

### ASTRONOMY...NOW WHAT?

Check out the American Astronomical Society and the American Institute of Physics for more information on careers in astronomy.

<b>Quick Facts: Astronomers</b>	
<b>2020 Median Pay</b>	\$ 128,950 per year
<b>Entry-Level Education</b>	Doctoral or professional degree
<b>Work Experience in a Related Occupation</b>	None
<b>On-the-job Training</b>	None
<b>Number of Jobs, 2019</b>	20,500
<b>Job Outlook, 2019-29</b>	7% (faster than average)
<b>Employment Change, 2019-29</b>	1,400

*[Found on the Occupational Outlook Handbook  
<https://www.bls.gov/ooh/life-physical-and-social-science/physicists-and-astronomers.htm>]*

A Ph.D. in physics, astronomy, or a related field is needed for most jobs, especially those in basic research or in independent research in industry. A typical Ph.D. program takes about five to seven years to complete. After receiving a Ph.D. in physics or astronomy, many begin their careers in a temporary postdoctoral research position, which typically lasts 2 to 3 years.

#### **WHAT ELSE CAN YOU DO WITH AN ASTRONOMY OR PHYSICS BACHELORS DEGREE?**

- Technician or research assistant in fields of astronomy, engineering, and computer science
- Support personnel at observatories (for example NASA centers such as the Space Telescope Science Institute)
- Medical doctor (the science you take anyway make it fairly simple to fulfill pre-med requirements)
- Lawyer (astronomy majors understand complicated arguments from principle)
- Business (an astronomy background will make the quantitative parts of business school curriculum pretty straightforward)

#### **WHAT DOES AN ASTRONOMER DO?**

Astronomers typically do the following:

- Develop scientific theories and models to explain the properties of the natural world, such as atom formation
- Plan and conduct scientific experiments and studies to test theories and discover properties of matter and energy
- Write proposals and apply for research grants
- Do complex mathematical calculations to analyze physical and astronomical data, such as finding new planets in distant solar systems
- Design scientific equipment, such as telescopes and lasers
- Develop computer software to analyze and model data

- Write scientific papers that may be published in scholarly journals
- Present research findings at scientific conferences and lectures

Astronomers study the motions, compositions, origins, and other properties of planets, stars, galaxies and other celestial bodies. They use ground-based equipment, such as radio and optical telescopes, and space-based equipment, such as the Hubble Space Telescope, to make observations and collect data. Some astronomers focus their research on objects in our own solar system, such as the sun or planets, while others study distant stars, galaxies, and phenomena such as neutron stars and black holes.

If you are considering graduate school, be sure to find research opportunities as part of your undergraduate work.

### Career Planning Resources & Websites

UMass Amherst CNS Career Center	<a href="http://www.cns.umass.edu/careers">www.cns.umass.edu/careers</a>
UMass Handshake Database of Internships & Jobs	<a href="https://umass.joinhandshake.com/">https://umass.joinhandshake.com/</a>
FOCUS2 Career and Education Planning	<a href="http://www.umass.edu/careers/planning">www.umass.edu/careers/planning</a> for sign-in button
CNS Completed Research/Internships database	<a href="https://secure.cns.umass.edu/webforms/internships">https://secure.cns.umass.edu/webforms/internships</a>
What Can I Do With This Major?	<a href="https://www.umass.edu/careers/planning">https://www.umass.edu/careers/planning</a>

*(Click on "What Can I do with this Major" icon on the right-hand column.)*

### Astronomy Job Search Resources

UMass Handshake Database	<a href="https://umass.joinhandshake.com/">https://umass.joinhandshake.com/</a>
National Science Foundation Research Experiences for Undergraduates	<a href="https://www.nsf.gov/crssprgm/reu/list_result.jsp?unitid=5045">https://www.nsf.gov/crssprgm/reu/list_result.jsp?unitid=5045</a>
Internships & Summer Jobs	<a href="https://aas.org/careers/internships-summer-jobs">https://aas.org/careers/internships-summer-jobs</a>
Careers in Astronomy	<a href="https://aas.org/learn/careers-astronomy">https://aas.org/learn/careers-astronomy</a>
Astronomy Jobs	<a href="https://jobregister.aas.org/jobs/current">https://jobregister.aas.org/jobs/current</a>
Space Jobs and CV Posting	<a href="https://www.space-careers.com/jobsearch.html">https://www.space-careers.com/jobsearch.html</a>
Space Jobs in Europe	<a href="https://www.hespace.com/vacancies">https://www.hespace.com/vacancies</a>
Astronomy/Astrophysics Jobs	<a href="https://jobs.sciencecareers.org/jobs/astronomy-astrophysics/#browsing">https://jobs.sciencecareers.org/jobs/astronomy-astrophysics/#browsing</a>
Jobs in Optics and Photonics	<a href="https://spiecareercenter.org/">https://spiecareercenter.org/</a>
Top 50 Consulting Firms	<a href="http://www.stormscape.com/inspiration/website-lists/consulting-firms/">http://www.stormscape.com/inspiration/website-lists/consulting-firms/</a>
EU Jobs in Sci Lang Translation	<a href="https://epso.europa.eu/apply/job-offers_en">https://epso.europa.eu/apply/job-offers_en</a>

### For Graduate Students Only

European Space Agency	<a href="http://www.esa.int/About_Us/Careers_at_ESA">http://www.esa.int/About_Us/Careers_at_ESA</a>
Eur Astro Society Non-academic Jobs	<a href="http://eas.unige.ch/jobs.jsp">http://eas.unige.ch/jobs.jsp</a>
European Patent Office Examiner Jobs	<a href="http://www.epo.org/about-us/jobs/vacancies.html">http://www.epo.org/about-us/jobs/vacancies.html</a>
Astronomy/Astrophysics Jobs in Higher Ed	<a href="https://www.higheredjobs.com/faculty/search.cfm?JobCat=98">https://www.higheredjobs.com/faculty/search.cfm?JobCat=98</a>
European Federation of Organisations for Medical Physics	<a href="http://www.efomp.org/index.php/component/content/article/83-staticcontent/123-job-opportunities">http://www.efomp.org/index.php/component/content/article/83-staticcontent/123-job-opportunities</a>

## IMPORTANT TRANSFERABLE QUALITIES TO INCLUDE ON YOUR RESUME (WHETHER YOU'RE PURSUING A JOB IN ASTRONOMY OR NOT)

**Advanced mathematical skills.** Astronomers perform complex calculations involving calculus, geometry, algebra, and other areas of mathematics. They must be able to express their research in mathematical terms.

**Analytical skills.** Astronomers need to be able to carry out scientific experiments and studies. They must be precise and accurate in their analysis because errors could invalidate their research.

**Critical-thinking skills.** Astronomers must carefully evaluate their own work and the work of others. They must determine whether results and conclusions are based on sound science.

**Interpersonal skills.** Astronomers must collaborate extensively with others—in both academic and industrial research contexts. They need to be able to work well with others towards a common goal.

**Problem-solving skills.** Astronomers use scientific observation and analysis to solve complex scientific questions.

**Speaking skills.** Astronomers present their research at scientific conferences, to the public, or to company management and other employees.

**Writing skills.** Astronomers write reports that may be published in scientific journals. They also write proposals for research funding.

*Some information taken from Occupational Outlook Handbook and Dartmouth College Department of Physics and Astronomy*

### **What Do Employers Look For? (NACE 2020 Job Outlook for Students)**

