b>Lecture</b> <ul style="list-style-type: none"><li>• <b>Files Read-Write</b></li></ul>	<b>Discussion Session / Homework</b>
<b>7/11: Thursday</b>	<b>Lecture</b> <ul style="list-style-type: none"><li>• <b>Review</b></li></ul>	<b>Discussion Session / Homework</b>
<b>7/12: Friday</b>	<b>Final Exam</b>	<b>Hackathon / Closing</b>