

## DEGREE REQUIREMENTS

Following are the course requirements for the B.S. in Physics with Emphasis in Astronomy & Astrophysics.

1. Same Mathematics requirements as current Pre-Professional Physics Major: multivariable calculus, vector calculus, ODEs, PDEs, linear algebra, and complex analysis. (Nominally: Math 1250, 1260, 2250, 3150, and 3160. See Physics and Astronomy Undergraduate Handbook for more details, equivalencies, and alternative sequences.)

2. The following physics core:

Physics 1970/1980 (Undergraduate Seminar I & II)

Physics 3210\* (Physics for Scientists and Engineers I)

Physics 2215 (Physics Lab for Scientists and Engineers I)

Physics 3220\* (Physics for Scientists and Engineers II)

Physics 2225 (Physics Lab for Scientists and Engineers II)

Physics 3740 (Intro to Quantum and Relativity)

Physics 3760 (Thermodynamics and Statistical Mechanics)

Physics 4410 (Classical Physics I)

Physics 4420 (Classical Physics II)

Physics 5450 (Intro to Quantum Mechanics)

[\*Physics 2210/2220 allowed, but 3210/3220 strongly advised.]

3. Astronomy 2500 (Foundations of Astronomy)

4. Two of the following topical classes:

Astronomy/Physics 3060 (Stars)

Astronomy/Physics 3070 (Galaxies; to be implemented)

Astronomy/Physics 4080 (Cosmology)

[Astronomy 5560, 5570, 5580, and 5590 are also acceptable if advisable.]

5. Two of the following practical classes:

Physics 3719 (Undergraduate Physics Lab)

Physics 3730 (Introduction to Computing in Physics)

Physics 3610 (Electronics)

Astronomy 4060 (Observational Astronomy)

Astronomy 4999 (Undergraduate Thesis Research)

[Astronomy 5015 also acceptable if advisable. Certain courses in Computer Science may also be accepted on petition of the student.]

6. Any 5000-level or higher elective class in Physics or Astronomy.

[Classes at the 5000-level or higher in other science or engineering departments may also be accepted on petition of the student.]

## POSSIBLE 4-YEAR SCHEDULING OF COURSES

The following is a possible four-year scheduling plan for the B.S in Physics with Emphasis in Astronomy & Astrophysics. Other schedules are possible as well.

### First Year Fall

MATH 1250
PHYS 1970

### Third Year Fall

PHYS 4410
PHYS 3760

### First Year Spring

MATH 1260
PHYS 3210+ lab
PHYS 1980

### Third Year Spring

PHYS 4420
ASTR 4080*

### Second Year Fall

MATH 2250
PHYS 3220+lab
ASTR 2500

### Fourth Year Fall

PHYS 5450
ASTR 4060*

### Second Year Spring

MATH 3150/60
PHYS 3740
ASTR 3060*

### Fourth Year Spring

PHYS 5--- *
ASTR 4999*

[\* indicates course fulfills flexible requirement]

[For those following the 1210/1220/2210 mathematics track, a summer course should be taken so that 2250 can be taken during fall of the second year.]

## COMPARISON TO PRE-PROFESSIONAL PHYSICS MAJOR

Viewed comparatively, the B.S. in Physics with Emphasis in Astronomy & Astrophysics replaces the following six specific requirements of the Pre-Professional Physics curriculum: two courses in General Chemistry (with associated labs), Physics 3730 (Computational), Physics 3719 (Undergraduate Lab), Physics 5110 (Intro to Particle Physics), and Physics 5460 (Quantum and Stat Mech). In place of these classes, the new program adds the following six requirements: an introductory class in astronomy (ASTR 2500), two topical classes in astronomy, two practical classes (for which Physics 3719 and Physics 3730 are both possible choices), and one 5000-level elective requirement (for which either Physics 5110 or Physics 5460 is a possible choice.)