PHYSICS WITH TEACHER CERTIFICATION IN PHYSICAL SCIENCE (PRESCHOOL-GRADE 12) (B.S.)

Students who wish to pursue P-12 teacher certification in Physical Science must apply to and be admitted to the Teacher Education Program. Please visit the Teacher Education Program website (https://www.montclair.edu/center-of-pedagogy/) for the required professional sequence of courses and other important Program requirements, guidelines, and procedures. Students are strongly advised to review the Teacher Education Program Handbook. Students majoring in physics have two teacher certification options to choose from – Physical Science or Physics – and should consult with an advisor to determine which certification program they wish to complete. Courses specific to the Physical Science teacher certification program are listed below.

120 credits of coursework is required for the baccalaureate degree with a minimum 3.0 overall GPA. Major GPA requirements differ depending on field of study. Consult the Teacher Education Program Handbook for more information.

Program Requirements Overview

Code	Title	Credits
General Education Requirements		14
World Languages and Cultures Requirements		3
Major Requirements		66-67
Teacher Education Program Requirements		37
Total Credits		**120-121**

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 300	Junior/Senior Physics Seminar	1
PHYS 320	Statistical and Thermal Physics	3
PHYS 330	Advanced Physics Laboratory	4
PHYS 340	Electricity and Magnetism	3
PHYS 360	Modern Physics	3
Physics Electives		
Complete 3-4 credits from the list below.		3-4
Collateral Requirements		
CSIT 104	Python Programming I	3
CHEM 120	General Chemistry I	4
CHEM 121	General Chemistry II	4
CHEM 230	Organic Chemistry I	3
CHEM 232	Experimental Organic Chemistry I	2
Complete an additional 2 credits of CHEM courses.		2
AMAT 120	Applied Calculus A	4
or MATH 122	Calculus I	
AMAT 220	Applied Calculus B	4
or MATH 221	Calculus II	
MATH 222	Calculus III	4
Teacher Education Sequence		
See requirements below.		
Total Credits		**66-67**

Major Electives

Code	Title	Credits
PHYS 180	Astronomy for Everyone	4
PHYS 245	Fundamentals of Electronics	4
PHYS 280	Astronomy for Physicists	4
PHYS 310	Advanced Mechanics	3
PHYS 325	Computational Physics	3
PHYS 341	Electronics and Digital Circuits	4
PHYS 350	Modern Optics	4
PHYS 368	Fluid Mechanics	3
PHYS 377	Mathematical Physics	3
PHYS 380	Observational Astronomy	4
PHYS 399	Special Topics in Physics	1-4
PHYS 451	Radiation and Medical Physics	3
PHYS 461	General Relativity	3
PHYS 462	Nuclear Physics	4
PHYS 464	Quantum Mechanics	3
PHYS 470	Solid State Physics	3
PHYS 480	Astrophysics	3
PHYS 495	Research or Independent Study in Physics	1-4

Teacher Education Program Requirements

Teacher Education Program Requirements (Teacher Certification in Subject Area P-12) (http://catalog.montclair.edu/programs/teacher-education-program-requirements-p12/)

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. Writing		*3*
2. Literature		*3*
D. Fine and Performing Arts or F. Humanities		
Complete one course from D. Fine and Performing Arts, F1. Great Works and Their Influences or F2. Philosophical and Religious Perspectives.		*3*
G. Computer Science		
CSIT 104	Python Programming I (Fulfilled in the major.)	
H. Mathematics		
Fulfilled in the major.		

AMAT 120 or MATH 122	Applied Calculus A 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		
Complete one course from K1. American and European History or K2. Global and Cultural Perspectives or IIB. World Cultures.		3
3. Social Science Perspectives		*0*
EDFD 200	Psychological Foundations of Education (Fulfilled in the Teacher Education sequence.)	
L. Interdisciplinary Studies		
SASE 210	Public Purposes of Education: Democracy and Schooling (Fulfilled in the Teacher Education sequence.)	
Total Credits		**14**

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		**3**
World Cultures		**0**
Fulfilled by either the K1 or K2 General Education category.		
Total Credits		**3**

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	CHEM 121	4
CHEM 120	4	EDFD 200	3
PHYS 191	4	PHYS 192	4
		PHYS 198	1
	16		**19**

Second Year

Fall	Credits	Spring	Credits
CHEM 230	3	Complete one course from one of the following categories:	3
MATH 222	4	GENERAL EDUCATION: (D) Fine and Performing Arts	
PHYS 210	3	GENERAL EDUCATION: (F1) Humanities – Great Works and Their Influences	
SASE 210	3	GENERAL EDUCATION: (F2) Humanities – Philosophical and Religious Perspectives	
		CHEM 232	2
		CSIT 104	3
		PHYS 320	3
		PHYS 340	3
	13		**14**

Third Year

Fall	Credits	Spring	Credits
PHYS 220	3	GENERAL EDUCATION: (J) Physical Education	1
PHYS 230	4	Complete one course from one of the following categories:	3
PHYS 300	1	GENERAL EDUCATION: (K1) Social Science – American and European History	
Chemistry Elective Course	3	GENERAL EDUCATION: (K2) Social Science – Global Cultural Perspectives	
SASE 320	3	World Cultures	3
SASE 321	3	PHYS 360	3
		Physics Elective Course	3
		SASE 322	3
	17		**16**

Fourth Year

Fall	Credits	Spring	Credits
PHYS 330	4	SASE 452	3
SASE 402	4	SASE 453	9
SASE 450	3	Students may not take any additional courses during the Clinical II semester.	
SASE 451	3		
	14		**12**

Total Credits 121