PHYSICS MAJOR (B.S.) (COMBINED B.S./M.S. PURE & APPLIED MATHEMATICS)

A minimum of 120 credits of coursework is required for the baccalaureate degree with a minimum 2.0 overall GPA, and a minimum 2.0 major GPA. However, more than 120 credits may be required depending upon the major field of study.

Students interested in this combined program should consult the Undergraduate Advisor after completing MATH 335.

Program Requirements

Students must complete 42 credits of General Education requirements (http://catalog.montclair.edu/undergraduate-graduate-degree-requirements/general-ed-ba-bs) and 3-9 credits of World Languages and Cultures Requirements (http://catalog.montclair.edu/undergraduate-graduate-degree-requirements/world-languages-cultures-requirement).

Requirements for the graduate portion of this dual degree program can be found here (http://catalog.montclair.edu/programs/pure-applied-mathematics-concentration-ms-combined-bs-ms).

Physics Required Courses

PHYS 191     University Physics I          4
PHYS 192     University Physics II         4
PHYS 210     Mechanics                      4
PHYS 240     Electricity and Magnetism      4
PHYS 350     Optics                         4
PHYS 460     Modern Physics                 4

Physics Elective Courses

Select a minimum of 14 credits from the following: 14

EAES 105   Physical Geology
PHYS 242    Circuit Theory
PHYS 245    Electronics and Digital Circuits
PHYS 247    Microprocessors and Their Applications
PHYS 280    Astronomy
PHYS 310    Advanced Mechanics
PHYS 320    Thermodynamics
PHYS 368    Fluid Mechanics
PHYS 377    Mathematical Physics
PHYS 380    Observational Astronomy
PHYS 430    Computer Simulations of Physical Systems
PHYS 462    Nuclear Physics
PHYS 464    Quantum Mechanics
PHYS 470    Solid State Physics
PHYS 480    Astrophysics
PHYS 490    Literature Research in Physics
PHYS 495    Laboratory Research in Physics

Collateral Courses

CHEM 120   General Chemistry I            4
CHEM 121   General Chemistry II           4
CSIT 111    Fundamentals of Programming I  3
MATH 122   Calculus I                     4

MATH 221     Calculus II                 4
MATH 222     Calculus III                 4
MATH 420     Ordinary Differential Equations  4

Prerequisite Courses

MATH 335     Linear Algebra \(^1\)            4
MATH 431     Foundations of Modern Algebra \(^1\)  3

Graduate Requirements

Select 12 credits of the following: 12

Select 0-6 credits from the following if equivalent courses not taken previously:

MATH 515     Intermediate Analysis I
MATH 516     Intermediate Analysis II
MATH 518     Foundations of Abstract Algebra

Select 6-12 credits from the following: \(^2\)

MATH 521     Real Variables I
MATH 525     Complex Variables I
MATH 530     Mathematical Computing
MATH 531     Abstract Algebra I
MATH 535     Linear Algebra I
MATH 560     Numerical Analysis
MATH 584     Operations Research
MATH 591     Applied Industrial Mathematics

Total Credits 84

\(^1\) Prerequisites for graduate courses.
\(^2\) These courses will also count toward the MS portion of this program.