Hollie O'Brien

5616 Fallbrook Ave ♦ Woodland Hills, CA 91367 ♦ 402-504-0054 ♦ hollieobrien11@gmail.com

EDUCATION:

Massachusetts Institute of Technology — Cambridge, MA
Bachelor of Science in Earth, Atmospheric, & Planetary Sciences — June 2015

State of Massachusetts Initial Teaching License + SEI Endorsement — Cambridge, MA
High School Physics — June 2015

TEACHING EXPERIENCE:

de Toledo High School — West Hills, CA
Precalculus, Calculus, AP Calculus BC, Geometry Fundamentals, Intermediate Algebra Instructor, AMC Coach, Foundations of Web Development, & Summer School Geometry Teacher — July 2018-Present

- Created an inquiry-based mathematics curriculum utilizing TI-nSPIRE Calculators, TI-nSPIRE exploration activities, and released SAT questions
- Founded year-long project-based course covering basic HTML, CSS, and Javascript concepts
- Established an inaugural team for the American Mathematics Competition and led weekly prep sessions

Physics, Astronomy, Engineering, AP CS A, Rocket Science & Robotics Instructor — July 2016-July 2018
Makerspace Curriculum Coordinator, Summer School Physics Teacher

- Created a project-based engineering curriculum incorporating design thinking, 2D & 3D modeling, and coding that culminated in an end of year Young Engineering Conference
- Established a computer science pathway: introduction to CS utilizing python and AP CS A based in Java
- Managed cross-curricular projects based out of the Makerspace in order to support faculty and students in developing and implementing new innovative learning hands-on opportunities.

Education Unlimited Summer Camp — San Francisco & Los Angeles, CA
Astrophysics and Java 2 Instructor — July—Aug 2019

- Established a firm introduction of Astrophysics topics like wave-particle duality of light, radiation and stellar evolution, black holes, and Einstein's Theory of Relativity through simulations and class-discussions
- Introduced Observational Astronomy through solar and night sky observational telescopes, focusing on techniques for identifying the constellations and naked-eye astronomy
- Taught Data Structures, Algorithms (simple search/sort), and other foundational Computer Science concepts in Java using the lens of designing a text based game

Uplift Hampton Preparatory High School — Dallas, TX
Physics & Robotics Instructor, Junior Level Chair, Track Coach — July 2015-July 2016

- Created a full year-long physics curriculum based off AP Physics 1 Standards including lesson plans, exit tickets, DO NOWS, differentiated homework, labs, and projects
- Led three targeted weekly intervention sessions as Junior Level Chair to ensure all students reach their growth goals. Managed weekly detention list and held intervention meetings for failing scholars.

Lowell Observatory — Flagstaff, AZ
Navajo-Hopi Astronomy Outreach Project Intern — January 2015

- Lead an outreach to a Navajo school where students learned about comets hands-on
- Wrote numerous hands-on astronomy activities ranging in topics from meteors and planets to eclipses and supernovas that aligned with the Arizona State and Next Generation Science Standards

RESEARCH EXPERIENCE:

Observational Techniques Of Optical Astronomy Lab & Educational Thesis — Wallace Observatory, MA
Student Researcher — Sept. 2014-June 2015

- Designed and carried out Photometric study on an Eclipsing Binary Variable Star—Beta Persei (Algol)
- Processed astronomical data including calibration, error propagation, & confidence of measurements

Department of Earth, Atmosphere, & Planetary Science — Leh, Ladahk, India
Student Researcher — August 2013

- Studied different outcrops that showed components of the Eurasian-Indian Collision zone from Delhi to Leh
- Oriented Paleo-magnetic rock samples collected via core sampling using a magnetic and sun compass
- Measured the attitude of bedding to correct for rock deformation after the collision