COLLEGE OF Science & Engineering
UNIVERSITY OF MINNESOTA

CSE Career Center
105 Lind Hall • 612-624-4090 • csecareer@umn.edu
cse.umn.edu/career

What can I do with a major in… Astrophysics

Astronomy is sometimes considered a subfield of physics. Astrophysics is a specialization in the field of astronomy. Astronomers use the principles of physics and mathematics to learn about the fundamental nature of the universe, including the sun, moon, planets, stars, and galaxies. They also apply their knowledge to solve problems in navigation, space flight, and satellite communications, and to develop the instrumentation and techniques used to observe and collect astronomical data.

Almost all astronomers do research. Some are theoreticians, working on the laws governing the structure and evolution of astronomical objects. Others analyze large quantities of data gathered by observatories and satellites and write scientific papers or reports on their findings. Some astronomers operate large space-based or ground-based telescopes, usually as part of a team. A small number of astronomers work in museums housing planetariums. These astronomers develop and revise programs presented to the public and may direct planetarium operations.

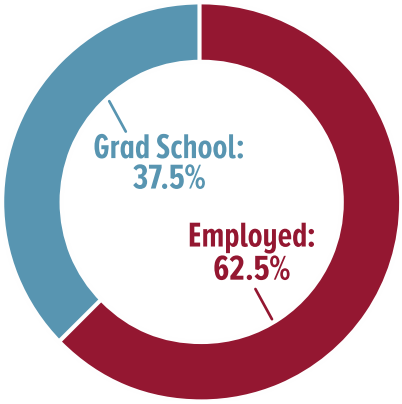
Most jobs in basic research usually require a doctoral degree. It is common for astronomers to spend three to six years in postdoctoral positions before finding a steady position in a university department, national facility, or government lab. Those with master's degrees qualify for some jobs in applied research and development. Those with bachelor's degrees often qualify as research assistants or for other physics-related occupations, such as technicians. Graduates typically work in a wide range of capacities, including business and private industry, education, national observatories, government laboratories, and other related jobs (planetariums, museums, public service, and science journalism).

CSE Career Outcomes

Average Starting Salary:

$ **

Post-graduation Outcomes:*



**cohort size too small to report data due to privacy regulations

INDUSTRIES

- Government
- Institutes
- Military
- Museums
- Planetariums
- Research and development
- Teaching
- Universities

EMPLOYERS

- 3M
- Honeywell
- Intel Corporation
- Lawrence Livermore National Lab
- Lincoln Laboratory
- Los Alamos National Laboratory
- MIT
- NASA
- Orbital ATK
- SAIC
- Smithsonian Astrophysical Observatory
- Space Telescope Science Institute
- The Aerospace Corporation
- UMN Polar Geospatial Center
- UMN Observational Cosmology Group

TECHNICAL SKILLS

- C, C++
- Excel
- Mathematica
- MATLAB
- Microsoft Office
- MotionLab Software

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POSSIBLE POSITIONS

- **Astronomer**: Solves problems in navigation, space flight, and satellite communications and develops instrumentation and techniques used to observe and collect astronomical data.
- **Data analyst**: Analyzes problems and comes up with creative solutions.
- **Instrument designer**: Uses CAD programming for satellite and rocket projects.
- **Physicist**: Conducts research into the phases of physical phenomena, develops theories and laws on the basis of observation and experiments, and devises methods to apply laws and theories to industry and other fields.
- **Professor/teacher**: Develops and teaches astronomy/astrophysics curriculum, which includes scientific experiments.
- **Research scientist**: Conducts experiments, analyzes findings, operates necessary equipment, develops and tests theories.
- **Support astronomer**: Provides instruction, assistance, and scientific guidance to observers on the use of the observatory's telescopes and instruments.
- **Telescope engineer**: Assists with the design, development, fabrication, and commissioning of telescopes.

***Some of these positions may require an advanced degree.*

GET INVOLVED

- Astronomy Club
- National Society of Black Engineers
- Science and Engineering Student Board
- Society of Asian Scientists and Engineers
- Society of Hispanic Professional Engineers
- Society of Physics Students
- Society of Women Engineers
- Solar Vehicle Project
- Tau Beta Pi
- TeslaWorks

RESOURCES

- American Astronomical Society: aas.org
- American Physical Society: aps.org
- Astronomy: astronomy.com
- Department of Astrophysics: astro.umn.edu
- International Astronomical Union: iau.org
- NASA: nasa.gov
- National Optical Astronomy Observatory: noao.edu
- Physics & Astronomy Online: physlink.com
- Physics Today: physlink.com
- Space Careers: space-careers.com
- The Astronomy Net: astronomy.net

See the Major Binders available in the CSE Career Center's Resource Center for more information about this major and career.
**Salary and Career Outcomes gathered from the 2016-2017 CSE Graduation Survey*
Post-graduation outcomes reflect the percentage of students who were employed full-time in their field or were enrolled in a graduate program.
For detailed starting salary information see the CSE Career Center website.