

ASTRON 98: Undergraduate Laboratory at Berkeley

Physics and Astronomy Division

University of California, Berkeley, Fall 2020

Units: 2

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Faculty Sponsor: Dan Kasen

Facilitators:

Exec: Yi Zhu, Carrie Zuckerman, Katie Lamar, Ronan Alam, Aditya Sengupta

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Curriculum Developers: Yukei Murakami

Course Overview

Undergraduate research can be one of the most transformative and fruitful experiences at Berkeley. However, many students feel they lack the knowledge, experience, or resources to getting started. ULAB is a student run research program built to remedy this issue by helping students from all backgrounds and skill levels get their foot in the door.

This *two-semester* course pairs groups of students with experienced undergraduate mentors in order to complete a year-long research project. Students in our program will experience the start-to-finish research process from designing a project of their choice to presenting their results at a poster symposium.

In addition to project-work, ULAB will teach students often overlooked skills such as Python, LaTeX, Git, plotting, statistics, and reading and writing about research. Finally, ULAB provides a safe and welcoming environment for students to connect with their peers and the larger community of faculty and graduate students through activities such as lab tours, project presentations, etc.

Course Structure

ULAB is a year-long program. Broadly speaking, the fall semester focuses on designing a research project and spring semester on executing the research project. *We expect students enrolled in the fall semester to also enroll the following spring. We will not accept new students in the spring semester.*

The course will meet **online M/W from 7–8 PM**. Monday meetings are generally reserved for workshops and lectures. Wednesday meetings are generally reserved for project group meetings. Individual groups may specify additional meeting times outside of lecture at their discretion.

Tentative Schedule and Assignments

Week	Monday Lecture	Wednesday Lecture	Assignments (due Sunday)
1 (08/23)			
2 (08/30)			
3 (09/6)	Orientation	Intro. Physics Topics	
4 (09/13)	Intro Astro. Topics	Mentor Introductions	
5 (09/20)	Sorting into Project Groups	Group Meeting	
6 (09/27)	CS 1: General CS Overview	Group Meeting	CS Module 1
7 (10/4)	CS 2: Fundamentals of Python	Group Meeting	CS Module 2
8 (10/11)	LaTeX	Group Meeting	LaTeX Module 1
9 (10/18)	Research Literacy	Group Meeting	Mid-Semester Check-In
10 (10/25)	CS 3: Fundamentals of Python	Group Meeting	CS Module 3
11 (11/1)	CS 4: Python for Physics/Astro.	Group Meeting	CS Module 4
12 (11/8)	CS 5: Python for Physics/Astro.	Group Meeting	CS Module 5
13 (11/15)	Communicating Research	Mock Project Presentation	LaTeX Module 2
14 (11/22)	Mock Project Presentation	Thanksgiving Break	
15 (11/29)	Group Meeting	Group Meeting	Project Proposal (Document)
RRR			Project Proposal (Present)
Finals			

Grading Policy

Grading is broken down into four categories: weekly mentor checkoffs, workshops assignments, the mid-semester assignment, and the final presentation. A weighted final grade of 70% or greater is required for a passing mark. An incomplete may be assigned under exceptional circumstances.

For each week of group meetings, students will receive a checkoff grade from mentors confirming active and satisfactory participation within their group. For each required workshop, students will be graded for accuracy on an accompanying homework assignment. Further details on the mid-semester and final assignment will be released later in the semester. Assignments submitted after the due date will not be accepted under any circumstance.

Weighting of Final Grade:

Weekly Checkoffs	30 %
Workshops	30 %
Mid-Semester Assignment	10 %
Final Assignment	30 %

Disabled Students' Program Accommodations

Students with special needs may receive accommodations via the [DSP Program](#). Please contact the ULAB Physics and Astronomy director before the start of instruction with an accommodation letter.

Student Conduct

We expect students to abide by the Berkeley honor code: *“As a member of the UC Berkeley community, I act with honesty, integrity, and respect for others.”* Cheating, plagiarism, and other forms of misconduct may result in a failing grade and/or further disciplinary action. More information can be found on the Physics Department’s [student code of conduct](#).

COVID-19 Contingencies

We expect all ULAB instruction and group work to be held online online. Students that wish to attend live lecture or attend group meetings in-person may do so at their discretion and in compliance with university and public health guidelines.

Information detailed in this syllabus may be subject to minor changes throughout the semester.