INTRODUCTORY REQUIREMENTS

Calculus: MATH 19A (FWS) ___ OR MATH 20A (F) ___
          MATH 19B (FWS) ___ OR MATH 20B (W) ___

Vector Calculus: MATH 23A (FWS) ___ AND MATH 23B (FWS) ___

Physics: PHYS 5A/L (FW) ___ + 5B/M (W) ___ + 5C/N (S) ___ + 5D (F) ___

**NOTE:** To declare this major, PHYS SABC must be completed with a GPA of 2.7 or higher.

Computer Programming: ASTR 119 Intro to Scientific Computing (IDL) (WS) ___
                       CMPS SC Programming in C/C++ (*) ___
                       CMPS SJ Programming in Java (FWS) ___
                       CMPS SP Programming in Python (WS) ___
                       PHYS 115 Computational Physics (C/C++, Fortran) (S) ___

ADVANCED REQUIREMENTS 15 courses and a senior thesis

Modern Physics: PHYS 102 Modern Physics (FW) ___

Mechanics: PHYS 105 Mechanics (F) ___

Electricity/Magnetism/Optics: PHYS 110A Electricity, Magnetism, and Optics (W) ___
                              PHYS 110B Electricity, Magnetism, and Optics (S) ___

Thermodynamics: PHYS 112 Thermodynamics and Statistical Mechanics (W) ___

Math Methods: PHYS 116A Mathematical Methods in Physics (W) ___
               PHYS 116B Mathematical Methods in Physics (S) ___
               PHYS 116C Mathematical Methods in Physics (F) ___

Quantum Mechanics: PHYS 139A Quantum Mechanics (S) ___

Electives: THREE from the following...
           ASTR 111 Order-of-Magnitude Astrophysics (F) ___
           ASTR 112 Physics of Stars (W) ___
           ASTR 113 Introduction to Cosmology (W) ___
           ASTR 117 High Energy Astrophysics (*) ___
           ASTR 118 Physics of Planetary Systems (S) ___
           ASTR 257 Modern Astronomical Techniques (F) ___
           PHYS 129 Nuclear and Particle Astrophysics (W) ___
           PHYS 171 General Relativity, Black Holes, and Cosmology (F) ___

Intermediate Laboratory: PHYS 133 (FW) ___

Advanced Laboratory: PHYS 135/AB (F/FW) ___ OR PHYS 136 (S) ___

DISCIPLINARY COMMUNICATION REQUIREMENT

Satisfied by successful completion of PHYS 182 and the senior thesis.

NOTE: This requirement MUST be completed at UCSC.

COMPREHENSIVE REQUIREMENT

PHYS 182 Scientific Communication for Physicists (FW) ___

Senior Thesis on an astronomy-related topic ___