ASTRONOMY, BS

Degree: Bachelor of Science (BS)
Major: Astronomy

Program Overview

The BS in Astronomy provides a theoretical foundation and practical experience in the field of astronomy. The program offers strong coursework in astronomy, math, and physics, as well as research opportunities. Students develop skills in data analysis, computational methods, and science communication.

This program prepares students for study in astronomy at the graduate level. The program is also good preparation for careers in data science, science education, public outreach, and related fields.

Undergraduate Policies

For undergraduate policies and procedures, please review the Undergraduate Academics section of the General Bulletin.

Accelerated Master's Programs

Undergraduate students may participate in accelerated programs toward graduate or professional degrees. For more information and details of the policies and procedures related to accelerated studies, please visit the Undergraduate Academics section of the General Bulletin.

Program Requirements

Students seeking to complete this major and degree program must meet the general requirements for bachelor's degrees and the Unified General Education Requirements. Students completing this program as a secondary major while completing another undergraduate degree program do not need to satisfy the school-specific requirements associated with this major.

The Bachelor of Science in astronomy requires 120 credit hours, including 18 credit hours in astronomy, 40 credit hours in physics, 14 credit hours in math, 3 credit hours in computer programming and 15 credit hours in technical electives.

Code	Title	Hours
Required Courses:		
ASTR 221	Stars and Planets	3
ASTR 222	Galaxies and Cosmology	3
ASTR 306	Astronomical Techniques	3
ASTR 311	Stellar Physics	3
ASTR 323	The Local Universe	3
ASTR 328	Cosmology and the Structure of the Universe	3
ENGR 131	Elementary Computer Programming	3
MATH 121	Calculus for Science and Engineering I	4
MATH 122 or MATH 124	Calculus for Science and Engineering II or Calculus II	4
MATH 223 or MATH 227	Calculus for Science and Engineering III Calculus III	3
MATH 224 or MATH 228	Elementary Differential Equations Differential Equations	3
PHYS 121 or PHYS 123	General Physics I - Mechanics or Physics and Frontiers I - Mechanics	4
PHYS 122 or PHYS 124	General Physics II - Electricity and Magnetism or Physics and Frontiers II - Electricity and Magnetism	4
PHYS 203	Analog and Digital Electronics	4
PHYS 204	Advanced Instrumentation Laboratory	4
PHYS 221	Introduction to Modern Physics	3
PHYS 250	Computational Methods in Physics	3
PHYS 310	Classical Mechanics	3
PHYS 313	Thermodynamics and Statistical Mechanics	3
PHYS 324	Electricity and Magnetism I	3
PHYS 325	Electricity and Magnetism II	3
PHYS 331	Introduction to Quantum Mechanics I	3
PHYS 332	Introduction to Quantum Mechanics II	3
Technical Electives: [a]		*15*
ASTR 333	Dark Matter	
EEPS 340	Earth and Planetary Interiors	
EEPS 345	Planetary Materials	
HSTY 209	The Copernican Revolution	
MATH 201	Introduction to Linear Algebra for Applications	
PHIL 203	Revolutions in Science	
PHYS 301	Advanced Laboratory Physics I	
PHYS 316	Introduction to Nuclear and Particle Physics	
PHYS 326	Physical Optics	
PHYS 349	Methods of Mathematical Physics I	
STAT 312R	Basic Statistics for Engineering and Science Using R Programming	

a Consult advisor for alternative technical electives.

Sample Plan of Study

First Year		
Fall		**Hours**
MATH 121	Calculus for Science and Engineering I	4
PHYS 121 or PHYS 123	General Physics I - Mechanics or Physics and Frontiers I - Mechanics	4
Academic Inquiry Seminar, Breadth, or Elective course [a]		3
Open Elective		3
	Hours	**14**
Spring		
MATH 122 or MATH 124	Calculus for Science and Engineering II or Calculus II	4
PHYS 122 or PHYS 124	General Physics II - Electricity and Magnetism or Physics and Frontiers II - Electricity and Magnetism	4
ENGR 131	Elementary Computer Programming	3
Academic Inquiry Seminar, Breadth, or Elective course [a]		3
	Hours	**14**
Second Year		
Fall		
ASTR 221	Stars and Planets	3

MATH 223 or MATH 227	Calculus for Science and Engineering III or Calculus III	3
PHYS 221	Introduction to Modern Physics	3
PHYS 203	Analog and Digital Electronics	4
Breadth, or Elective course [a]		3
	Hours	**16**
Spring		
ASTR 222	Galaxies and Cosmology	3
MATH 224 or MATH 228	Elementary Differential Equations or Differential Equations	3
PHYS 204	Advanced Instrumentation Laboratory	4
PHYS 250	Computational Methods in Physics	3
Breadth, or Elective course [a]		3
	Hours	**16**
Third Year		
Fall		
ASTR 328	Cosmology and the Structure of the Universe [b]	3
PHYS 313	Thermodynamics and Statistical Mechanics	3
Breadth, or Elective course [a]		3
Technical Elective		3
Open Elective		3
	Hours	**15**
Spring		
ASTR 311	Stellar Physics [b]	3
PHYS 324	Electricity and Magnetism I	3
PHYS 310	Classical Mechanics	3
Breadth, or Elective course [a]		3
Technical Elective		3
	Hours	**15**
Fourth Year		
Fall		
ASTR 323	The Local Universe [b]	3
PHYS 325	Electricity and Magnetism II	3
PHYS 331	Introduction to Quantum Mechanics I	3
Technical Elective		3
Capstone [c]		3
	Hours	**15**
Spring		
ASTR 306	Astronomical Techniques [a]	3
PHYS 332	Introduction to Quantum Mechanics II	3
Breadth, or Elective course [a]		3
Technical Elective		3
Technical Elective		3
	Hours	**15**
	Total Hours	**120**

a Unified General Education Requirement.

b ASTR 306 , ASTR 311 , ASTR 323 , and ASTR 328 are taught every other year, so the specific semesters in which these courses are taken may be different than shown here.

c A Capstone Experience is required of all students. The Astronomy BS does not require the Astronomy Capstone but only that a three credit hours of Capstone be taken in some field. Depending on the specific Capstone taken, the three credit hours may be spread over two semesters.