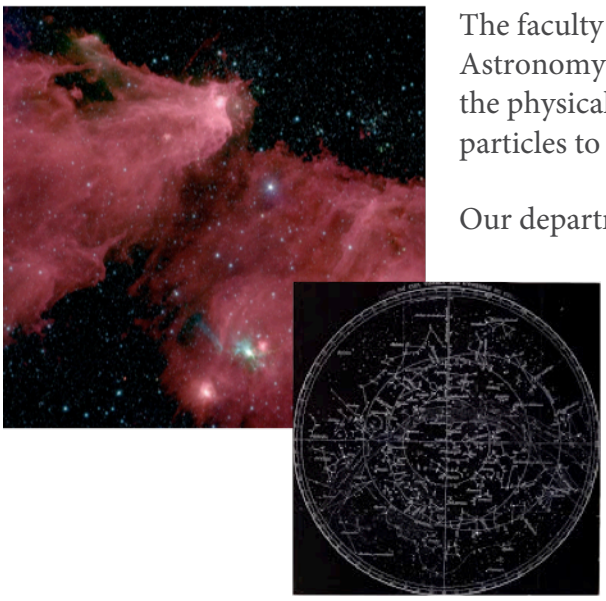
UNIVERSITY of ROCHESTER

COLLEGE OF ARTS AND SCIENCE

DEPARTMENT OF PHYSICS AND ASTRONOMY

Bachelor of Science in Physics and Astronomy



The faculty and students of the Department of Physics and Astronomy are engaged in explaining and predicting the behavior of the physical world around us, including everything from subatomic particles to supernovas.

Our department combines the best features of a small liberal arts college and a major research university. We are a moderately sized department with accessible faculty dedicated to excellence in teaching.

The BS degree is an intensive program of study providing stronger preparation for graduate school in astronomy, physics, or a closely related science, than does the BA. Students planning to pursue graduate study normally elect the BS program.

Concentration Requirements for BS degree in Physics and Astronomy

- Three of the following: ASTR/PHYS 231, ASTR 232, 233, 241, 242, 243, 244w and 265.
- A total of six courses in physics at the 200 level or beyond: PHYS 217, 218, 227, 235W, 237, 243W, 244W, 245W, 246 (or close equivalents), or ASTR 393W (Senior Thesis). (PHYS 218 or 243W are recommended).
- Two courses in advanced mathematics: MTH 281 and either MTH 282 or OPT 287 are recommended.
- Computer literacy requirement
- At least a 2.0 (C) average in astronomy, physics and mathematics courses must be maintained.
- The undergraduate astronomy advisor must approve all course choices.

Note: The computer literacy requirement can be satisfied by an introductory college computing course (preferably CSC 161/171), or PHY 256 (Computational Physics).

Graduate courses cannot in general be used to replace undergraduate requirements, but suitably prepared undergraduates may take graduate courses as electives, subject to permission of the course instructor and major advisor.

Please contact our Undergraduate Coordinator with any questions: UGCoordinator@ur.rochester.edu

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Four-Year Worksheet: Bachelor of Science in Physics and Astronomy

Physics Pre-Concentration
Regular Sequence

First Year	
Fall	**Spring**
AST 10x – Elementary Astronomy I	PHY 121: Mechanics
MTH 161: Calculus I	MTH 162: Calculus II
WRT 105: College Writing	Elective or Cluster course
Elective or Cluster course	Elective or Cluster course
Second Year	
Fall	**Spring**
PHY 122: Electromagnetism	PHY 123: Modern Physics
MTH 164: Multidimensional Calc.	MTH 165: Linear Algebra & Diff. Eqs
AST 111: Elementary Astronomy I	AST 142: Elementary Astrophysics
Elective or Cluster course	Elective or Cluster course

Physics Pre-Concentration
Honors Sequence[1]

First Year	
Fall	**Spring**
PHY 141: Honors Mechanics	PHY 143: Honors Modern Physics[2]
MTH 161/171: Honors Calculus I	MTH 162/172: Honors Calculus II
AST 111: Solar System & Its Origin	Elective or Cluster course[3]
WRT 105: College Writing	Elective or Cluster course
Second Year	
Fall	**Spring**
PHY 142: Honors Electromagnetism	PHY 237: Quantum Mech. of Physical Systems
MTH 164/173:Analysis IIIA	MTH 165/174: Honors Calculus IV
Elective or Cluster course	AST 142: Elementary Astrophysics
Elective or Cluster course	Elective or Cluster course

Third Year	
Fall	**Spring**
PHY 217 -- Electricity & Magnetism I	PHY 218 – Electricity & Magnetism II
PHY 235W -- Classical Mechanics	PHY 237 -- Quantum Mech. of Physical Systems[4] OR PHY 227 -- Thermo. & Statistical Mechanics[5]
MTH 281 -- Fourier Series	AST 241 -- Stellar Astrophysics
AST 2xx - Upper level Astro[6]	Elective
Fourth Year	
Fall	**Spring**
PHY 243W -- Advanced Experimental Techniques I	AST 242 -- Galaxies and Cosmology
PHY 231 -- Relativity and Gravitation	PHY 246 – Quantum Theory OR PHY 227 – Thermo & Statistical Mech.
AST 393W -- Senior Project[7]	MTH 282 – Intro. Complex Variables
Elective or Cluster course	Elective or Cluster course

1 Students who are intending to major in physics or related fields are encouraged to pursue the honors sequence.
2 PHY 143 is open to freshmen only, except with permission of the instructor.
3 Students are encouraged to take a course in computer programming during their first or second years in order to satisfy the major's computer literacy requirement. Such courses include CSC 161, 171, ECE 114, and PHY 256.
4 Students who have taken PHY 237 in their sophomore year should consider taking PHY 246 in either their junior or senior years.
5 The department encourages students planning to go to graduate school in Physics and Astronomy to prepare for the GRE Physics exam during the summer after junior year, as the exam is typically taken in the fall of senior year. While graduate schools have different policies on how the exams are used in admissions, high scores are always helpful, and the review itself provides enrichment. Some copies of old GRE exams available in the Physics/Optics/Astronomy Library, located on the 3rd floor of Bausch & Lomb Hall, room 374. Before taking the exam, it is also strongly recommended that you have taken PHY 227, Thermodynamics and Statistical Mechanics.
6 PHY 231, AST 232, AST 241 and AST 242 are offered every other year.
7 All students with a GPA greater than 3.0 are strongly encouraged to do senior project in their senior year.

Please contact our Undergraduate Coordinator with any questions: UGCoordinator@UR.Rochester.edu