

PHYSICS (B.S.) (COMBINED B.S./M.A.T. WITH TEACHER CERTIFICATION IN PHYSICS (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. 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 Physics (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.

Degree Requirements Overview

Code	Title	Credits
	New Student Seminar	1
	SEEDS General Education Requirements	21-24
	Major Requirements	65-66
	Teacher Education Requirements	36
Total Credits		123-127

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
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
PHYS 464	Quantum Mechanics	3

Physics 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
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
AMAT 350	Applied Mathematics I	3-4
or MATH 325	Ordinary Differential Equation	
or PHYS 377	Mathematical Physics	

Total Credits 65-66

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 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 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-td/>)

New Student Seminar

Code	Title	Credits
Students in the Adult Learner program must take GNED 100.		
Complete one course from the following. Some courses may be restricted by major. Consult with an academic advisor.		1
ADVS 198	Pathways to Success	
CHEM 190	Freshman Seminar in Chemistry	
FYS 100	First Year Seminar	
GNED 100	Adult Academic Success Seminar	
GNED 199	New Student Seminar	
HPEM 199	Freshman Seminar in Health and Physical Education	
IDS 155	Pathways to Adult Learning	
JUST 199	New Student Seminar	
MATH 102	New Student Experience for Mathematical Sciences	
MUGN 199	Freshman Seminar for Music Majors	
NURS 199	Introduction to Nursing	
POLS 199	Freshman Seminar in Political Science and Law	

SEEDS General Education Requirements

Click here for a list of courses that fulfill the SEEDS requirements. (<http://catalog.montclair.edu/programs/seeds-general-education-requirements/>)

Code	Title	Credits
Foundations		
<i>Effective Writing I</i>		
Complete one Effective Writing I course.		3
<i>Effective Writing II</i>		
Complete one Effective Writing II course.		3
<i>Interactive Communication</i>		
Complete one Interactive Communication course.		3
<i>Quantitative Reasoning</i>		
Fulfilled by AMAT 120 or MATH 122 in the major.		
Political and Civic Life		
Fulfilled by SASE 210 in the Teacher Education requirements.		
<i>World Language</i>		
Complete two sequential classes in one World Language when starting at the Beginner I or Beginner II level. Complete one class when starting at the Intermediate/Advanced Level.		3-6
Exploration		
Complete one course from four different Exploration categories:		9
<i>Analyzing Cultures and Societies</i>		
<i>Creative Expression</i>		
<i>Ethical Inquiry</i>		
Historical Thinking		
<i>Literary and Artistic Analysis</i>		
<i>Scientific Reasoning</i>		
Fulfilled by PHYS 191 in the major.		
Total Credits		21-24