PHYSICS B.A.
Bachelor of Arts - Physics
College Humanities & Sciences

Degree Specific Credits: 68
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 30
Physics Electives 6
Math Requirements 16
Computer Science Requirements 3
Advanced College Writing Requirement 3
Total Hours 68

Lower Division Physics
Rule: Must complete all of the courses in one of the two sequences:

Physics
Select one of the following Physics sequences:
Algebra- and Trigonometry-based:
   PHSX 205N College Physics I
   & PHSX 206N and College Physics I Laboratory
   PHSX 207N College Physics II
   & PHSX 208N and College Physics II Laboratory
Calculation-based (strongly recommended):
   PHSX 215N Fund of Physics w/Calc I
   & PHSX 216N and Physics Laboratory I w/Calc
   PHSX 217N Fund of Physics w/Calc II
   & PHSX 218N and Physics Laboratory II w/Calc
Total Hours 10
Minimum Required Grade: C-

Upper Division Physics
Rule: Complete the following courses

PHSX 301 Intro Theoretical Physics 3
PHSX 311 Oscillations and Waves 2
PHSX 320 Classical Mechanics 3
PHSX 323 Intermediate Physics Lab 3
PHSX 343 Modern Physics 3
PHSX 423 Electricity & Magnetism I 3
PHSX 444 Advanced Physics Lab 3
PHSX 461 Quantum Mechanics I 3
PHSX 499 Senior Capstone Seminar 1
Choose any 2 courses from the following 6
   PHSX 425 Electricity & Magnetism II
   PHSX 446 Thermodynamics & Stat Mech
   PHSX 462 Quantum Mechanics II
Total Hours 30
Minimum Required Grade: C-

Physics Electives
Note: Other PHSX courses may be substituted with adviser approval.
Select two courses from the following list: 6
   PHSX 141N Einstein’s Relativity
   or ASTR 142N The Evolving Universe
   PHSX 327 Optics
   PHSX 330 Communicating Physics
   PHSX 333 Computational Physics
   PHSX 425 Electricity & Magnetism II (2 of these 3 courses must be taken in the physics core, the remaining course can be used as an elective)
   or PHSX 446 Thermodynamics & Stat Mech
   or PHSX 462 Quantum Mechanics II
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
M 172 Calculus II 4
M 221 Introduction to Linear Algebra 4
M 273 Multivariable Calculus 4
Total Hours 16
Minimum Required Grade: C-

Computer Science Requirements
Select one of the following: 3
   CSCI 100 Intro to Programming
   CSCI 135 Fund of Computer Science I
   CSCI 250 Computer Mdlng/Science Majors (strongly recommended)
   PHSX 333 Computational Physics (strongly recommended)
Total Hours 3
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.

PHSX 330 Communicating Physics 3

Total Hours 3

Minimum Required Grade: C-

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/currinst/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.

EDU 497 Teaching and Assessing 4

Total Hours 4

Minimum Required Grade: C-