

Mariam Helal

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Education

University of California, Berkeley

Berkeley, CA, USA

BA in Planetary Science, BA in Astrophysics, Minor in Chemistry

May 2028

- GPA: 4.0/4.0
- Relevant Coursework: Introductory Astrophysics, General Chemistry, Organic Chemistry, Planetary Astrophysics, Calculus, Differential Equations, Linear Algebra, General Physics

Mission Early College High School

Santa Clara, CA, USA

High School Diploma, AS-T in Physics

May 2024

- GPA: 4.8/4.0
- SAT: 1570

Research

Ramsden Research Fellow

Berkeley, CA, USA

Macdonald Lab

Oct 2024 – present

- Developing protocol for usage of hand-held XRF instrument to analyze and interpret major element compositions of carbonates and iron formations
- Investigating effects of diagenesis and mineralogy on $\delta^{13}\text{C}$ values of carbonates recording the Trezona anomaly

Undergraduate Researcher

Berkeley, CA, USA

Bergner Lab

Feb 2025 – present

- Modeling edge-on proto-planetary disks using radmc3d to test methods of correcting for rotational motion effects on column-density calculations of molecules
- Conducted molecule identification and spectral analysis of ALMA proto-stars to probe phosphorus chemistry in planet-forming regions

Student Researcher

Fremont, CA, USA

Aspiring Scholars Directed Research Program

Sept 2022 – Dec 2023

- Developed protocol for quantifying microplastic content in California mussels (*Mytilus californianus*) using enzymatic digestion and fluorescence microscopy
- Compiled results into preprint: *Testing a Method for Quantifying Microplastic Content in Mytilus californianus*

Teaching

ASTRON/EPS C162 - Planetary Astrophysics Reader

Berkeley, CA, USA

UC Berkeley Department of Astronomy & Department of Earth & Planetary Sciences

Aug 2025 – present

- Graded student work, including problem sets and exams

Python DeCal Student Facilitator

Berkeley, CA, USA

UC Berkeley Department of Astronomy

Jan 2025 – present

- Taught lectures on Python programming, plotting, and data analysis techniques
- Co-hosted office hours to provide students with individual support and address coding questions
- Carried out instructional duties including grading homework assignments and mentoring students on final projects

ASTRON/EPS W12 - Planets Tutor/Reader

Remote

UC Berkeley Department of Astronomy & Department of Earth & Planetary Sciences

June 2025 – Aug 2025

- Interacted with students via discussions and office hours
- Point of contact for sections of the class, assisting student with material-related and administrative questions

Professional Experience

Chief Scientist

NASA L'SPACE Mission Concept Academy

Remote

Jan 2025 – May 2025

- Participated in weekly seminars covering the process of NASA mission concept development and learning from industry professionals
- Led team of 5 through science-delegated tasks, developing a NASA mission concept for a Aerobot system to conduct research on the Venusian atmosphere and surface and navigating surprise roadblocks through reevaluating priorities and descoping
- Presented final PDR document to board of mentors, providing a summary of our mission and answering clarifying questions

Extracurriculars

Telescope Crew Officer

Undergraduate Astronomy Society

Berkeley, CA, USA

May 2025 – present

- Operated Newtonian & Schmidt-Cassegrain telescopes, as well as Treffers, the UC Berkeley Campbell rooftop telescope
- Co-facilitated weekly Sidewalk Astronomy outreach events to engage the campus community in public observation sessions

MPS Scholars Mentor

Math & Physical Sciences Department, UC Berkeley

Berkeley, CA, USA

May 2025 – present

- Advised incoming freshman on course selection, research opportunities, and academic planning within the EPS and Planetary Science disciplines
- Hosted regular mentoring meetings to address student questions and provide academic and personal support

Extrusion Sub-team Member

Student Environmental Resource Center

Berkeley, CA, USA

Sept 2024 – May 2025

- Researched and tested methods for extrusion of recycled 3D printer filament to create a closed-loop campus filament recycling program

Sensor Placement Co-Lead

Strawberry Creek Monitoring Group

Berkeley, CA, USA

Jan 2025 – Aug 2025

- Created social media posts and graphic design materials for outreach on SCMG activities and creek health
- Co-led sensor placement efforts, finding optimal locations to place sensors monitoring creek activity

Awards & Honors

Ramsden Research Fellowship

Summer 2025

Dean's List

Fall 2024

Presidential Volunteer Service Certificate

Fall 2023

Skills

Lab: Microscopy, XRF, Mineral Separation

Coding: Python, Matplotlib, Pandas, NumPy, Seaborn, Cartopy, LaTeX, HTML, CSS

Programs: CASSIS, CARTA, radmc3d

Languages: English, Arabic