PHYSICS MINOR

Minor - Physics (Minor)
College Humanities & Sciences

Degree Specific Credits: 24
Required Cumulative GPA: 2.0
Catalog Year: 2017-2018

Note: Mathematics prerequisites for the physics minor are M 171, M 172, M 273, (and M 221 if needed).

Summary

Required Lower Division Courses
- College Physics
  - Physics with Calculus
Upper Division Core Course
- Elective Courses
Total Hours

Required Lower Division Courses
Rule: Must complete all of the following courses in one of the two options:

Note: The Physics with Calculus series (PHSX 215N - PHSX 218N) is strongly recommended.

10 Total Credits Required

College Physics
Rule: May complete all of the following courses:

- PHSX 205N College Physics I
- PHSX 206N College Physics I Laboratory
- PHSX 207N College Physics II
- PHSX 208N College Physics II Laboratory

Total Hours

Minimum Required Grade: C-

Physics with Calculus
Rule: May complete all of the following courses:

- PHSX 215N Fund of Physics w/Calc I (strongly recommended)
- PHSX 216N Physics Laboratory I w/Calc (strongly recommended)
- PHSX 217N Fund of Physics w/Calc II (strongly recommended)
- PHSX 218N Physics Laboratory II w/Calc (strongly recommended)

Total Hours

Minimum Required Grade: C-

Upper Division Core Course
Rule: Must complete the following course:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHSX 301</td>
<td>Intro Theoretical Physics</td>
<td>3</td>
</tr>
</tbody>
</table>

Total Hours
Minimum Required Grade: C-

Elective Courses
Select 11 credits with 8 upper division credits from the following:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHSX 141N</td>
<td>Einstein's Relativity</td>
<td></td>
</tr>
<tr>
<td>PHSX 291</td>
<td>Special Topics</td>
<td></td>
</tr>
<tr>
<td>PHSX 311</td>
<td>Oscillations and Waves</td>
<td></td>
</tr>
<tr>
<td>PHSX 320</td>
<td>Classical Mechanics</td>
<td></td>
</tr>
<tr>
<td>PHSX 323</td>
<td>Intermediate Physics Lab</td>
<td></td>
</tr>
<tr>
<td>PHSX 327</td>
<td>Optics</td>
<td></td>
</tr>
<tr>
<td>PHSX 330</td>
<td>Communicating Physics</td>
<td></td>
</tr>
<tr>
<td>PHSX 333</td>
<td>Computational Physics</td>
<td></td>
</tr>
<tr>
<td>PHSX 343</td>
<td>Modern Physics</td>
<td></td>
</tr>
<tr>
<td>PHSX 423</td>
<td>Electricity &amp; Magnetism I</td>
<td></td>
</tr>
<tr>
<td>PHSX 444</td>
<td>Advanced Physics Lab</td>
<td></td>
</tr>
<tr>
<td>PHSX 446</td>
<td>Thermodyn &amp; Stat Mech</td>
<td></td>
</tr>
<tr>
<td>PHSX 461</td>
<td>Quantum Mechanics I</td>
<td></td>
</tr>
<tr>
<td>PHSX 462</td>
<td>Quantum Mechanics II</td>
<td></td>
</tr>
</tbody>
</table>

Total Hours
Minimum Required Grade: C-

The term 'minor' for this teaching option refers to courses that need to be completed. To sign up for this option, you need to contact the Teaching and Learning Department. Do not fill out a minor form for graduation or the minor section of the major change form. Approvals for this option must come from the Teaching and Learning Department.

Teaching Physics Track

A teaching minor is an academic minor which may contain different course requirements designed to meet state standards. Those interested in teaching in K-12 schools must complete a teaching major in a content area plus the teacher preparation program through the Department of Teaching and Learning. Additional teaching areas can be added through completion of either a teaching major or a teaching minor in that content area.

- Secondary Education Licensure Program (http://www.coehs.umt.edu/departments/currinst/undergradprograms/seced/default.php)
- Licensure Degree Requirements (catalog.umt.edu/colleges-schools-programs/education-human-sciences/teaching-learning/lic-secondary-licensure)

Teaching Licensure Requirements
Note: Students must be formally admitted to the Teacher Education Program and complete all of the professional education licensure requirements. See the Department of Teaching and Learning (catalog.umt.edu/colleges-schools-programs/education-human-sciences/teaching-learning) in the College of Education and Human
Sciences for more information. A minor GPA of 2.75 is required to be eligible for student teaching. Individuals completing a teaching minor must also complete a teaching major in another content area.

**Teaching Licensure Course**

**Rule:** Must complete the following course

**Note:** The EDU 497 course number is used for multiple courses. Students should register for EDU 497 Methods: 5-12 Science.

<table>
<thead>
<tr>
<th>Course</th>
<th>Description</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDU 497</td>
<td>Teaching and Assessing</td>
<td>3</td>
</tr>
<tr>
<td><strong>Total Hours</strong></td>
<td></td>
<td><strong>3</strong></td>
</tr>
</tbody>
</table>

Minimum Required Grade: C–