

# Bachelor of Science in Astronomy Degree Courses

## Total Hours Required for Graduation: 122

Six hours of Mathematics and Natural Science (Physics) are double counted towards SAGES Breadth Requirement and 1 required math course is double counted towards the SAGES Quantitative Reasoning requirement.

## Astronomy Hours: 20 hours required, up to 24 with Astronomy capstone

ASTR 151 Doing Astronomy (1) (Suggested but Not Required For the Major)

ASTR 221 Stars and Planets ..... (3)

ASTR 222 Galaxies and Cosmology ..... (3)

ASTR 306 Astronomical Techniques (SAGES Dept. Seminar)..... (3)<sup>a</sup>

ASTR 309 Astrophysics Seminar I ..... (1)

ASTR 310 Astrophysics Seminar II ..... (1)

ASTR 311 Stellar Physics ..... (3)<sup>a</sup>

ASTR 323 The Local Universe ..... (3)<sup>a</sup>

ASTR 328 Cosmology and the Structure of the Universe ..... (3)<sup>a</sup>

ASTR 351 SAGES Astronomy Capstone ..... (3-4)<sup>b</sup>

a. ASTR 306,311,323 and 328 are taught every other year only.

b. A SAGES Capstone Experience is required of all students. The Astronomy BS does *not* require the Astronomy Capstone but only that a Capstone be taken. The Astronomy Capstone with requires 1 hour in the Senior Fall Semester and 2-3 hours in the Senior Spring Semester. If another Capstone is taken the number of hours may be different.

## Physics Hours: 43 (class-lab-credit hours)

PHYS 121 General Physics I - Mechanics ..... (4-0-4)<sup>c</sup>

PHYS 122 General Physics II: Electricity & Magnetism ..... (4-0-4)<sup>c</sup>

PHYS 203 Laboratory Physics ..... (2-4-4)

PHYS 204 Advanced Instrumentation Lab ..... (1-4-4)

PHYS 221 General Physics III: Modern Physics ..... (3-0-3)<sup>c</sup>

PHYS 250 Mathematical Physics & Computing ..... (3-0-3)

PHYS 310 Classical Mechanics ..... (3-0-3)

PHYS 313 Thermodynamics & Statistical Mechanics ..... (3-0-3)

PHYS 324 Electricity & Magnetism I ..... (3-0-3)

PHYS 325 Electricity & Magnetism II ..... (3-0-3)

PHYS 326 Physical Optics ..... (3-0-3)

PHYS 331 Quantum Mechanics I ..... (3-0-3)

PHYS 332 Quantum Mechanics II ..... (3-0-3)

c. Selected students may be invited to take PHYS 123, 124, 223 in place of 121, 122, 221.

## Math Hours: 14

MATH 121 Calculus for Science & Engineering I ..... (4)

or MATH 123 Calculus I ..... (4)

MATH 122 Calculus for Science & Engineering II ..... (4)

or MATH 124 Calculus II ..... (4)

MATH 223 Calculus for Science & Engineering III ..... (3)

or MATH 227 Calculus III ..... (3)

MATH 224 Elementary Differential Equations ..... (3)

or MATH 228 Differential Equations ..... (3)

## ENG/Computing Hours: 3

ENGR 131 Elementary Computer Programming ..... (3)

## Technical Electives Hours 9

Technical Electives are additional courses in astronomy, chemistry, mathematics, statistics, physics, or geology which satisfy interests of the student but also fall within the science/mathematics objectives of the major. For a complete list of approved technical electives see advisor.

## Approved Technical Electives - B. S. In Astronomy (This is not an exhaustive list)

GEOL 345 Planetary Materials

MATH 345 Introduction to Applied Mathematics

MATH 201 Introduction to Linear Algebra

PHYS 316 Introduction to Nuclear and Particle Physics

PHYS 349 Methods of Mathematical Physics I

PHYS 350 Methods of Mathematical Physics II