PHYSICS B.A.

Bachelor of Arts - Physics

College Humanities & Sciences

Degree Specific Credits: 65

Required Cumulative GPA: 2.0

Catalog Year: 2017-2018

General Education Requirements

Information regarding these requirements can be found in the General Education Section (http://catalog.umt.edu/academics/general-education-requirements) of the catalog.

Summary

Lower Division Physics | 10
---|---
College Physics
Physics with Calculus
Upper Division Physics | 27
Physics Electives | 6
Math Requirements | 15
Computer Science Requirements | 3
Advanced College Writing Requirement | 3
Foreign Language
Total Hours | 64

Lower Division Physics

Rule: Must complete all of the courses in one of the two options:

Note: Calculus-based Physics sequence is strongly recommended.

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

Minimum Required Grade: C-

10 Total Credits Required

College Physics

Rule: May complete all of the following courses

PHSX 205N College Physics I | 4
PHSX 206N College Physics I Laboratory | 1
PHSX 207N College Physics II | 4
PHSX 208N College Physics II Laboratory | 1
Total Hours | 10

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) | 4
PHSX 216N Physics Laboratory I w/Calc (strongly recommended) | 1

Total Hours | 10

Minimum Required Grade: C-

Physics Electives

Rule: Choose any 2 courses designated with PHSX prefix, for 6 total credits

Note: PHSX 425 and PHSX 462 are strongly recommended

Select two of the following: | 6
---|---
PHSX 141N Einstein's Relativity
PHSX 327 Optics
PHSX 330 Communicating Physics
PHSX 333 Computational Physics
PHSX 425 Electricity & Magnetism II (strongly recommended)
PHSX 446 Thermodyn & Stat Mech
PHSX 462 Quantum Mechanics II (strongly recommended)
Any PHSX course

Total Hours | 6

Minimum Required Grade: C-

Math Requirements

Rule: Complete all of the following courses

Note: M 317, M 412, and M 418 are recommended as well

M 171 Calculus I | 4
Physics B.A.

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>M 172</td>
<td>Calculus II</td>
<td>4</td>
</tr>
<tr>
<td>M 221</td>
<td>Introduction to Linear Algebra</td>
<td>4</td>
</tr>
<tr>
<td>M 273</td>
<td>Multivariable Calculus</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td><strong>Total Hours</strong></td>
<td><strong>16</strong></td>
</tr>
</tbody>
</table>

Minimum Required Grade: C-

**Computer Science Requirements**

**Rule:** Choose 1 of the following

**Note:** PHSX 333 or CSCI 250 is strongly recommended

Select one of the following:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSCI 100</td>
<td>Intro to Programming</td>
<td>3</td>
</tr>
<tr>
<td>CSCI 135</td>
<td>Fund of Computer Science I</td>
<td></td>
</tr>
<tr>
<td>CSCI 250</td>
<td>Computer Mdlng/Science Majors (strongly recommended)</td>
<td></td>
</tr>
<tr>
<td>PHSX 333</td>
<td>Computational Physics (strongly recommended)</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Total Hours</strong></td>
<td><strong>3</strong></td>
</tr>
</tbody>
</table>

Minimum Required Grade: C-

**Advanced College Writing Requirement**

**Rule:** Must take the following course

**Note:** May substitute another advanced writing course as approved by the department chair.

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHSX 330</td>
<td>Communicating Physics</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td><strong>Total Hours</strong></td>
<td><strong>3</strong></td>
</tr>
</tbody>
</table>

Minimum Required Grade: C-

**Foreign Language**

**Note:** Students must also complete a 2 semester language sequence or have equivalent placement.

**Teaching Physics Track**

Individuals interested in teaching in K-12 schools must complete a degree in the content area they want to teach plus the teacher preparation program through the Department of Teaching and Learning. Individuals must complete the teaching major/teaching track within that degree program, which may contain different course requirements than the academic major since the sequence of courses is designed to meet state standards. Upon completion of the degree program with the teaching track and the secondary licensure program, one will be eligible for a standard Montana teaching license in this content area.

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

To sign up for this option, you need to contact the Teaching and Learning Department. Do not fill out a major/minor form for graduation or the major/minor/concentration section of the major change form. Approvals for this option must come from the Teaching and Learning Department.

Tracks will not appear on your UM transcript, diploma, university lists, student data system, or university publication and are used for advising purposes only. You do not fill out a major change for a track.

**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 (http://catalog.umt.edu/colleges-schools-programs/education-human-sciences/teaching-learning) in the College of Education and Human Sciences for more information. A major GPA of 2.75 is required to be eligible for student teaching. This major does not qualify as a single field endorsement. Individuals must complete a second teaching major or minor 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>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDU 497</td>
<td>Teaching and Assessing</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td><strong>Total Hours</strong></td>
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</tr>
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</table>

Minimum Required Grade: C-