NASA's Neurodiversity Network

Internships and Codesign with Autistic Learners

n3.sonoma.edu

Prof. Lynn Cominsky
Sonoma State University
Autism Self-Advocacy Movement

“Nothing for us or about us without us”

- Autistic people should be included in the development of autism supports
- We are co-designing and co-redeveloping existing NASA resources with autistic learners and adults.
- The internship program is also being developed with input from autistic youth and young adults.
N3 Program Goals, 2021-2025

Providing a pathway to NASA participation and STEM employment for neurodiverse learners, with a focus on those on the autism spectrum.

- Enabling STEM education for a segment of the population that is significantly underserved by co-redeveloping existing NASA resources with autistic learners.
- Improving scientific literacy for this underserved population by providing authentic NASA experiences
- Providing internships, mentored by NASA Subject Matter Experts, to selected neurodiverse learners.
N3 Codesign projects
High School Co-Design Process

Northern California Partners

- Anova Center for Education (anovaeducation.org)
- Orion Academy (orionacademy.org)
- Oak Hill (theoakhillschool.org)
- Stanbridge Academy (stanbridgeacademy.org)
- Autistry Studios (autistrystudios.com)
Initial resources targeted for co-redevelopment

2021
Photometry activities on AfH were developed as part of NASA’s Universe of Learning in an informal learning pathway that starts with image analysis using MicroObservatory.

2022
Model rocketry and payload development program for URM community college students.

2023
Heliophysics activities that include building a sun spotter and getting ready to observe eclipses in 2023 (annular) and 2024 (total) or partials.

Credit: nationaleclipse.com/maps/map_2023_2024.html
2021: Remote Astronomy

afh.sonoma.edu

Discover activities
Exoplanet Finder Game

We need your help, Astronomer! To keep humanity safe, we need to find extraterrestrials before they find us. This means first finding exoplanets where they might live. Analyze the patterns in the light from nearby stars to determine which have transiting exoplanets but do it quickly, before it’s too late!
Build a light curve using JS9-4L
We have revised the rocketry and payload build guide from Rising Data based on the experiences of two of last summer’s interns.

We have created a new series of videos that show how to build the payload.

We created a new mini-guide that teaches how to cut and strip wires, solder electronic parts onto circuit boards (building a Jiggy Bot) and the use of a digital multi-meter.
Photos from NYSCI Middle School Rocket Camp 8/8-12:
1. Student soldering Arduino
2. Tony Alcocer helps with launch preparations
3. Rocketeer with rocket on launch stand
4. Rocketeers and NYSCI staff posing with their rockets prior to launch
Photos from 9/9/2022
Rocket launches with Orion and Stanbridge Academies:
1) Tony Alcocer and Lynn Cominsky fix a fin
2) Rockets ready to go to the pad
3) Students putting rockets on launch pad
Photos from Rocket launches with Orion and Stanbridge Academies:

4) Rocket launching

5) Students spotting rockets and payloads reentering

6) Stanbridge teacher and student with recovered rocket and payload
Lesson 1 – Student Learning Objectives

- Students will read about strange occurrences around the world.
- Students will organize the information from these occurrences.
- Students will investigate the forces and events involved in the mysterious phenomena and how those forces might interact to cause the mystery.
- Students will create a claim about what is causing the occurrences based on the evidence they have available to them.
Lesson 2 – Student Learning Objectives

● Students recall the different components of a sunspotter
● Students describe how to use a sunspotter to observe sunspots over time
● Students sketch a design or take a photograph for making sunspot observations each day
● Students plan how to implement their design
● Students assemble their sunspot detector area
● Students evaluate their peers’ sunspot detector area designs
● Students observe and collect data on sunspots over time
● Students present their sunspot observations

Students at Oak Hill invented several methods to support the viewing of the Sun using the Sun Spotter which they put together from parts provided by N3 project.

Using box to hold the sun Spotter
Inside the box it is easier to see the Sun

Original design with tripod
Tips for Supporting Autistic Learners

- Provide a visual schedule
- Prime students for what’s to come so they understand the context and process for their learning
- Embed interests
- Establish clear expectations
- Provide supportive visuals and/or other reference materials
N3 Internship Programs
Internship Program Details

- Summer interns complete at least 100 hours (one month of full-time work) between June 1 and August 15, 2024. Mentors meet with interns weekly.
- All internships will be completed virtually.
- Interns are paid a $1,000 stipend and mentors are paid a $2,000 stipend.
- All interns are paired with a Subject Matter Expert (SME) from NASA’s Science Mission Directorate with expertise in at least one of the following areas: Astrobiology, Astrophysics, Earth and Environmental Science, Heliophysics and Planetary science, Space Instrumentation.
- Application for 2024 internships is now open.
- Application for 2024 mentors is now open.

n3.sonoma.edu/internships/about/
Internships

● Three years of intern projects:
  ○ Astrophysics (23)
  ○ Heliophysics (4)
  ○ Planetary Science (8)
  ○ Earth Science (9)
  ○ Instrument/Hardware (8)

● Astronomy projects often used GORT, SSU’s 14-inch NASA-funded robotic telescope but also analyzed data from Fermi and other NASA missions.

● Many interns are python experts and have helped mentors translate code from IDL (for example).
NASA’s Neurodiversity Network Summer Internship

NASA’s Neurodiversity Network (N3) is looking for summer interns to work on projects with NASA scientists. The goal of the N3 program is to provide experiences for neurodiverse students, specifically those who identify as autistic, that will spark their interest in careers in STEM (Science, Technology, Engineering and Mathematics).

100 hours of work between June 1 to September 1, 2024

Go to our website n3.sonoma.edu/internship/about for more information and to submit your application due by March 8, 2024 at 11:59 pm PT

Details:
All interns will be paired with a Subject Matter Expert (SME) from NASA’s network. The work schedule will be mutually agreed upon by the intern and the SME. Internships will be completed remotely during Summer 2024 and N3 interns will receive a $1,000 stipend upon completion of their internship.

Eligibility:
Students must submit an online application and a teacher recommendation letter for full consideration. Visit our website for complete instructions.
Current high school students 16 years of age or older who identify as autistic and have completed pre-calculus and at least two years of physical science courses are eligible.
NASA Needs You!

NASA’s Neurodiversity Network (N3) is looking for NASA Scientists and Engineers to serve as mentors for our 2024 Summer Interns. The goal of the N3 program is to provide experiences for neurodiverse high school students, specifically those on the autism spectrum, that will spark their interest in careers in STEM.

Get involved!
For more information about N3, visit:

n3.sonoma.edu

or email
lynnc@universe.sonoma.edu

Now in its fourth year, the N3 project selects a group of at least 20 interns to work on a summer research project that aligns with NASA’s Science Mission Directorate. Based on location, internships can be hosted either virtually or in person. Interns are required to work the equivalent of 160 hours from late May to early September, depending on their school schedule. Participating mentors will receive training on working with autistic high school students from the N3 team and dedicated support throughout the internship period. Mentors will also participate in brief program evaluation activities and receive a $2000 stipend for their time.

Interested?
Take a look at our internship projects from Summer 2023

n3.sonoma.edu/internships/about
Ways to connect with N3!

- HS students: apply for the N3 internship program! Applications for 2024 are now open: n3.sonoma.edu/internship/about/
- Mentors: write to lynnc@universe.Sonoma.edu for more info or scan this QR code

- Speak at a monthly meeting about your science! If interested write to lynnc@universe.Sonoma.edu
- Check out Astronomy from Home Discover activities: afh.sonoma.edu
- Watch our videos: n3.sonoma.edu/media/videos-and-talks/
Questions?

Prof. Lynn Cominsky, Sonoma State University
lynnnc@universe.sonoma.edu