Astronomy

FROM STUDY TO SKILLS

All academic programs offered at the UM help students develop valuable transferable skills. Astronomy is a research field oriented towards the study of the fundamental nature of the universe, its origin and evolution, and the physical processes that take place in it.

As an astronomy student you will develop a wide range of skills — from research skills specific to astrophysical investigation to technical and communication skills.

**Related fields include** Physics, Mathematics, Statistics, and Informatics.

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**SKILLS AND ABILITIES**

<table>
<thead>
<tr>
<th>Investigative Skills</th>
<th>Communication Skills</th>
<th>Computational/ Mathematical Skills</th>
<th>Technical Skills</th>
</tr>
</thead>
<tbody>
<tr>
<td>Defining a research problem</td>
<td>Developing and writing research proposals</td>
<td>Measuring distances/sizes/relationships</td>
<td>Designing and using specialized equipment</td>
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<tr>
<td>Developing a research model</td>
<td>Reviewing astronomy literature</td>
<td>Performing calculations</td>
<td>Identifying and classifying materials/specimens</td>
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<tr>
<td>Establishing hypotheses</td>
<td>Summarizing research findings</td>
<td>Mathematical modeling</td>
<td>Recording and interpreting results</td>
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<tr>
<td>Gathering/analyzing data</td>
<td>Informing/explaining/instructing</td>
<td>Maintaining records</td>
<td>Recording and analyzing data</td>
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<tr>
<td>Evaluating ideas</td>
<td>Preparing technical reports</td>
<td>Utilizing mathematical formulas</td>
<td>Establishing and controlling experimental designs</td>
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<tr>
<td>Seeing relationships among factors</td>
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<td>Mathematical modeling</td>
<td>Designing and using computer simulations</td>
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<td>Drawing meaningful conclusions</td>
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<td>Using scientific instruments</td>
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BUILDING YOUR SKILLS OUTSIDE THE CLASSROOM

Employers seek out individuals who can demonstrate excellent verbal and written communication skills, teamwork and interpersonal skills, initiative, and a strong work ethic. Student organizations and campus employment offer valuable opportunities to add to the skills you are developing in your classes. Most concentrations sponsor specific student groups like an undergraduate organization or an honor society. Other options include study abroad, off-campus employment, or volunteering in the community. Finally, a summer internship may be the best way of all to test out a career field and develop marketable skills.
FROM SKILLS TO CAREER

The skills you will gain as an Astronomy concentrator will prepare you to succeed in a number of fields. In addition to preparing for a research career, Astronomy concentrators have discovered opportunities in a wide range of occupations; the list below was compiled from UM graduates and from national data. In addition, Astronomy concentrators may choose to continue their education in graduate or professional school.

Investigative Skills
Research scientist
Optical design specialist
Particle physicist
Information specialist
Flight management analysts
Atmospheric space scientist
Biochemist
Biophysicist

Communication Skills
Educational TV advisor
K-12/college teacher
Planetarium guide/lecturer
Special librarian
Museum exhibit planner
Technical writer
Webpage writer
Science journalist
Sales, technical equipment

Computational/Mathematical Skills
Computer programmer
Mathematical technician
Cartographer
Website designer/administrator
Community manager
System support representative
Database analyst

Technical Skills
Telescope operator
Instrument maker
Photographer
Military officer/intelligence
Navigation equipment specialist
Special effects artist

= Green Jobs
= Further Study Required

For more career information, see O*Net at http://online.onetcenter.org/

CONCENTRATION REQUIREMENTS

Prerequisites:
Mathematics 115, 116, 215, 216
Physics 140/141, 240/241, 340/341
Astronomy 160 or other 100 level survey class

General Requirements:
ASTRO 361, 399, 402, 404, 429, plus a 400 level elective
Mathematics 450 or 451
Physics 390, 401, 405, 453
One of MATH 404, 450, 556, or Physics 451

NEXT STEPS/RESOURCES

To begin connecting to professionals in fields that interest you, create your own LinkedIn account:
www.careercenter.umich.edu/students/networking/linkedin_intro.html

To identify internships or job opportunities, visit Career Center Connector: www.careercenter.umich.edu/c3student/

Maize Pages list hundreds of organizations for students to get involved in: http://studentorgs.umich.edu/maize

On-campus jobs (work-study and non work-study jobs) are listed at:
https://studentemployment.umich.edu/JobX_Home.aspx

 Volunteer Connection lists volunteer opportunities in local organizations: http://volunteer-connection.umich.edu/

The Career Center
3200 Student Activities Building
734-764-7460
www.careercenter.umich.edu
www.facebook.com/careercenter.umich
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