

PHYSICS, BACHELOR OF SCIENCE WITH A CONCENTRATION IN BIOMEDICAL PHYSICS

Physics, Bachelor of Science with a Concentration in Biomedical Physics Requirements

Code	Title	Credits
GENERAL EDUCATION REQUIREMENTS - 46 Hours Required		
Minimum of "C-" required		
Fundamental Academic Skills		15
ENGL 1150	ENGLISH COMPOSITION I	
ENGL 1160	ENGLISH COMPOSITION II	
Writing in the Discipline Course		
CMST 1110	PUBLIC SPEAKING FUNDS	
or CMST 2120	ARGUMENTATION AND DEBATE	
MATH 1120	INTRODUCTION TO MATHEMATICAL AND COMPUTATIONAL THINKING	
or MATH 1100	DATA LITERACY AND VISUALIZATION	
or MATH 1130	QUANTITATIVE LITERACY	
or MATH 1140	QUANTITATIVE REASONING FOR HEALTHCARE PROFESSIONALS	
or MATH 1300	COLLEGE ALGEBRA WITH SUPPORT	
or STAT 1100	DATA LITERACY AND VISUALIZATION	
or STAT 1530	ELEMENTARY STATISTICS	
Distribution Requirements		31
Natural Science - From two disciplines and at least one lab - 7 hrs		
Social Science - From two disciplines - 9 hrs		
Humanities and Fine Arts - From two disciplines- 9 hrs		
Global Diversity - 3 hrs		
US Diversity - 3 hrs		
MAJOR REQUIREMENTS		
**Course will satisfy UNO's General Education requirement		
^Course requires pre-requisite(s)		
Major Requirements - 55 Hours Required		
Required Coursework		54
PHYS 1950	PHYSICS GATEWAY COURSE	
PHYS 2110 & PHYS 1154	GENERAL PHYSICS I - CALCULUS LEVEL and GENERAL PHYSICS LABORATORY I	
PHYS 2120 & PHYS 1164	GENERAL PHYSICS-CALCULUS LEVEL and GENERAL PHYSICS LABORATORY II	
PHYS 2130	MODERN PHYSICS	
PHYS 3250	MATHEMATICAL METHODS OF PHYSICS (*)	
MATH 1950	CALCULUS I	
MATH 1960	CALCULUS II	
MATH 1970	CALCULUS III	
PHYS 3300	INTRODUCTION TO BIOMEDICAL PHYSICS	
PHYS 3450	CLASSICAL MECHANICS	

PHYS 3600	THERMODYNAMICS AND STATISTICAL PHYSICS
PHYS 3750	ELECTRICITY AND MAGNETISM I
PHYS 3800	OPTICS
PHYS 3504	EXPERIMENTAL PHYSICS I
PHYS 4500	BIOLOGICAL PHYSICS
PHYS 4550	PHYSICS IN MEDICINE
PHYS 4950	PROBLEMS IN PHYSICS
or PHYS 4960	PROBLEMS IN PHYSICS

Select one of the following: **1**

PHYS 3524	EXPERIMENTAL MATERIALS SCIENCE
PHYS 3544	EXPERIMENTAL PHYSICS III
PHYS 3564	EXPERIMENTAL PHYSICS IV

The following courses from other disciplines are recommended:

CHEM 1180 & CHEM 1184	GENERAL CHEMISTRY I and GENERAL CHEMISTRY I LABORATORY
CHEM 1190 & CHEM 1194	GENERAL CHEMISTRY II and GENERAL CHEMISTRY II LABORATORY
CHEM 2250	ORGANIC CHEMISTRY I
CHEM 2260 & CHEM 2274	ORGANIC CHEMISTRY II and ORGANIC CHEMISTRY LABORATORY

And either:

CHEM 4610	BIOCHEMISTRY OF METABOLISM
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Or:

BIOL 1450	BIOLOGY I
BIOL 1750	BIOLOGY II
CHEM 4650 & CHEM 4654	BIOCHEMISTRY I and BIOCHEMISTRY I LABORATORY
CHEM 4660 & CHEM 4664	BIOCHEMISTRY II and BIOCHEMISTRY II LABORATORY

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

College Breadth (choose one option) 15-30+

Option 1: Complete any UNO minor or undergraduate certificate - 15+ hours

Option 2: Additional General Education Requirements - 19+ hours

Additional quantitative literacy - 3 hours

Additional Social Science Gen. Ed. from 3rd Discipline - 3 hours

Additional Humanities Gen. Ed. from 3rd Discipline - 3 hours

HIST 1000 and HIST 1010 - 6 hours

Additional Nat. and Physical Science w/ Lab - 4-5 hours

Option 3: CAS comprehensive major (50+ hours) OR any second UNO major (30+ hours)

Bachelor Science Cognate Requirement - 15-16

See Advisor

ELECTIVES

Elective hours as required to reach a total of 120 hours

Physics, Bachelor of Science with a Concentration in Biomedical Physics Four Year Plan

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
Humanities & Fine Arts Course #1 – Add Global Diversity		3
*ENGL 1150: Requires appropriate placement.		
**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
Humanities & Fine Arts Course #2		3
*ENGL 1160: Requires ENGL 1150 or placement via AP or EPPE.		
**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
PHYS 3300	INTRODUCTION TO BIOMEDICAL PHYSICS (**)	3
Social Science Course #1 & US Diversity		3
*PHYS 2120: Requires PHYS 2110 - PHYS 1154 and MATH 1960.		
**PHYS 3300: Requires PHYS 2110.		

Credits 15

Spring

PHYS 2130	MODERN PHYSICS (*)	4
PHYS 3250	MATHEMATICAL METHODS OF PHYSICS (**)	3
Natural/Physical Science no Lab***		3
Social Science #2		3
Humanities & Fine Arts Course #3^		3
*PHYS 2130: Requires PHYS 2110, PHYS 2120, MATH 1950, and MATH 1960.		
**PHYS 3250: Requires MATH 1950, 1960, 1970, and PHYS 2120.		
***NPS Must be in a field other than PHYS.		
^HFA Must be in a 2nd discipline.		

Credits 16

Junior

Fall		Credits
PHYS 3504	EXPERIMENTAL PHYSICS I (*)	1

PHYS 3750	ELECTRICITY AND MAGNETISM I (**)	3
PHYS 4500 or PHYS 4550	BIOLOGICAL PHYSICS (***) or PHYSICS IN MEDICINE	3
Social Science #3^		3
Humanities & Fine Arts Gen Ed for A&S or Course towards Minor/2nd Major/Cognate Course~		3
HIST 1000 or Course towards Minor/2nd Major/Cognate Course#		3
*PHYS 3504: Requires PHYS 2120.		
**PHYS 3750: Requires MATH 1950, 1960, 1970, and PHYS 3250.		
***PHYS 4500: Requires PHYS 2110. PHYS 2120 and 3300 recommended. PHYS 4550 Requires PHYS 2110 and 2120, and PHYS 2130 for PHYS majors. PHYS 3300 and PHYS 4500 are recommended.		
***Must take both PHYS 4500 and PHYS 4550. PHYS 4500 is offered only in Fall of odd-numbered years. PHYS 4550 is offered only in Fall of even-numbered years.		
^SS Must be in a 2nd discipline.		
~A&S College Requirement Options. HFA Must be in a 3rd discipline.		
#A&S College Requirement Options		

Credits 16

Spring

ENGL 3980	TECHNICAL WRITING ACROSS THE DISCIPLINES (*)	3
PHYS 3450	CLASSICAL MECHANICS (**)	3
PHYS 3800	OPTICS (***)	3
Social Science Gen Ed for A&S or Course towards Minor/2nd Major^		3
HIST 1010 or Course towards Minor/2nd Major#		3
*ENGL 3980: Requires ENGL 1160.		
**PHYS 3450: Requires MATH 1970 and PHYS 3250.		
***PHYS 3800: Requires PHYS 2120 and MATH 1970.		
^A&S College Requirement Options. SS must be in a 3rd discipline.		
#A&S College Requirement Options		

Credits 15

Senior

Fall		Credits
PHYS 3600	THERMODYNAMICS AND STATISTICAL PHYSICS (*)	3
PHYS 4500 or PHYS 4550	BIOLOGICAL PHYSICS (**) or PHYSICS IN MEDICINE	3
Advanced Laboratory***		1
Social Science for A&S or Course towards Minor/2nd Major/ Cognate Course^		3
Elective or Minor/2nd Major Course/Cognate Course		3
Elective		2
*PHYS 3600: Requires PHYS 2120 and MATH 1970.		
**PHYS 4500: Requires PHYS 2110. PHYS 2120 and 3300 recommended. PHYS 4550 Requires PHYS 2110 and 2120, and PHYS 2130 for PHYS majors. PHYS 3300 and PHYS 4500 are recommended.		
**Must take both PHYS 4500 and PHYS 4550. PHYS 4500 is offered only in Fall of odd-numbered years. PHYS 4550 is offered only in Fall of even-numbered years.		
***Advanced Laboratory: Requires PHYS 2120. Options: PHYS 3524, 3544, or 3564. Each is designed to compliment specific classes. See Catalog for details.		

^A&S College Requirement Options. SS must be from 3rd discipline.

Credits		15
Spring		
PHYS 4950 or PHYS 4960	PROBLEMS IN PHYSICS (*) or PROBLEMS IN PHYSICS	1
Upper Level PHYS Elective		3
Elective or Minor/2nd Major Course/Cognate Course		3
Elective**		3
Elective**		3
*PHYS 4950 and 4960: Requires PHYS 2120 and permission of instructor. See "Graduation Requirements" below for more information.		
**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. 120 total credits are required for a bachelor's degree.		
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>).