

PHYSICS - PRE-MEDICAL CONCENTRATION (B.S.)

Unless otherwise noted, 120 credits of coursework is required for a baccalaureate degree with a minimum 2.0 overall GPA, and a minimum 2.0 major GPA.

Program Requirements Overview

Code	Title	Credits
	General Education Requirements	29
	World Languages and Cultures Requirements	3-6
	Major Requirements	83-84
	Free Electives	5-1
	Total Credits	120

Major Requirements

Code	Title	Credits
Physics Core		
PHYS 191	University Physics I	4
PHYS 192	University Physics II	4
PHYS 198	Introductory Physics Seminar	1
PHYS 210	Intermediate Mechanics	3
PHYS 220	Oscillations, Waves, and Optics	3
PHYS 230	Intermediate Physics Laboratory	4
PHYS 320	Statistical and Thermal Physics	3
PHYS 330	Advanced Physics Laboratory	4
PHYS 340	Electricity and Magnetism	3
PHYS 360	Modern Physics	3
Concentration Requirements		
PHYS 452	Medical Physics Seminar	3
CHEM 230	Organic Chemistry I	3
CHEM 231	Organic Chemistry II	3
CHEM 232	Experimental Organic Chemistry I	2
CHEM 370	Biochemistry I	3
BIOL 112	Principles of Biology: Introduction to the Cell	4
BIOL 113	Principles of Biology: Organisms and Diversity	4
PSYC 101	Introduction to Psychology	3
Physics Electives		
Complete 3-4 semester hours from the following (PHYS 451 is recommended if offered):		3-4
PHYS 245	Fundamentals of Electronics	
PHYS 325	Computational Physics	
PHYS 341	Electronics and Digital Circuits	
PHYS 350	Modern Optics	
PHYS 368	Fluid Mechanics	
PHYS 377	Mathematical Physics	
PHYS 399	Special Topics in Physics	
PHYS 451	Radiation and Medical Physics	
PHYS 462	Nuclear Physics	
PHYS 464	Quantum Mechanics	
PHYS 495	Research or Independent Study in Physics	

Collateral Requirements		
CSIT 104	Python Programming I	3
CHEM 120	General Chemistry I	4
CHEM 121	General Chemistry II	4
MATH 122	Calculus I	4
or AMAT 120	Applied Calculus A	
MATH 221	Calculus II	4
or AMAT 220	Applied Calculus B	
MATH 222	Calculus III	4
Total Credits		83-84

General Education Requirements

Click here for a list of courses that fulfill General Education categories. (<http://catalog.montclair.edu/programs/general-education-requirements-ba-bs/>)

Code	Title	Credits
A. New Student Seminar		
	Complete a 1 credit New Student Seminar course.	1
C. Communication		
	1. <i>Writing</i>	3
	2. <i>Literature</i>	3
	3. <i>Communication</i>	3
D. Fine and Performing Arts		
	Complete a 3 credit Fine and Performing Arts course.	3
F. Humanities		
	1. <i>Great Works and Their Influences</i>	3
	2. <i>Philosophical and Religious Perspectives</i>	3
G. Computer Science		
CSIT 104	Python Programming I (Fulfilled in the major.)	
H. Mathematics		
Fulfilled in the major.		
AMAT 120	Applied Calculus A	
	or MATH 122: Calculus I	
I. Natural Science Laboratory		
PHYS 191	University Physics I (Fulfilled in the major.)	
J. Physical Education		
	Complete a 1 credit Physical Education course.	1
K. Social Science		
	1. <i>American and European History</i>	3
	2. <i>Global Cultural Perspectives</i>	3
Select one course that will also satisfy the World Cultures requirement below.		
	3. <i>Social Science Perspectives</i>	
PSYC 101	Introduction to Psychology (Fulfilled in the major.)	
L. Interdisciplinary Studies		
	Complete a 3 credit Interdisciplinary Studies course.	3
Total Credits		29

World Languages and Cultures Requirements

Click here for a list of courses that fulfill World Languages and Cultures categories. (<http://catalog.montclair.edu/programs/world-languages-and-cultures-requirements/>)

Code	Title	Credits
World Languages		
Based on placement exam complete one or two sequential courses in 3-6 one language.		
World Cultures		
Fulfilled by course selected in General Education K2 category.		
Total Credits		3-6

Recommended Roadmap to Degree Completion

This four-year plan is provided as an outline for students to follow in order to complete their degree requirements within four years. This plan is a recommendation and students should only use it in consultation with their academic advisor.

First Year

Fall	Credits	Spring	Credits
GENERAL EDUCATION: (A) New Student Seminar	1	GENERAL EDUCATION: (C2) Literature	3
GENERAL EDUCATION: (C1) Writing	3	AMAT 220 or MATH 221	4
AMAT 120 or MATH 122	4	BIOL 113	4
BIOL 112	4	PHYS 192	4
PHYS 191	4	PHYS 198	1
16		16	

Second Year

Fall	Credits	Spring	Credits
GENERAL EDUCATION: (C3) Communication	3	CHEM 121	4
GENERAL EDUCATION: (D) Fine and Performing Arts	3	CSIT 104	3
CHEM 120	4	PHYS 320	3
MATH 222	4	PHYS 340	3
PHYS 210	3		
17		13	

Third Year

Fall	Credits	Spring	Credits
World Language 1	3	GENERAL EDUCATION: (F1) Humanities – Great Works and Their Influences	3
CHEM 230	3	GENERAL EDUCATION: (F2) Humanities – Philosophical and Religious Perspectives	3
CHEM 232	2	World Language 2	3
PHYS 220	3	CHEM 231	3

PHYS 230	4	PHYS 360	3
15		15	

Fourth Year

Fall	Credits	Spring	Credits
GENERAL EDUCATION: (L) Interdisciplinary Studies	3	GENERAL EDUCATION: (J) Physical Education	1
CHEM 370	3	GENERAL EDUCATION: (K1) Social Science – American and European History	3
PHYS 330	4	GENERAL EDUCATION: (K2) Social Science – Global Cultural Perspectives	3
PHYS 452	3	PHYS 451	3
PSYC 101	3	Free Elective	2
16		12	
Total Credits 120			