

PHYSICS, BACHELOR OF SCIENCE

Requirements

The Bachelor of Science (B.S.) degree in physics is offered with three different options for students to follow: Option I is for the student who intends to go on to graduate school in physics; Option II allows for the degree to be enhanced by a second discipline; and finally, the Bachelor of Science in physics with a concentration in education leads to a physics teaching certificate at the secondary-school level. To help prospective physics majors make optimal decisions, they are encouraged to speak with a departmental adviser as early as possible.

To obtain a B.S. with a major in physics, a student must fulfill university, college, and departmental requirements. Hour requirements follow:

- 46 hours of University General Education courses
Most commonly, physics majors do not complete 46 hours of coursework solely for the purpose of meeting University General Education requirements. Instead, they often test out of at least three hours of fundamental academic skills, take courses that meet both the six hours of diversity requirements and six hours of distribution requirements, and meet 4 hours of the natural sciences distribution requirement through completing major courses. In such cases, the number of credit hours taken solely to meet General Education requirements is reduced to 33 or fewer.
- 12-19 hours college breadth requirement
- 55 hours of major courses
- 15-16 hours of cognate courses
- 0-4 hours of electives

TOTAL HOURS: 120

Code	Title	Credits
Introductory Physics and Math Courses		
PHYS 1950	PHYSICS GATEWAY COURSE	1
PHYS 2110 & PHYS 1154	GENERAL PHYSICS I - CALCULUS LEVEL and GENERAL PHYSICS LABORATORY I	5
PHYS 2120 & PHYS 1164	GENERAL PHYSICS-CALCULUS LEVEL and GENERAL PHYSICS LABORATORY II	5
PHYS 2130	MODERN PHYSICS	4
PHYS 3250	MATHEMATICAL METHODS OF PHYSICS ¹	3
MATH 1950	CALCULUS I	5
MATH 1960	CALCULUS II	4
MATH 1970	CALCULUS III	4
Physics Core Courses		
PHYS 3450	CLASSICAL MECHANICS	3
PHYS 3600	THERMODYNAMICS AND STATISTICAL PHYSICS	3
PHYS 3750	ELECTRICITY AND MAGNETISM I	3
PHYS 3800	OPTICS	3
PHYS 4200	INTRODUCTION TO QUANTUM MECHANICS	3
Advanced Laboratory		
PHYS 3504	EXPERIMENTAL PHYSICS I	1
Select one of the following:		
PHYS 3524	EXPERIMENTAL MATERIALS SCIENCE	1

PHYS 3544	EXPERIMENTAL PHYSICS III	
PHYS 3564	EXPERIMENTAL PHYSICS IV	
Senior Project and Physics Electives		
In addition to the above requirements, a senior project (1 credit) and two upper level (3000/4000) elective physics courses (6 credits) are required. ²		
PHYS 4950 or PHYS 4960	PROBLEMS IN PHYSICS	1
Two 3-credit PHYS 3000/4000 Level Electives		6
Total Credits		55

¹ Students taking a number of 2000-level mathematics courses may be permitted to waive PHYS 3250 or PHYS 3260.

² Please see more details about the senior project in the "Other Information" portion of the physics section.

Freshman

Fall		Credits
CMST 1110 or CMST 2120	PUBLIC SPEAKING FUNDS or ARGUMENTATION AND DEBATE	3
ENGL 1150	ENGLISH COMPOSITION I (*)	3
MATH 1950	CALCULUS I (**)	5
PHYS 1950	PHYSICS GATEWAY COURSE	1
Humanity & Fine Arts Course #1		3
*ENGL 1150: Requires appropriate placement via EPPE or AP.		
**MATH 1950: Requires ALEKS Exam or ACT or SAT scores OR grades of C- or better within the past 2 years in both Math 1320 and 1330 or Math 1340.		
Credits		15

Spring

ENGL 1160	ENGLISH COMPOSITION II (*)	3
MATH 1960	CALCULUS II	4
PHYS 2110 & PHYS 1154	GENERAL PHYSICS I - CALCULUS LEVEL and GENERAL PHYSICS LABORATORY I (**)	5
Social Science Course #1		3
*ENGL 1160: Requires ENGL 1150 or placement via EPPE or AP.		
**PHYS 2110: Requires MATH 1950.		
Credits		15

Sophomore

Fall		Credits
MATH 1970	CALCULUS III	4
PHYS 2120 & PHYS 1164	GENERAL PHYSICS-CALCULUS LEVEL and GENERAL PHYSICS LABORATORY II (*)	5
Social Science #2		3
Humanities/Fine Arts Course #2 - Add U.S. Diversity		3
*PHYS 2120: Requires PHYS 2110-1154 and MATH 1960. Also counts as A&S Additional Gen Ed Natural Science with Lab.		
Credits		15

Spring

PHYS 2130	MODERN PHYSICS (*)	4
PHYS 3250	MATHEMATICAL METHODS OF PHYSICS (**)	3
Social Science #3 & US Diversity Course***		3
Humanities/Fine Arts Course #3 - Add Global Diversity^		3
Natural/Physical Science no Lab#		3

*PHYS 2130: Requires PHYS 2110, PHYS 2120, MATH 1950, and MATH 1960.	
**PHYS 3250: Requires MATH 1950, 1960, 1970, and PHYS 2120.	
***SS must be in a 2nd discipline.	
^HFA must be in a 2nd discipline.	
#NPS Must be in a field other than PHYS.	

Credits **16**

Junior**Fall**

HIST 1010 or Course towards Minor/2nd Major*	3
PHYS 3504 EXPERIMENTAL PHYSICS I (**)	1
PHYS 3750 ELECTRICITY AND MAGNETISM I (***)	3
Upper Level PHYS Elective	3
Social Science Gen Ed for A&S or Course towards Minor/2nd Major^	3
Elective/Cognate Course	3
*A&S College Requirement Options.	
**PHYS 3504: Requires PHYS 2120.	
***PHYS 3750: Requires MATH 1950, 1960, 1970, and PHYS 3250.	
^A&S College Requirement Options. SS Must be in a 3rd discipline.	

Credits **16**

Spring

HIST 1000 or Course towards Minor/2nd Major*	3
PHYS 3450 CLASSICAL MECHANICS (**)	3
PHYS 3800 OPTICS (***)	3
HFA Gen Ed for A&S or Course towards Minor/2nd Major^	3
Elective/Cognate Course	3
*A&S College Requirement Options	
**PHYS 3450: Requires MATH 1970 and PHYS 3250.	
***PHYS 3800: Requires PHYS 2120 and MATH 1970.	
^A&S College Requirement Options. HFA Must be in a 3rd discipline.	

Credits **15**

Senior**Fall**

PHYS 3544 EXPERIMENTAL PHYSICS III (*) or PHYS 3524 or EXPERIMENTAL MATERIALS or PHYS 3564 SCIENCE or EXPERIMENTAL PHYSICS IV	1
PHYS 3600 THERMODYNAMICS AND STATISTICAL PHYSICS (**)	3
PHYS 4200 INTRODUCTION TO QUANTUM MECHANICS (***)	3
Elective or Course towards Minor/2nd Major/Cognate Course	3
Elective or Course towards Minor/2nd Major/Cognate Course	3
Elective	2
*PHYS 3544: Requires PHYS 2120.	
**PHYS 3600: Requires PHYS 2120 and MATH 1970.	
***PHYS 4200: Requires PHYS 3250.	

Credits **15**

Spring

ENGL 3980 TECHNICAL WRITING ACROSS THE DISCIPLINES (*)	3
PHYS 4950 PROBLEMS IN PHYSICS (**) or PHYS 4960 or PROBLEMS IN PHYSICS	1
Upper Level PHYS Elective	3

Elective or Course towards Minor/2nd Major/Cognate Course***	3
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Elective or Course towards Minor/2nd Major/Cognate Course***	3
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*ENGL 3980: Requires ENGL 1160

**PHYS 4950 and 4960: Requires PHYS 2120 and permission of instructor. See "Graduation Requirements" below for more information.

***120 total credits required for degree. Electives are used to reach that minimum amount. 27 upper level credits throughout the entire degree are required. Electives may need to be taken at the 3000-4000 level to reach this minimum.

Credits **13**

Total Credits **120**

This roadmap is a suggested plan of study and does not replace meeting with an advisor. Please note that students may need to adjust the actual sequence of courses based on course availability. Please consult an advisor in your major program for further guidance.

This plan is not a contract and curriculum is subject to change

Additional Information About this Plan:**University Degree Requirements:**

The minimum number of hours for a UNO undergraduate degree is 120 credit hours. Please review the requirements for your specific program to determine all requirements for the program. In order to graduate on-time (four years for an undergraduate degree), you need to take 30 hours each year.

Placement Exams:

For Math, English, Foreign Language, a placement exam may be required. More information on these exams can be found at <https://www.unomaha.edu/enrollment-management/testing-center/placement-exams/information.php>

**Transfer credit or placement exam scores may change suggested plan of study

GPA Requirements: 2.0

Graduation Requirements: Physics majors must also take the two assessment tests (Major Field Test and Local test) and complete the exit interview.

The senior project must be approved and the department chair notified at least eight months prior to graduation as a Physics major and the student must register for either PHYS 4950 (<https://catalog.unomaha.edu/search/?P=PHYS%204950>) or PHYS 4960 (<https://catalog.unomaha.edu/search/?P=PHYS%204960>).