

A typical course of study for the Physics major

First year:

Fall: PHYS 005: Spacetime and Quanta

Spring: PHYS 013: Thermodynamics/Statistical Mechanics (0.5 cr)

PHYS 015: Optics (0.5 cr)

Second year:

Fall: PHYS 007: Introductory Mechanics

PHYS 063: Procedures in Experimental Physics (0.5 cr)

Spring: PHYS 008: Electricity, Magnetism, and Waves

PHYS 017: Mathematical Methods of Physics (0.5 cr)

PHYS 018: Quantum Mechanics (0.5 cr)

Third year:

Fall: PHYS 111: Analytic Dynamics

PHYS 112: Electrodynamics

Spring: PHYS 113: Quantum Theory

PHYS 114: Statistical Physics

PHYS 081: Advanced Laboratory I (0.5 cr)

Fourth year:

Fall: PHYS 082: Advanced Laboratory II (0.5 cr)

*PHYS 115/PHYS 13x: Modern and Quantum Optics; Advanced Topics seminar

*PHYS 180: Thesis

Spring: *PHYS 13x: Advanced Topics seminar

*not required for the major

This represents a typical curriculum but one that progresses at a *rapid* pace, meeting nearly all the major requirements by the end of the third year. Many alternate schedules are possible. Common ones include moving 112 and/or 114 to senior year; and changing the order of 13, 15, 17, and 18. Some of these half-credit classes can even be taken in the junior year. PHYS 17 (Math Methods) is the primary one required as a prerequisite for seminars, but, for example, PHYS 15 (Optics) could be taken any of the four years.

Advanced seminars (13x) include General Relativity, Particle Physics, Computational Physics, Solid State Physics, Plasma Physics, Nuclear Physics and several others. They are not required for the major, but taking at least two is strongly recommended, especially for a student intending to go on to graduate study.

Some of the astronomy courses, for example ASTR 14 (Astrophysics: Solar System and Cosmology), ASTR 16 (Astrophysics: Stars, ISM, and Galaxies), and ASTR 61 (Current Problems in Astrophysics, 0.5 cr) are sometimes taken as electives.

Study abroad is possible for astro/physics majors, but it is sometimes important that some of the courses taken abroad count toward the major.

The course major and honors major requirements for classes, seminars, and labs are identical. All 100-level classes are taught as seminars. Senior thesis is an option for students in the honors program; non-thesis research can be pursued during the semester via ASTR/PHYS 94. Really, the only difference between the course and honors major curricula are the external exams and the opportunity to write an honors thesis.

All majors, regardless of their participation in the honors program, are encouraged to participate in research one summer or semester.

Astrophysics and Astronomy are two additional majors offered by our department. Because you can't minor in something within your major department, you can't major in Physics and minor in Astro. The functional equivalent of that is the Astrophysics major, which requires all the classes required for the physics major

(except PHYS 63, 81, and 82) and also requires ASTR 14 or ASTR 16 and two 100-level astronomy seminars. The 20-credit rule is waived for astrophysics majors.

The Astronomy major shares nearly the first four semesters in common with the Physics major, but then requires ASTR 14 or ASTR 16, four 100-level astronomy seminars (ASTR 14 or ASTR 16 can be substituted for one), and ASTR 61.

Typical courses of study for these two majors are listed on the following pages.

A typical course of study for the Astrophysics major

First year:

Fall: PHYS 005: Spacetime and Quanta

Spring: PHYS 013: Thermodynamics/Statistical Mechanics (0.5 cr)

 PHYS 015: Optics (0.5 cr)

 ASTR 014: Astrophysics: Solar System and Cosmology

Second year:

Fall: PHYS 007: Introductory Mechanics

 ASTR 016: Astrophysics: Stars, ISM, and Galaxies

Spring: PHYS 008: Electricity and Magnetism

 PHYS 017: Mathematical Methods of Physics (0.5 cr)

 PHYS 018: Quantum Mechanics (0.5 cr)

Third year:

Fall: PHYS 111: Analytic Dynamics

 PHYS 112: Electrodynamics

Spring: PHYS 113: Quantum Theory

 ASTRO 121: Research Techniques in Observational Astronomy

 *ASTR 61: Current Problems in Astronomy and Astrophysics (0.5 cr)

Fourth year:

Fall: ASTR 123: Stellar Astrophysics

*ASTR 180: Thesis

*PHYS 13x: Advanced Topics seminar

Spring: PHYS 114: Statistical Physics

*ASTR 126: Interstellar Medium

*not required for the major (note also that only one of ASTR 14 and 16 is required for the major)

A typical course of study for the Astronomy major

First year:

Fall: PHYS 005: Spacetime and Quanta

Spring: *PHYS 013: Thermodynamics/Statistical Mechanics (0.5 cr)

ASTR 014: Astrophysics: Solar System and Cosmology

Second year:

Fall: PHYS 007: Introductory Mechanics

Spring: PHYS 008: Electricity and Magnetism

*PHYS 017: Mathematical Methods of Physics (0.5 cr)

*PHYS 018: Quantum Mechanics (0.5 cr)

Third year:

Fall: ASTR 016: Astrophysics: Stars, ISM, and Galaxies

Spring: *PHYS 015: Optics (0.5 cr)

ASTRO 121: Research Techniques in Observational Astronomy

ASTR 61: Current Problems in Astronomy and Astrophysics (0.5 cr)

Fourth year:

Fall: ASTR 123: Stellar Astrophysics

 *ASTR 180: Thesis

Spring: ASTR 126: Interstellar Medium

 *ASTR 61: Current Problems in Astronomy and Astrophysics (0.5 cr)

*Not required for the major; although PHYS 13 and 15 are prerequisites for certain astro seminars, and PHYS 17 and 18 are recommended. Note that Astro 61 can be taken for credit more than once.