CHLOE HARAMIS

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EDUCATION

Mesa Community College Expected Graduation 2024
Associates in Science, Astronomy
Associates in Science, Physics

Arizona State University Expected Graduation 2025
Bachelors of Science, Astrophysics

RESEARCH

STARS Lab Oct 2023-Jan 2024
Research focusing on how gas clouds in the Interstellar Medium interact with galaxies, using data sets from the SLOAN survey and graphing their spectrums using python. Working under multiple graduate students.

Exoplanet Group March 2024-Current
Research focusing on exoplanets atmospheres, with an emphasis on hot jupiters. Utilizing python to code simulations to assist in removing noise from data. Working under phD Student Peter Smith.

SKILLS

Programing Languages
Vpython, Python, Mathematica

Operating Systems
Widnows, Mac OS

Software
Excel, Google Sheets, LaTeX, Logger Pro, PASCO, Powerpoint, Word

Telescope Operation
Both Manual and Automated systems from Meade, Celestron, Unistellar, and Seestar.

Engineering
Circuit Building, Computer Building, Telescope Building, and designing of multiple physics experiments closely relating to optics and spectroscopy

RELEVANT COURSEWORK

SES 121 and 123

- Content focused on introductions to modern astronomy and earth sciences. Final presentation and essay project focusing on the varying pH of water bodys on earth and its broader implications.

SES 126 and 128

- Content focused on introductions to modern astronomy, stars, exoplanets, planets, moons, forces, basic astronomy equations, and galaxies. Multiple excel based labs, focusing on graph creation and math calculations, by deriving information from online databases and analyzing it. Final presentation project focused on neutron stars, how they form, sustain themselves, and what they create through their lifetime.

PHY 150/151

- Content focusing on an introduction to physics, kinematics, Newton's Laws, basic forces, momentum, energy, electromagnetic feilds, Ampere's and Faradays's Laws, Maxwell's Equations, and basic circuit elements. Multiple logger pro and excel based labs, focusing on calculations, analyzing both data and graphs, and creating and testing predictions by experimentation. Coding for some labs using vPython, focused on analyzing electromagnetic feilds.

PHY 201

- Content surrounding the ideas of Differential Equations and Linear Algebra. Focusing on complex arithmatic,vector algebra, matrices, matrix theory, fourier series, ordinary first order differential equations, second order differential equations, the wave equation, and other important equations.

PHY 252

- Content focused on thermodynamics, electromagnetic waves, optics, quantum mechanics, special relativity, and modern physics. Labs focused on data fitting, thermodynamics, waves, optics, spectroscopy, and electromagnetic radiation.

AST 321

- Content focused on celestial mechanics, stars, how they are studied, classified, composed, evolve, star remnants, supernova, exoplanets, creating computer programs/simulations using Python and Scratch. Final project focused on utilizing stellar mass data from .5 to 1.2 solar masses and python to code up a simulation of stellar lifetimes and writing a mock scientific paper on the results.

AST 421

- Content focused on deriving celestial mechanics, utilizing classical mechanics such as lagragins, working out many facets of a star, including formation, hydrostatic equilibrium and stellar radiation, and also reviewed electromagnetism in regards to both physics and astronomy.

AST 422

- Content focused on expanding learned knowledge in AST421 but on a deeper or mathematical level. Many coding based simulations assignments via python, such as blackbody temperature curves, deriving planks constant, that Saha equation, and more. Final Presentation project focused on education in physics, and ways it can be improved using peer learning techniques.

SES 410

- A graduating project focused on working in small teams to develop a technology. I am the primary data analyst, scientist, and spectroscopy expert, working with my team to develop a thermal longwave infrared sensor to observe ozone at the ground level.

AST 498

- Content focused on learning how to use the JWST telescope, from learning how to use Astronomy Proposal Tool (APT), work with JWST data from SIMBAD and STSci DDT, and used James Webb Exposure Time Calculator to simulate galaxys.

TALKS

"pH and Extremophiles" A project exploring the general pH distribution of Earth's water bodys through wide ranges of data, from oceans, rain, and lakes, how water bodies pH can be effected by its surroundings, how different forms of life have evolved to live in extreme conditions, such as acidophiles and alkaliphiles, how these extremophiles can be studied in astrophysics, and possible ways to implement a "model" into planetary spectroscopy for estimating pH of water on exoplanets.

"Neutron Star Mergers" A project on the merging events of neutron stars and black holes, how black holes and neutron stars form based on data, an analysis of the HR-diagram including evolutionary tracks, a short simulation of a neutron star merger, why these events occur (analyzing gravity), and results of these collision events, such as heavy elements, gamma-ray bursts and gravitational waves.

"Cub Scouts Astronomy Badge Night" An Event focused on teaching Cub Scouts, ages six to seven, about different aspects of astronomy. The Presentation was heavily focused on planets, some orbital mechanics, and how the phases of the moon occur. Demos and acitivies included worksheets, a flashlight moon phase demo, and a solar system spacing demo.

"International Observe the Moon Night" Was featured as one of the interviewee's on NASA's official observe the moon night livestream on 10/21/2023. Talked about the moons historical, scientific, and cultural importance.

"Starlab Shows" Was main lecturer for three mini planetarium shows were stars, their locations and mythos, along with providing some astronomy background, such as the structure and composition of the milkway

"Sundial" Was a guest speaker at multiple Astronomy and Physics intro level class to talk about the importance of our on campus, free mentorship program, Sundial. This program is oriented around student learning, and how to improve physics and astronomy education at the university level, and is part of a large network, known as the Access Network.

"Clicker Questions and how they Pair with Peer Instruction in Physics" A presentation focused on educational psychology within physics, highlighting how clicker questions can improve student learning when implemented at a peer level, based on a study done at University of Colorado Boulder.

TEACHING EXPERIENCE

Private Tutor Oct 2019 - Current
Self Employed

- Tutored students on STEM and nonSTEM topics ranging from elementary school students to university students

Sundial Program Aug 2023 - Current
Arizona State University *Tempe, AZ*

- Student Undergraduate Mentor for SESE and Physics students.
- Mentored 7 total students, in Physics, Aerospace engineering, Astrophysics and Astrobiology.

Sundial Early Start Program May 2024 - September 2024
Arizona State University *Tempe, AZ*

- Student Undergraduate Student Faciliator for the Sundial Early Start Summer Program.
- Gave Presentations to students on Astrophysics and Physics topics, such as Power and Energy, exoplanets, and more!
- Conducted and assisted students in multiple hands on lab experiences pertaining to optics, radiation, and spectroscopy.
- Designed the New Coronagraphy lab focused on both optics, and how exoplanets can be detected.

OUTREACH

TCA Astronomy Event

- Set up and assisted people in the usage of telescopes (8 inch MEAD and others) and binoculars. Explained solar system objects, such as the moon, jupiter, and mars. Additionally described stellar objects.

Pecos Conference Astronomy Event 2023

- Set up 11 inch Celestron, two 8 inch Meades, and an EVscope. Assisted people with usage of eVscope. Described stellar objects, took photos, and pointed out constellations and perseids. Gave mini-presentations on topics when requested by attendees.

Camp SESE 2023

- Planned and coordinated the Astronomy Club camping trip and participation in Camp SESE along with Ric Alling. Additionally, assisted the astronomy club in set up to telescopes and space education. Used 8 inch Meade, 11 inch Celestron, and EvScope. Assisted in set up of EQ telescopes fro solar observations. Described stellar objects, took photos, pointed out constellations, stars, and some nebulae and galaxies.

ASU Programming and Actitivities Board Disney Night

- Planned and coordinated the Astronomy Club PAB event, including gathering and setting up tabling equipment, and doing general astronomy outreach. Showed off astronomy club astrophotography. Set up an 8 and 10 inch meade telescope, set up an eVscope. Asissted people with usage of telescopes, and binoculars, and explained celestial objects.

Temple Emmanuel Star Party

- Planned and coordinated a paid Star Party at Temple Emmanuel in Tempe. Set up eVscope, and 2 8 inch meade telescopes, did a short oral presentation on the telescopes and their usage, showed off astronomical objects and explained how certain things form (i.e stars, nebulae, galaxies, clusters). Hand aligned 8 inch telescopes to jupiter and the moon when they malfunctioned.

LROC Observe the Moon Night

- Coordinated and assisted the Astronomy Club at ASU in setting up telescopes, two 11 inch celestrons, for LROC's observe the moon night, was featured as an interviewee on a NASA livestream. Talked about the moon, and its different notable features and its importance.

ESE Day 2023

- Coordinated and set up the Astronomy Club at ASU's booth for ESE. Educated people in attendance on astronomy, and what Astronomy Club at ASU does. Assisted in post event clean up.

STEAM Night

- Coordinated, planned, and volunteered the Astronomy Club at ASU's booth and Telescope section at Cotton Boll Elementary School's STEAM Night. Assisted Students with chemistry, and astronomy demos and activities, as well as set up and show off telescopes. Additionally coordinated with SESE's AD for Community Outreach, Patrick Young, for a gas refund.

EVAC Star Party

- Coordinated and planned Astronomy Club at ASU's one day trip to the East Valley Astronomy Club's Star Party. Set up and operated eVscope.

Open Door 2024

- Coordinated and planned Astronomy Club at ASU's attendance and booth at SESE's Open Door Event. Provided educational astronomy activities for all to participate in.

Astronomy Club at ASU Star Party

- Coordinated and planned Astronomy Club at ASU's first star party of 2024 including coordinating club officers, food, equipment, educational activities, facilitating telescope training, and having an educational telescope viewing experience for all in attendance.

ASU Programs and Activities Board Up Night 2024

- Planned and Coordinated the attendance of the Astronomy Club at ASU's attendance at the Up Night. Planned and created activities, as well as networked with other students.

2024 Space Gala

- Assisted in planning and coordinating the 2024 Space Gala on behalf of the Astronomy Club, collaborating with clubs such as Society of Physics Students (SPS), Students for the Exploration and Development of Space (SEDS), Space Business Association (SBA), and Next Level Devils (NLD). This included creating a decorations bugdet, submitting the budget, and assisting groups in submitting other budgets, such as food and entertainment.

2024 Space Expo

- Planned, coordinated, and attended the Astronomy Club's table the first ASU Space Expo under the Space Coalation and Space Ambassadors Program. Put together educational activities, demos, and connected with other student organizations on campus.

Cub Scouts Astronomy Badge Night

- Planned, coordinated, and was the main speaker at a Cub Scouts Pack 603 astronomy badge night. Created an educational environment catered to the specific needs of the Astronomy Badge, which included educational activities, a presentation, demonstratrions, and the usage of telescopes both to view, and for the kids to focus.

EXTRA-CURRICULAR ACTIVITIES

Astronomy Club at ASU
President

- member since 2022
- Event Coordinator Officer since August 2023
- Head Event Coordinator Officer since October 2023
- President since March 2024

In charge of the entire operation and scope of the Astronomy Club at ASU, focusing on club meetings, events, and collaborations. In addition, managing a group of event coordinators and officers, giving presentations, creating club infrastructure, attending events, utilizing astronomy education skills, and telescope set up and usage skills.

SESE Undergraduate Council

- member since 2023
- Event Coordinator since April 2024

Assisting in the planning and coordinating of events the SESE undergraduate council puts on for ASU students.

Scholars of Physical Mathamatics at ASU

- member since 2023

Assisting in the setup of a new student ran club at ASU focusing on math in physics, and applying said math to create experiments.

ASU SEDS Chapter

- member since 2022

ASU Geology Club

- member since 2023

Society of Physics Students at ASU

- member since 2023

Arizona Outdoors Club

- member since 2024