

PHYSICS

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.umd.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: 10

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

Calculus-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	Thermodyn & 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 142 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 Thermodyn & 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/past-catalogs/2017-2018/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/past-catalogs/2017-2018/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-