Astronomy, Minor

The Astronomy Minor is intended for students who are interested in learning about modern astronomy and astrophysics. Students may have the opportunity to participate in undergraduate research with physics department faculty members.

Minor in Astronomy

**NON-PHYSICS MAJORS:** the minor in astronomy requires one introductory physics sequence (8 credit hours) and four required physics courses (12 credit hours) for a total of 20 credit hours as listed below:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHYS 1001 &amp; PHYS 1002</td>
<td>General Physics 1 and General Physics 2</td>
<td>8</td>
</tr>
<tr>
<td>PHYS 1003 &amp; PHYS 1004</td>
<td>General Physics with Introductory Calculus 1 and General Physics with Introductory Calculus 2</td>
<td></td>
</tr>
<tr>
<td>PHYS 1013 &amp; PHYS 1014</td>
<td>Classical and Modern Physics with Calculus 1 and Classical and Modern Physics with Calculus 2</td>
<td></td>
</tr>
</tbody>
</table>

Required Courses:
- PHYS 1008: Astronomy and Space Physics
- PHYS 2400: The Microscopic World
- PHYS 3021: Introduction to Theoretical Astrophysics
- PHYS 3022: Introduction to Observational Astronomy

Total Credit Hours: 20

**Note:**
- Students who complete PHYS 1001 General Physics 1 and PHYS 1002 General Physics 2 must take the math requisites MATH 1450 Calculus 1, MATH 1455 Calculus 2, and MATH 2440 Calculus 3 in order to meet the mathematics level of PHYS 2400 The Microscopic World, PHYS 3021 Introduction to Theoretical Astrophysics, and PHYS 3022 Introduction to Observational Astronomy.

**PHYSICS MAJORS:** the minor in astronomy requires the following, taken under the guidance of one of our astronomy/astrophysics faculty with a topic being in the realm of astronomy or astrophysics. **Note:** If the PHYS 4931 Topics in Contemporary Physics course is used for the astronomy minor requirement, it may not then be used for a physics major elective course requirement. The astronomy minor for a physics major requires a total of 12 credit hours beyond the physics major requirements. The required introductory physics sequence is completed as part of the physics major requirements.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHYS 1001 &amp; PHYS 1002</td>
<td>General Physics 1 and General Physics 2</td>
<td>8</td>
</tr>
<tr>
<td>PHYS 1003 &amp; PHYS 1004</td>
<td>General Physics with Introductory Calculus 1 and General Physics with Introductory Calculus 2</td>
<td></td>
</tr>
<tr>
<td>PHYS 1013 &amp; PHYS 1014</td>
<td>Classical and Modern Physics with Calculus 1 and Classical and Modern Physics with Calculus 2</td>
<td></td>
</tr>
</tbody>
</table>

Required Courses:
- PHYS 1008: Astronomy and Space Physics
- PHYS 3021: Introduction to Theoretical Astrophysics
- PHYS 3022: Introduction to Observational Astronomy

Choose one of the following:
- PHYS 4034: Modern Optics
- PHYS 4065: Experimental Methods in Molecular Biophysics
- PHYS 4072: Introduction to Nuclear and Elementary Particle Physics
- PHYS 4931: Topics in Contemporary Physics

Total Credit Hours: 20
University Policies

- Academic Advising (https://bulletin.marquette.edu/policies/academic-advising/)
- Academic Censure - Undergraduate (https://bulletin.marquette.edu/policies/academic-censure/undergraduate/)
- Academic Integrity (https://bulletin.marquette.edu/policies/academic-integrity/)
- Academic Misconduct (https://bulletin.marquette.edu/policies/academic-misconduct-policy/)
- Academic Program Definitions (https://bulletin.marquette.edu/policies/academic-programs-defined/)
- Academic Standing (https://bulletin.marquette.edu/policies/academic-standing/)
- Accelerated Degree Programs (https://bulletin.marquette.edu/policies/accelerated-degree-programs/)
- Advanced Standing Credit - Undergraduate (https://bulletin.marquette.edu/policies/advanced-standing-undergraduate/)
- Attendance - Undergraduate (https://bulletin.marquette.edu/policies/attendance/undergraduate/)
- Audit - Undergraduate (https://bulletin.marquette.edu/policies/audit/)
- Awarding Diplomas and Certificates (https://bulletin.marquette.edu/policies/awarding-diplomas-certificates/)
- Background Checks, Drug Testing (https://bulletin.marquette.edu/policies/background-checks-drug-testing/)
- Class Rank (https://bulletin.marquette.edu/policies/class-rank/)
- Classification - Undergraduate (https://bulletin.marquette.edu/policies/classification-undergraduate/)
- Commencement (https://bulletin.marquette.edu/policies/commencement/)
- Conferral of Degrees and Certificates (https://bulletin.marquette.edu/policies/conferral-degrees-certificates/)
- Course Levels (https://bulletin.marquette.edu/policies/course-levels/)
- Credit Hour (https://bulletin.marquette.edu/policies/credit/)
- Credit Load - Undergraduate (https://bulletin.marquette.edu/policies/credit-load/undergraduate/)
- Examinations (Midterm and Final) - Undergraduate (https://bulletin.marquette.edu/policies/examinations-midterm-final-undergraduate/)
- Faculty Grading (https://bulletin.marquette.edu/policies/faculty-grading/)
- Family Education Rights and Privacy Act-FERPA (https://bulletin.marquette.edu/policies/ferpa/)
- Grade Appeals (https://bulletin.marquette.edu/policies/grade-appeals/)
- Grading System - Undergraduate and Health Science Professional (https://bulletin.marquette.edu/policies/grading-system/undergraduate-healthscienceprofessional/)
- Graduation - Undergraduate (https://bulletin.marquette.edu/policies/graduation/undergraduate/)
- Immunization and Tuberculosis Screening Requirements (https://bulletin.marquette.edu/policies/immunization-and-tuberculosis-screening/)
- Last Date of Attendance/Activity (https://bulletin.marquette.edu/policies/last-dateof-attendance-activity/)
- Major and Minor Declaration - Undergraduate (https://bulletin.marquette.edu/policies/major-declaration/)
- Medical Withdrawal (https://bulletin.marquette.edu/policies/medical-withdrawal/)
- Military Call to Active Duty or Training (https://bulletin.marquette.edu/policies/militarycall-active-duty-training/)
- Non-Degree Undergraduate Students (https://bulletin.marquette.edu/policies/non-degree-undergraduate-students/)
- Readmission - Undergraduate (https://bulletin.marquette.edu/policies/readmission/)
- Registration - Undergraduate (https://bulletin.marquette.edu/policies/registration/undergraduate/)
- Repeated Courses - Undergraduate (https://bulletin.marquette.edu/policies/repeated-courses/undergraduate/)
- Second Language Course Placement - Undergraduate (https://bulletin.marquette.edu/policies/second-language-course-placement-undergraduate/)
- Second/Additional Bachelor Degree (https://bulletin.marquette.edu/policies/second-additional-bachelor-degree/)
- Student Data Use and Privacy (https://bulletin.marquette.edu/policies/student-data-use-privacy/)
- Study at Other Institutions - Undergraduate (https://bulletin.marquette.edu/policies/study-institutions/)
- Transcripts-Official (https://bulletin.marquette.edu/policies/transcripts-official/)
- Transfer (Internal) To Another Undergraduate College within the University (https://bulletin.marquette.edu/policies/transfer-internal-another-undergraduate-college-within-university/)
- Transfer Course Credit - Undergraduate (https://bulletin.marquette.edu/policies/transfer-course-credit-policy/undergraduate/)
- Withdrawal - Undergraduate (https://bulletin.marquette.edu/policies/withdrawals/undergraduate/)

College of Arts and Sciences Policies

- Absences from Final Examinations (https://bulletin.marquette.edu/arts-sciences/policies/absences-final-examinations/)
- Academic Dismissal/Probation/Academic Alert (CAA) (https://bulletin.marquette.edu/arts-sciences/policies/dismissal-probation-alert/)
- Academic Integrity (https://bulletin.marquette.edu/arts-sciences/policies/academic-integrity/)
- Advisers (https://bulletin.marquette.edu/arts-sciences/policies/advisers/)
- Attendance (https://bulletin.marquette.edu/arts-sciences/policies/attendance/)
- Astronomy, Minor
• Credit Overload (https://bulletin.marquette.edu/arts-sciences/policies/credit-overload/)
• Degrees Offered (https://bulletin.marquette.edu/arts-sciences/policies/degrees-offered/)
• Elective Courses (https://bulletin.marquette.edu/arts-sciences/policies/elective-courses/)
• Grade Minimums (https://bulletin.marquette.edu/arts-sciences/policies/grade-minimums/)
• Independent Study Courses (https://bulletin.marquette.edu/arts-sciences/policies/independent-study-courses/)
• Interdisciplinary Programs (https://bulletin.marquette.edu/arts-sciences/policies/interdisciplinary-programs/)
• Majors and Minors (https://bulletin.marquette.edu/arts-sciences/policies/majors-minors/)
• Transfer Credit Policy (https://bulletin.marquette.edu/arts-sciences/policies/transfer-credit-policy/)