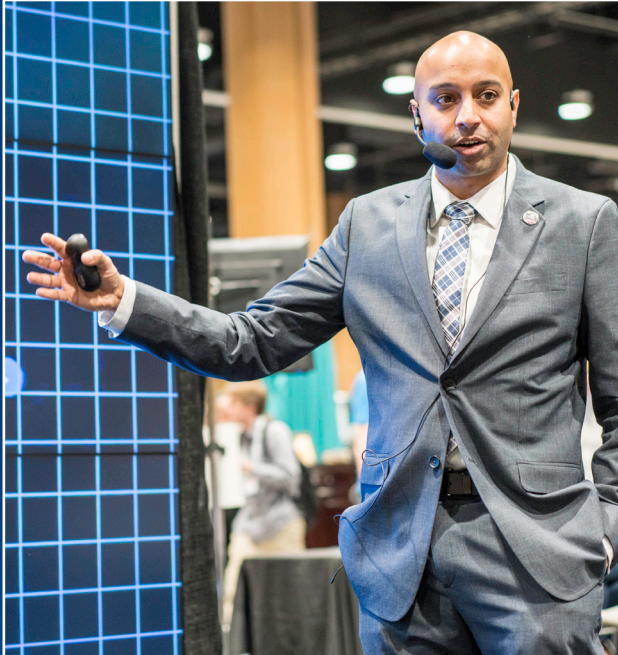


U.S. STEM Training and Astronomy



Sustaining a strong Science, Technology, Engineering and Math (STEM) workforce is essential for US future economic growth.

Economic Engine

STEM jobs are the engine of the American economy, supporting **2** out of every **3** US jobs and 69% of the nation's GDP. Astronomy provides a critical pathway to the development of a variety of STEM careers.

*Jason Kalirai, astrophysicist and the Mission Area Executive for Civil Space at the Johns Hopkins University Applied Physics Laboratory.
Credit: STScI/AURA*



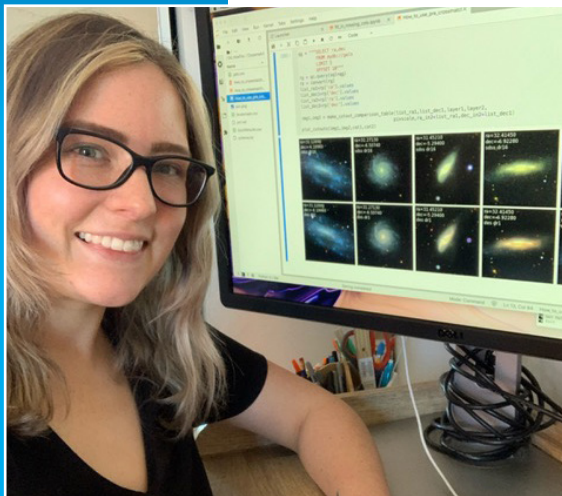
*Students look through spectrosopes at Onizuka Day at University of Hawaii at Hilo
Credit: Gemini Observatory/NOIRLab/NSF/AURA*

Astronomy is one of the first science topics to capture children's imaginations as they learn about the Moon and Solar System. This early interest can lead to the study of other STEM subjects including math, physics, chemistry and biology.

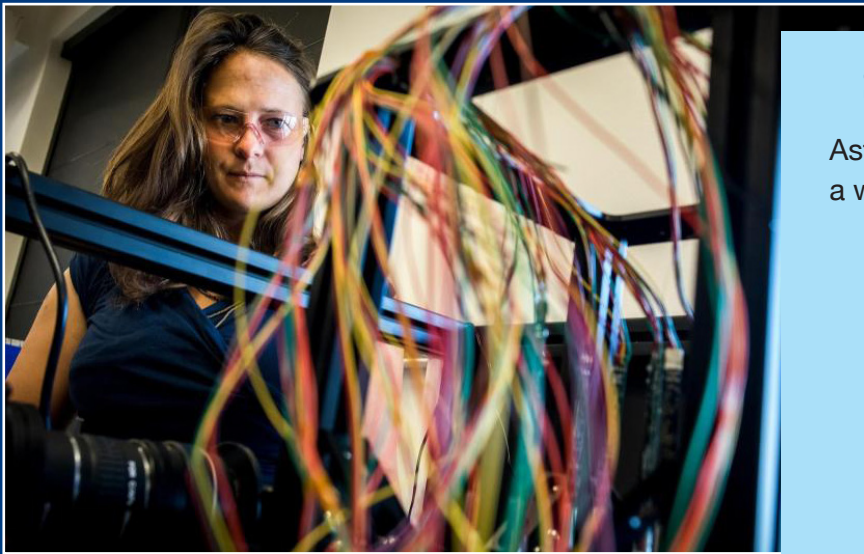
Universities find that astronomy courses provide students with training in problem solving that can translate to numerous career paths outside of astronomy and offer a variety of employment options.

Astronomy education can hold the key to a lifetime of achievement in a STEM career.

The study of astronomy now includes analysis of big data sets, computational modeling, statistical analysis, data visualization, instrumentation and optical design, and more recently artificial intelligence and machine learning. Astronomy graduates are well qualified for a wide variety of positions in many fields.



*Alice Jacques, Data Analyst at NSF's NOIRLab.
Credit: AURA*

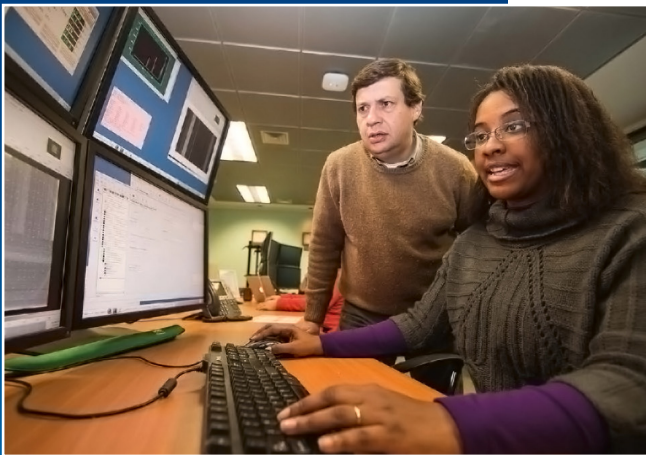


STEM Opportunities

Astronomy students find employment in a wide range of careers:

- Computing and IT
- Data analysis
- Artificial intelligence
- Machine learning
- Medical research
- Finance and investing
- Education

Parker Fagrelus, Assistant Scientist, NSF's NOIRLab Credit: Paul Mueller/Lawrence Berkeley National Lab/KPNO/NOIRLab/NSF/AURA



Raquel Nacemento, Astronomy Intern, at the Gemini South control room. International Gemini Observatory/NOIRLab/NSF/AURA/M. Paredes

Workforce Development

Astronomy is powering our STEM workforce and keeping STEM jobs here in the US.

Historically, the largest non-academic employment sectors for astronomy PhDs have been aerospace companies, NASA centers and observatories, DOE national laboratories, and NSF-funded research and development centers. Today, however, many astronomy majors find employment outside of astronomy in computing and data analysis, artificial intelligence and machine learning. Other areas include education, medical fields, consulting firms, and even Wall Street firms that utilize quantitative investment techniques.

In addition to jobs in the field of astronomy, astronomical facilities and advanced space missions offer a myriad of other STEM positions such as engineering, optics, data management, information technology, communication, outreach and education.

The study and practice of astronomy contributes to the US high-tech economy and encourages its development across a broad spectrum of fields beyond traditional activities in astronomy.

AMERICA'S STEM ECONOMY

STEM supports...



2 out of 3
U.S. workers

Sixty-seven percent of U.S. jobs and 69% of the nation's GDP (gross domestic product) are supported by STEM, with direct STEM jobs accounting for 33% of the economy. <https://eos.org/agu-news/stem-supports-67-of-u-s-jobs>



Association of Universities for Research in Astronomy,
1331 Pennsylvania Ave. NW, Suite 1475 Washington, DC 20004
aura-astronomy.org