

# PHYSICS (B.S.) (COMBINED B.S./M.A.T. TEACHING WITH TEACHER CERTIFICATION IN PHYSICAL SCIENCE (PRESCHOOL-GRADE 12) AND TEACHER OF STUDENTS WITH DISABILITIES)

A Combined Degree program enables undergraduate students to enroll in graduate courses in their senior year, which can be counted towards the completion of both their Bachelor's and Master's degree requirements.

The ability to take these "swing courses" allows students to earn both their Bachelor's and Master's degrees in a shortened period of time, typically within five years of intensive study. Undergraduate students interested in this option can find more information regarding program requirements on the University's Combined Programs website (<https://www.montclair.edu/combined-programs/programs-of-study/>).

The Combined Degree with Dual Certification program is a 5-year program that leads to teacher certification in Physical Science (grades P-12), teacher certification in Teacher of Students with Disabilities, a baccalaureate degree and a master's degree. Interested students must apply to and be admitted to the Teacher Education Program as an undergraduate.

Students must successfully complete the undergraduate portion of the program in order to be admitted to the Graduate School and complete the one-year master's portion of the program. Please visit the Teacher Education Program (<http://www.montclair.edu/cehs/academics/cop/teacher/>) website for the required undergraduate professional sequence of courses, overall course outline, and other important Program requirements, guidelines, and procedures. Students also are strongly advised to review the Teacher Education Program Handbook.

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
	Teacher Education Requirements (including Graduate Swing Courses)	36
	Free Electives	1
<b>Total Credits</b>		<b>120</b>

## Major Requirements

Requirements for the graduate portion of this combined program can be found here. (<http://catalog.montclair.edu/programs/teaching-certification-p12-students-disabilities-combined-bx-mat/>)

Code	Title	Credits
<b>Physics Core</b>		
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

### Major Electives

Complete 3 credits from the list below. 3

### 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

**Total Credits** 66

## 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

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PHYS 480	Astrophysics	3
PHYS 495	Research or Independent Study in Physics	1-4

Fulfilled by either the K1 or K2 General Education category.

**Total Credits** **3**

## Teacher Education Program Requirements

Teacher Education Program Requirements for Combined Degree Programs with Subject Area P-12 and Teacher of Students with Disabilities Certifications (<http://catalog.montclair.edu/programs/combined-bx-mat-teacher-education-program-requirements-p12-tsd/>)

## 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
<b>A. New Student Seminar</b>		
	Complete a 1 credit New Student Seminar course.	1
<b>C. Communication</b>		
	1. Writing	3
	2. Literature	3
<b>D. Fine and Performing Arts or F. Humanities</b>		
	Complete one course from D. Fine and Performing Arts, F1. Great Works and Their Influences or F2. Philosophical and Religious Perspectives.	3
<b>G. Computer Science</b>		
CSIT 104	Python Programming I (Fulfilled in the major.)	
<b>H. Mathematics</b>		
	Fulfilled in the major.	
AMAT 120	Applied Calculus A or MATH 12: Calculus I	
<b>I. Natural Science Laboratory</b>		
PHYS 191	University Physics I (Fulfilled in the major.)	
<b>J. Physical Education</b>		
	Complete a 1 credit Physical Education course.	1
<b>K. Social Science</b>		
	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.)	
<b>L. Interdisciplinary Studies</b>		
SASE 210	Public Purposes of Education: Democracy and Schooling (Fulfilled in the Teacher Education sequence.)	
<b>Total Credits</b>		<b>14</b>

## Recommended Roadmap to Degree(s)

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

Fifth year courses are taken at the graduate level, after matriculation into the graduate portion of this combined degree program.

### First Year

Fall	Credits	Spring	Credits
GENERAL EDUCATION: (A) New Student Seminar		1 GENERAL EDUCATION: (C2) Literature	3
GENERAL EDUCATION: (C1) Writing	3	GENERAL EDUCATION: (C3) Communication	3
		<b>4</b>	<b>6</b>

### Third Year

Fall	Credits	Spring	Credits
SASE 320		3 SASE 322	3
SASE 321	3	SPED 469	3
SPED 279	3		
		<b>9</b>	<b>6</b>

### Fourth Year

Fall	Credits	Spring	Credits
SPED 483		3 SPED 566	3
SPED 488	3	SPED 586	3
		SPED 690	3
		<b>6</b>	<b>9</b>

### Total Credits 40

### Fifth Year

Fall	Credits	Spring	Credits
SASE 526		3 SASE 529	6
SASE 527	3	SASE 543	3
SPED 584	3		
Teaching Methods Course	3-4		
		<b>12-13</b>	<b>9</b>

### Total Credits 21-22

## 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
<b>World Languages</b>		<b>3</b>
<b>World Cultures</b>		<b>0</b>