PHYSICS - ASTRONOMY 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.

Degree Requirements Overview

Code	Title	Credits
New Student Seminar		1
SEEDS General Education Requirements		24-27
Major Requirements		78-82
Free Electives		17-10
Total Credits		**120**

Major Requirements

Code	Title	Credits
Physics/Astronomy Required Courses		
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/Astronomy Concentration Courses		
Complete 10-11 credits from the following:		10-11
PHYS 280	Astronomy for Physicists	
PHYS 380	Observational Astronomy	
PHYS 461	General Relativity	
PHYS 480	Astrophysics	
Complete 6-8 credits from the following:		6-8
PHYS 245	Fundamentals of Electronics	
PHYS 310	Advanced Mechanics	
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 462	Nuclear Physics	
PHYS 470	Solid State Physics	
PHYS 495	Research or Independent Study in Physics	
AMAT 345	Applied Probability	
AMAT 450	Applied Mathematics II	
MATH 460	Introduction to Applied Mathematics	
STAT 230	Data Science and Statistics	
Collateral Courses		
CHEM 120	General Chemistry I	4
CHEM 121	General Chemistry II	4
CSIT 104	Python Programming I	3
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		**78-82**

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		
Effective Writing I		
Complete one Effective Writing I course.		3
Effective Writing II		
Complete one Effective Writing II course.		3
Interactive Communication		
Complete one Interactive Communication course.		3
Quantitative Reasoning		
Fulfilled by AMAT 120 or MATH 122 in the major.		
Political and Civic Life		
Complete one Political and Civic Life course.		3
World Language		

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
Analyzing Cultures and Societies	
Creative Expression	
Ethical Inquiry	
Historical Thinking	
Literary and Artistic Analysis	
Scientific Reasoning	
Fulfilled by PHYS 191 in the major.	
Total Credits	**24-27**