# Hailey E. Nelson

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## Education

- **Astrophysics PhD Student at Arizona State University**
  **August 2025- Present**
  - Relevant Coursework

AST591*: Astrophysics (A+)* • AST598*: Origins of Solar Systems (A)*• AST598*: Science Communication (A)*• AST523*: Stars/Interstellar Medium* • AST531*: Galaxies and Cosmology I*

- **Arizona State University, Barrett the Honors College**
  **August 2021 - May 2025**
  - *Summa Cum Laude* (GPA: 3.83)
  - **Majoring in Earth and Space Exploration (Astrophysics) (BS)**
  - **Majoring in Chemistry (BS)**
  - **Majoring in French (BA)**
  - Relevant Coursework (*Classes completed with Honors credit)

Earth and Space Sequence: *SES121/123: *Earth, Solar System and Universe + Lab* (A/A+) • *SES126/128: *Exploration of the Universe + Lab* (A-/A) • SES230: *Coding for Exploration* (A+) • SES494: *Planetary Impact Processes* (A)

Astronomy Sequence: AST321: *Intro/Planetary/Stellar Astrophysics* (A) • AST322: *Intro/Galactic/Extra/Astrophys* (A+) • AST422: *Astrophysics II* (A) • AST421: *Astrophysics I* (A+)

Mathematics Sequence: MAT242: Elementary Linear Algebra (A) • MAT265: Calculus for Engineers I (A) • MAT266: *Calculus for Engineers II* (A) • MAT267: *Calculus for Engineers III* (B) • MAT 275: *Modern Differential Equations* (B)

Physics Sequence: PHY150: *Physics I* (B) • PHY 131/132: *Physics II* (A) • PHY252: *Physics III* (A+) • *PHY201: *Math Methods Physics I* (A) • PHY314: *Quantum Physics* • PHY494: *Student Leaders and Mentors* (A+)

Chemistry Sequence: CHM233/237: *General Organic Chemistry I + Lab* • CHM234/238: *General Organic Chemistry II + Lab* • CHM325/326: *Analytical Chemistry + Lab* (A/A+) • CHM 327/328: *Instrumental Analysis + Lab* (A+/A)• CHM345/348: *Physical Chemistry I + Lab* (A-/A) • CHM346/349: *Physical Chemistry II + Lab* (A+/A) • CHM453/452: *Inorganic Chemistry + Lab* (A-/A-)

Biochemistry Sequence: BCH463: *Biophysical Chemistry* (A+) • BCH494: *Science is Fun!* (A+)

French/Linguistics Sequence: FRE305: *Readings in French Literature* (A) • *FRE311: *Oral and Written Expression I* (A-) • FRE312: *Oral and Written Expression II* (A) • FRE321: *French Cultural Masterpieces I* (B) • FRE322: *French Cultural Masterpieces II* (A) • FRE325: *French Language and Culture through Film* (B) • *FRE484: *Internship* (A+/A+/A/A+) • *SLC201: *Introduction to Linguistics* (A)

Honors Sequence: *HON 498 Topic: *Thesis Stories: Honors Thesis Learning Experience* (A)

- Studied abroad with the *GIE: Mediterranean Food and Culture in Sicily (2022)
- HON498: Develop materials for supporting honors students in developing their honors projects. Involved writing and telling stories about problem-solving and innovation during the process, as it relates to individual projects, as well as how to plan for the thesis as a whole and in general. Deliverables include a verbal storytelling to be uploaded by Barrett

the Honors College to their main website, as well as interactive Q&A-style documents to be provided to students.

- BCH494: Bring education to communities around Arizona. Projects include demonstrations, activities, and tabling events. Additionally, I worked to develop content for my Honors Thesis and had it distributed to the other members of the class for use in facilitation.
- PHY494: Mentor a student twice a week on various subjects, including math, college management and organization, class selection, writing, astrophysics classes, and more.
- *FRE484: Develop lesson plans and activities to teach a class and club for middle schoolers in French at McKemy Academy of International Studies. Create a non-judgmental and open environment to encourage a well-rounded development of beginner French skills. In the Spring 2024 semester, I also provided materials for a French student who is learning English at the school.
- **Barrett Honors Thesis:** Working with Astrophysicist Dr. Patrick Young, Chemical Physicist Professor Dr. Rogelio Hernandez-Lopez, Physical Chemist Dr. Scott Sayres, nonprofit Clubes de Ciencia Mexico, and the Arizona Science Center to develop an educational outreach program that incorporates fun and engaging ways of learning science to administer to communities throughout North America. Currently working to develop lesson plans to provide to other educators to further the impact of the project. Traveled to Guanajuato, Mexico, in July 2024 to teach a class titled "Beyond Earth: Cosmic Light Odyssey," focusing on spectroscopy and astrophysics, and how they provide insight into different celestial bodies. Topics covered during the class include (but are not limited to): Stellar Evolution, Spectroscopy, Exoplanets, The Habitable Zone, Dark Matter, Dark Energy, the shape of the Universe, The Cosmic Microwave Background, The Four Fundamental Forces, Quantum Mechanics, Astrobiology, Spacecrafts and Engineering, The History and Future of Space Missions, Black Holes, Neutron Stars, and other forms of High Energy Astrophysics. Analysis was conducted on survey data collected from students regarding their interest and knowledge levels before and after the class to assess the effectiveness of the instructional methods and content. It proved the developed curriculum to be both impactful and inspirational.

❖ **Desert Vista High School**
**2017 – 2021**

- GPA = 3.98 (weighted 4.59)
- Rank 53/726

## RESEARCH

- **Patrick Young Research Group (August 2025-Present)**
    - This project will begin by determining the missing compositions for stars in the Habitable Worlds Observatory notional and secondary target lists– these are stars that are the most likely targets to have observable planets in the habitable zone. These stars are F5-K7 stars, as they could host planets that can remain in the habitable zone for billions of years. Understanding stellar composition provides insight into disk structure and the types of elements available for planet formation. We will work with high-resolution, high-signal-to-noise-ratio optical and near infrared (near-IR) spectra to fill in gaps in the literature for

mineral-forming elements (Potassium, Europium, Thorium, Phosphorous) as tracers for long-lived radionuclides, which are all possible to analyze with archival data in addition to the proposed collections of PEPSI spectra on the Large Binocular Telescope, as well as IGRINS near-IR spectra. Of the target list, approximately 90% have Carbon, Oxygen, and/or Magnesium abundances reported, but less than 20% have Potassium, and only 4% have Phosphorus. We will use standard astrophysical abundance determination software, such as MOOG, to derive chemical abundances in the target list. Next, we will use them as input to estimate the level of geological activity that might be expected at the stellar ages of the targets, and then the planetary interior structures using Exoplex software in conjunction with the known abundances of known exoplanets. This will then let us predict what an Earth to super-Earth sized planet in the habitable zone might have as a range of structures. Results from this project will include planetary mass-radius relations, the bulk density of the planet, and the types of planets.

- **The Experience: Bringing Engaging Education to All (January 2024-Present)**
    - A continuation of my Barrett Honors Thesis, I am continuing this project under Dr. Darryl Reano at Arizona State University. The goal of this project is to explore how student perceptions of science change across various implementations of inquiry-based learning. We plan to develop two sets of science curricula that can be implemented across multiple modalities (e.g., online, asynchronous, and synchronous in-person educational environments), as well as using different variations of inquiry-based learning. One set of curricula (developed by Hailey Nelson) will focus on astronomy, and the other (developed by Jessica Verpeut) will focus on neuroscience and psychology. This work will be completed with juveniles in the Lewis-Sunrise facility within the Arizona Department of Corrections, Rehabilitation, & Reentry, four middle and high school districts in Arizona, and the non-profit First Star, which is a non-profit for foster and displaced high school students, the non-profit Clubes de Ciencia Mexico, which aims at expanding access to STEM education for high schoolers and college students in Mexico, and will be expanded to work with more groups in the future.
- **Scott Sayres Research Group (December 2023- May 2025)**
    - I worked in Dr. Scott Sayres's lab at Arizona State University's School of Molecular Science. We worked to study the fragmentation of alcohol molecules in a vacuum and how the laser's polarization impacts the results. We collected graphs of the arrival times of the fragments and used code to determine the corresponding molecular mass of the fragment based on the arrival time. I primarily focused on assisting the graduate students in collecting data and then performing analysis on the results. One of my important contributions to the experiment was organizing all of the information into an easy-to-read spreadsheet, outfitted with the molecule's formula that I calculated, the mass, the mass lost, the elements lost, the bond broken, the energy needed to recover, the time to recover, the plateau size and both of their uncertainties and if there was a proton transfer. This was repeated for seven different molecules, each with up to 43 different fragments. The experiment utilized a femtosecond pump-probe laser to measure the recovery time of molecules from their excited state.

## Grants

- **NASA Space Grant Intern (August 2024-May 2025)**
    - The NASA Space Grant was awarded to support my project with Dr. Scott Sayres, utilizing mass spectrometry and femtosecond pump-probe spectroscopy to investigate how amino acids form under space-like conditions. This will provide useful insight into both the experimental lifetimes and the timescales for the peptide-bond formation steps, leading to a conclusion on whether it is a step-wise or concerted process. The project will ultimately shed light on polymerization timescales and efficiencies of peptide bond formation for each individual chain length. This will further our understanding of how life formed, given that peptides are the building blocks for proteins, an important factor in the development of life Understanding the foundation of life will allow humans to predict where else it could form in the Universe, as well as understand the early timescales of life and its development from the very beginning, filling in a crucial yet unknown period in time.

## Conference Presentations

- Mike Simmons, Fizza Afreen, April Russell, **Hailey Nelson**; Astronomy for Equity (2026). Bright Futures: A Global STEM Education Program for Unserved Communities presented at International Astronomical Union: Communicating Astronomy with the Public 2026; May 25-29, 2026; Yerevan, Armenia
- **Hailey Nelson** (2026). The Experience: Bringing Engaging Education to All presented at: Institute for Social Science Research; April 21, 2026; Tempe, Az
- **Hailey Nelson** (2026). The Experience: Bringing Engaging Education to All presented at: Future of Learning Community Fest; February 5-6, 2026; Tempe, Az
- **Hailey Nelson** (2026). The Experience: Bringing Engaging Education to All presented at: The American Astronomical Society (AAS) Conference; January 4-8th, 2026; Phoenix, Az
- **Hailey Nelson** (2025). The Experience: Bringing Engaging Education to All presented at: Barrett The Honors College Honors Symposium; April 16, 2025; Tempe, Az
- **Hailey Nelson**, Chase Rotteger, Hannah Rucker, Scott Sayres (2025). Exploring the Foundation of Life in the Universe with Ultrafast Dynamics presented at: AZ Space Grant Consortium Symposium; April 19, 2025; Tempe, Az
- **Hailey Nelson**, Chase Rotteger, Hannah Rucker, Scott Sayres (2025). Exploring the Foundation of Life in the Universe with Ultrafast Dynamics presented at: The School of Earth and Space Exploration Internal Symposium/Graduate Fair; February 20, 2025; Tempe, Az
- **Hailey Nelson**, Chase Rotteger, Hannah Rucker, Scott Sayres (2025). Exploring the Foundation of Life in the Universe with Ultrafast Dynamics presented at: The School of Molecular Sciences Graduate Fair; March 1, 2025; Tempe, Az
- **Hailey Nelson**, Chase Rotteger, Hannah Rucker, Scott Sayres (2025). Exploring the Foundation of Life in the Universe with Ultrafast Dynamics presented at: AZ Space Grant Poster Session; February 12, 2025; Tempe, Az
- **Hailey Nelson**, Chase Rotteger, Scott Sayres (2024). The Dynamics of Gas-Phase Peptide Bond Formation presented at: Arizona Bioindustry Association; September 18, 2024; Phoenix, Az

## Invited Presentations

- *Keynote speaker* at the First Star non-profit for foster and homeless youth event (January 2026)
- *Keynote speaker* at the Association for Women in Physics ASU meeting (November 2025)
- *Panelist* at Dr. Molly Simon's SES 121 Earth, Solar System, and Universe class to discuss graduate student experiences, reflections, and advice for incoming freshmen in the School of Earth and Space Exploration (November 2025)
- *Keynote speaker* at Astronomy On Tap: Valley of the Sun, Get Psyched about Psyche! (October 2025)
- *Keynote speaker* at Bioscience High School's STEM Week (October 2025)
- *Gave the keynote address* at the NASA Space Grant Alumni Night (January 2025)
- *Presented a two-hour seminar* for Feria de las Ciencias 2024 by Bachillerato Bivalente de Talentos to 110 students across four high schools in Guanajuato, Mexico, which was also broadcast across the entire state by the Department of Education of Guanajuato. Talk entitled: "Navigating Interdisciplinary Science: Pathways Between Chemistry, Astrophysics, and Beyond." Topics covered include chemistry and astrophysics research, informal education, and NASA's Psyche mission, as well as how to get involved in each topic (October 2024)
- *Keynote Speaker* at the Arizona Science Center's Girls in STEM 'Awesome Astronomy' Event, talking about the experience in STEM education and encouraging students to pursue their dream careers (2024)
- *Presenter* at the SES191: Career & Internships Discussion class to help incoming freshmen in the School of Earth and Space Exploration learn about opportunities and how to get involved in college (November 2024)
- Talk associated with the Karen Valentine Science Communication Award for the School of Earth and Space Exploration Community Conversation Event (December 2024)

## Experience

- **Crew Scientist and Analog Astronaut with Southeast Analog (February 2026-Present)**
  - Southeast Analog is a fully student-led Mars analog mission, and in August 2026, the astronauts will be locked in the Titan Ranch missile silo for 10 days to collect data and experience, as realistically as possible, a "space " mission, supported by a full mission control team. As the Crew Scientist, my primary role is the *coordination, documentation, and execution of selected research projects during the analog habitat mission*. As an analog astronaut, I gain important skills through virtual and in-person training across a wide range of relevant fields, including medicine, psychology, aeronautics, astronautics, extreme environments, scuba diving, and more.
- **Bright Futures Coordinator (January 2026- Present)**
  - I am the primary point of contact for connecting our program with communities and community representatives (currently spanning 12 countries). I work to gather information from groups on how we can improve our lessons and processes, reach broader audiences, and be more inclusive as a program. I also

coordinate the collection and release of photos, videos, and testimonials to promote the program.
    - "Bright Futures partners with national organizations in countries worldwide to share eclipse glasses and other resources for studying sunlight. Partner organizations distribute resources with simple lesson plans to schools and astronomy outreach organizations throughout their countries and provide continuing support."
- **Instructor with Clubes de Ciencia Mexico (July 2024, July 2026)**
    - 2026: Taught high school and college students about Astrophysics in a week-long course titled "*Unraveling the Mysteries of the Universe: Quantum to Cosmic*" that was independently curated, created, and presented. Topics include Comets, Asteroids, Meteorites, the Electromagnetic Spectrum, protoplanetary disks, planet formation and migration, exoplanet detection methods, exoplanet atmospheres, exoplanet habitability, gravity and relativity, dark energy, dark matter, galaxy classifications and interactions, star formation and evolution, stellar nucleosynthesis, high-energy astrophysics, space weather, and careers in science and the space sciences. Students completed various activities, including working with real data both through citizen science projects and publicly available data releases in topics such as exoplanet transits and gravitational wave detections.
    - 2024: Taught high school and college students about Astrophysics in a week-long course titled "*Beyond Earth: Cosmic Light Odyssey*" that was independently curated, created, and presented. Topics include spectroscopy, gravitational waves, black holes, neutron stars, other celestial bodies in high-energy astrophysics, exoplanets, the habitable zone, astrobiology, dark matter, dark energy, space travel, and the history and future of space missions. Activities included using exoplanet databases, participating in citizen science with real data, such as categorizing exoplanet transits and gamma-ray bursts, creating a DIY gravity well, observing the spectra of different elements using spectrum tubes, and designing their own realistic exoplanets and space missions. The students created and presented a poster on the fourth day to the general public in the city square, and a play on the sixth day at the local university for the general public.
- **Arts, Exhibits, and Archiving Assistant and ASU Psyche Inspired Art Program Intern with NASA and JPL's Mission to Psyche (March 2024-Present)**
    - *Create, manage, and maintain events and exhibits* relating to Psyche and Psyche Inspired with museums, schools, libraries, and collaborators across the United States.
    - Preserve and store artwork from the Psyche-inspired art initiative.
    - Connect with current and potential partners to exhibit works.
    - *Manage detailed archives* for 500+ Psyche-inspired works and capstone projects.
    - Provide support to Psyche capstone students and Psyche Inspired interns as needed.
    - *Engage with the public* and/or *public speaking* at the Psyche booth at public events (ex, Homecoming, Earth and Space Day, ASU Open Door, etc).
    - Assist Psyche faculty, staff, and students with administrative and events-related tasks.

- **Science Communicator and Engagement Specialist at the Arizona Science Center (February 2022-Present)**
    - Facilitate *large-scale events* and run chemical-based demonstrations for groups of over 3000 people, such as the Men's Final Four Dribble presented by Buick.
    - *Developed a new exhibit* with Science North and recorded scientific videos to be presented in the exhibit. These videos will be distributed to various Science museums across North America for the next ten years.
    - *Developing and leading* the project to revamp and catalog all current floor activities in an effort to maximize the enjoyment of guests' experiences and encourage organization throughout the different departments of the Science Center.
    - *Perform, lead, and develop* science-related demonstrations to groups of 50+ people of various ages, with topics ranging from combustion, states of matter, dissections, biology, entomology, and electricity.
    - Use and teach various technologies such as the *Van de Graaf Generator and Tesla Coils*.
    - *Develop and present 50+ minute planetarium shows* on constellations, light pollution, and the solar system.
    - *Train staff* on properly using and disposing of chemicals and dissection matter.
    - Work in the Arizona Science Center staff groups to *create new informal learning materials* and presentations.
    - *Record media and news videos* for science topics to be publicized.
    - Spent four months working closely with exotic animals ranging from medicinal leeches to sloths, and cared for each individual animal, including administering medication and training as needed.
    - *Lead and facilitate scientific activities* with small groups and families on various science topics, including leading VIP tours.
    - Selected to give *VIP tours* and private exhibit facilitation with Senator and Astronaut Mark Kelly, Mayor Kate Gallego, and Astronaut Sian Proctor.
    - *Engage families and guests* with science to provide a fulfilling and inspiring experience.

- **Student Multimedia Designer with NASA's Lunar Reconnaissance Orbiter (September 2022- October 2024)**
    - Compile images from *ShadowCam, the Lunar Reconnaissance Orbiter (LRO), and the Lunar Reconnaissance Orbiter Camera (LROC)*.
        - Create infographics, flyers, brochures, exhibits, and interactive material for the general public and those who are interested in learning more about the Moon and LRO as a whole.
        - Work with the graphic design and science team to produce complex projects.

- **Ice Trail Supervisor at Enchant Christmas (November 2022-January 2023)**
    - Supervise the ice trail for up to 12,000 guests per night, maintain the safety of the ice, and administer first aid as needed. Teach guests ice skating lessons as well as proper skate-wearing techniques. Maintain ice surface and manage skate rental activities.

- **Note Taker for the School of Earth and Space Exploration at Arizona State University**
  **(August 2021- December 2021)**
    - Take accurate, thorough, and clear notes on the lectures in SES121, Earth, Solar System, and Universe at Arizona State University to be provided to students who may need additional support or assistance. Notes were uploaded every day at the end of class in a timely manner.

- **Guest Service Representative at Ice Den Chandler**
  **(August 2019-January 2022)**
    - Teach guests of all ages about the basics of figure skating. Assist guests with proper procedures for ice skating safely. Maintain the cleanliness and safety of facilities.

- **Assistant teacher for Kids Summer Art Camp at Music Makers Workshop**
  **(July 2019)**
    - Worked with kids ages 5-13, teaching various art techniques and completing proje

## Achievements and Honors

- Recipient of the **GRFP Honorable Mention** (2026)
- Recipient of the **University Graduate Fellowship** (2026)
- Recipient of the **National Aeronautics and Space Administration Group Achievement Award** as a member of the Psyche Student Collaborations Team (2026)
- Recipient of the **Graduate College Enrichment Fellowship** (2025-2027)
- Recipient of the **Royal Society of Chemistry (RSC) Certificate of Undergraduate Excellence Award** (2024-2025)
- Recipient of the **Karin Valentine Science Communication Award** (2024)
    - Award-associated presentation at the SESE Community Conversation Event
- Member of the ASU Chapter of **Phi Beta Kappa Honors Society** (2024- Present)
- Member of the **Society of Physics Students** (2024- Present)
- Member of **Sigma Pi Sigma**: The Physics and Astrophysics Honors Society (2024-Present)
- Recipient of the **School of Molecular Sciences Scholarship** (2024-2025)
- Recipient of **The Mensch Prize for Barrett Students for Physical Sciences** (2024-2025)
- Member of the **Association for Women in Science** (AWIS) (2023-present)
- Arizona State University **Presidential Scholarship Recipient** (2021-2025)
- Recipient of Arizona State University's College of Liberal Arts and Sciences Dean's List ( repeated semesters)
- Seal of Biliteracy Award in the French Language (2021)
- Member of the National Science Honors Society (2021)
- Member of the National Honor Society (2019-2021)
- Member of the National Society of High School Scholars (2017-2021)
- Member of the National French Honor Society (2020-2021)
- Formal Certificate for Adobe Illustrator (2017-2021)
- Accepted to Brown Pre-College Program (unable to attend because of Covid-19) (2020)

- Presidential Award for Outstanding Academic Excellence for graduating with a 4.0 GPA from Altadena Middle School (2017)
- Member of National Junior Honor Society (2016-2017)

## Activities and Clubs

- Member of the planning committee for the Arizona Astrobiology Symposium (January 2025- Present)
- Co-investigator for the School of Earth and Space Exploration's Prison Education Program (2025-present)
- Co-founder for the Open House Club at the School of Earth and Space Exploration at Arizona State University (2025-Present)
- Awarded and selected to attend a course for Introductory Pressure Suit/Space Suit Operations Course with BioSphere 2 (2025)
- Member of the School of Earth and Space Exploration's Outreach and Public Programs team, developing content for the Magic Planet, a 3D planet model allowing users to explore the solar system (2023-2025)
- Arizona State University Astronomy Club (2022-2025)
- Students for the Exploration and Development of Space, Arizona State University (2022-2025)
- Arizona State University French Club (2021-present)
- Team Member of the Ice Denettes Synchro Figure Skating Synergy Team (Open Juvenile) (2021-2023)
    - Won 3rd place, Synchronized Fall Classic (2021)
    - First team from Arizona to compete at Sectionals in Michigan (2022)
    - Won 3rd place, Midwestern and Pacific Coast Synchronized Skating Sectional Championships (2022)
    - Won 5th place, Midwestern and Pacific Coast Synchronized Skating Sectional Championships (2023)
- Member of the Desert Ice Skating Club of Arizona (2017- Present)
- Member of US Figure Skating's Skating Program at Ice Den Chandler (2017-2021)
- Team Member of the Ice Denettes Synchro Skating Harmony Team (Pre-Juvenile) (2019-2020)
    - Won 2nd place, Synchronized Fall Classic (2019)
    - Won 1st place, Synchronized California State Winter Games (2020)
- Peer Tutor for Desert Vista High School Peer Tutoring Club
    - Tutor middle/high school students in AP/Honors Chem, Gen/Honors Chem+Phys, Gen/Honors Algebra 1+2, Honors Geometry, Honors Bio, Gen/Honors French 1-8
- Captain of the Ice Denettes Synchro Skating Harmony Team (Pre-Juvenile) (2019-2020)
- Completed Rhode Island School of Design Class for Game Design in Unity (2020)
- Leader of Desert Vista Peer Tutoring "Cram for Exams" sessions (2020-2021)
- Link Crew Commissioner for Desert Vista Link Crew (2020) and member (2019-2021)
- Project manager for the Online Schooling Tips+Tricks Presentation run by Link Crew (2020)
- Piano student at Music Maker Workshops (2017-2021)
- President of Desert Vista Art Club (2019-2020)
- Arizona State University's Summer Art Camp (2018 and 2019)

- Ice Den Synchro Summer Camp (Summer 2019)
- Ice Den Synchro Pre-Season (Summer 2019)

## Service Activities

- Taught a full day of sixth and seventh graders at McKemy Academy of International Studies, discussing astrophysical topics of their interest, including, but not limited to, dark matter, dark energy, black holes, and more (January 2026)
- Guest instructor at the YMCA Summer Camp about acid-base chemistry (July 2025)
- Volunteer at STEM Night at Broadmoor Elementary School (2024)
- Volunteer for the Empty Bowls program, which supports local food banks and homeless shelters (2024)
- Taught a class with Astronaut and Senator Mark Kelly (2023)
    - Activities included facilitating space-related activities for local elementary classes
- Assistant in various science-based magic shows with Jason Latimer (2023)
- Volunteer judge for the Broadmoor Elementary School Science Fair (2023, 2024)
- Led and facilitated free science activities for families at the Tempe Public Library (2022)
- Led an intermediate Chemistry Patch workshop for Girl Scout Cadettes (2022, 2024)
- Lead a beginner Chemistry Patch workshop for a troop of Girl Scout Juniors (2022, 2024)
- Leader of the Brain, Neuron, and Microscope Booths, ASU Brain Fair for Children, and ASU Open Door Community Science Outreach Events (Annually 2015-2020)
    - Led brain dissection and other booths, taught kids to make brain and neuron models, taught kids to use microscopes, taught about brain areas and functions
- 5K Charity Run for Cancer Research
    - Volunteered for the welcome and administration booth
- Teacher's Aid for French Classes at Desert Vista High School (French 1-2/3-4, Honors French 3-4)
- Painted murals throughout the school as a Member and Co-President of the Desert Vista Art Club (2017-2019)
- Designed and Presented to Executive Leadership, 2017 Altadena Courtyard Renovation Project