# Astronomy, BS

## Requirements

The Bachelor of Science with a major in astronomy requires a minimum of 120 s.h., including at least 60 s.h. of work for the major. The program provides balanced and integrated coursework in astronomy, mathematics, and physics that prepares students for graduate studies in astronomy, astrophysics, or related science disciplines. Students must maintain a grade-point average (GPA) of at least 2.00 in all courses for the major and in all UI courses for the major. They must also complete the College of Liberal Arts and Sciences GE CLAS Core.

Students must complete several required mathematics courses in addition to the required physics and astronomy core. The department offers a wide range of upper-level electives and students are encouraged to explore different research areas. All students are strongly encouraged to get involved with research.

In planning coursework, students should be guided by the College of Liberal Arts and Sciences maximum hours rule: students earning a BS may apply a maximum of 56 s.h. earned in one department to the minimum 120 s.h. required for graduation, whether or not the coursework is accepted toward the requirements for the major. Students who earn more than 56 s.h. from one department may use the additional semester hours to satisfy requirements for the major (if the department accepts them), and the grades they earn become part of their grade-point average, but they cannot apply the additional semester hours to the minimum 120 s.h. required for graduation.

Students who want to earn a double major in astronomy and physics must choose their coursework carefully; see the following section titled "Double Major in Physics and Astronomy."

The BS with a major in astronomy requires the following coursework. Substitutions may be allowed by exception through the department.

| Requirements | Hours |
|---|---|
| Mathematics Courses | 13-16 |
| Physics Core Courses | 24-28 |
| Astronomy Core Courses | 17 |
| Upper-Level Physics Courses | 6-7 |
| Optional Upper-Level Elective Courses | |

## Mathematics Courses

| Course # | Title | Hours |
|---|---|---|
| All of these: | | |
| MATH:1850 | Calculus I | 4 |
| MATH:1860 | Calculus II | 4 |
| MATH:2700 | Introduction to Linear Algebra | 4 |
| MATH:2850 | Calculus III | 4 |
| Or all of these: | | |
| MATH:1550 | Engineering Calculus I | 4 |
| MATH:1560 | Engineering Calculus II | 4 |
| MATH:2550 | Engineering Matrix Algebra | 2 |
| MATH:3550 | Engineering Vector Calculus | 3 |

## Physics Core Courses

| Course # | Title | Hours |
|---|---|---|
| These three courses: | | |
| PHYS:1701 | Physics I | 4 |
| PHYS:1702 | Physics II | 4 |
| PHYS:2703 | Physics III | 4 |
| Or these two courses: | | |
| PHYS:1611 | Introductory Physics I | 4 |
| PHYS:1612 | Introductory Physics II | 4 |
| All of these: | | |
| PHYS:2704 | Physics IV | 4 |
| PHYS:3710 | Intermediate Mechanics | 3 |
| PHYS:3741 | Introduction to Quantum Mechanics I | 3 |
| PHYS:3811 | Electricity and Magnetism I | 3 |
| PHYS:3812 | Electricity and Magnetism II | 3 |

## Astronomy Core Courses

| Course # | Title | Hours |
|---|---|---|
| All of these: | | |
| ASTR:1771 | Fundamental Astronomy I: The Solar System and Exoplanets | 4 |
| ASTR:1772 | Fundamental Astronomy II: Evolution of Stars, Galaxies, and the Universe | 4 |
| ASTR:3771 | Introduction to Astrophysics I (offered every other year) | 3 |
| ASTR:3772 | Introduction to Astrophysics II (offered every other year) | 3 |
| ASTR:4850 | Observational Techniques in Astronomy (offered every other year) | 3 |

## Upper-Level Physics Courses

| Course # | Title | Hours |
|---|---|---|
| One of these: | | |
| PHYS:3756 | Intermediate Laboratory | 3 |
| PHYS:3850 | Electronics | 4 |
| One of these: | | |
| PHYS:3742 | Introduction to Quantum Mechanics II | 3 |
| PHYS:4731 | Plasma Physics I | 3 |

## Optional Upper-Level Elective Courses

Undergraduate majors who plan to pursue graduate study are advised to go as far as they can beyond the requirements by taking one or more of these elective courses.

| Course # | Title | Hours |
|---|---|---|
| PHYS:3730 | Statistical Physics | 3 |
| PHYS:3742 | Introduction to Quantum Mechanics II | 3 |
| PHYS:4720 | Introductory Optics | 3 |
| PHYS:4731 | Plasma Physics I | 3 |
| PHYS:4740 | Elementary Particles and Nuclear Physics | 3 |

| | | |
|---|---|---|
| PHYS:4761 | Mathematical Methods of Physics I | 3 |
| PHYS:4762 | Mathematical Methods of Physics II | 3 |
| PHYS:4905 | Special Topics in Physics | arr. |

## Double Major in Physics and Astronomy

Students who are earning two majors from the same department (e.g., astronomy and physics) may apply more than 56 s.h. from their home department toward their degree, but they must earn at least 56 s.h. of credit in courses outside their home department in order to graduate. Students working toward a Bachelor of Science with a double major in physics and in astronomy must complete all requirements for both majors and must earn a minimum of 56 s.h. outside the Department of Physics and Astronomy in order to graduate. Students interested in earning a double major should consult with their advisors. See Requirements for a Bachelor's Degree on the College of Liberal Arts and Sciences website.