

Bachelor of Science in Space Studies

Prepare for the political, economic, legal, commercial, scientific, and technical challenges associated with human exploration in space with the Bachelor of Science in Space Studies.

Very few space studies academic programs match the breadth and scope of this innovative online program and its concentration options, including space entrepreneurship. This space studies program uses a curriculum initially designed by a former NASA astronaut. Many faculty include scientists and engineers currently working for NASA, the space industry, and national astronomical observatories.

You'll also have the opportunity to use the university's state-of-the-art, remote-controlled observatory, with a fully online 24-inch aperture telescope.

Degree Program Objectives

In addition to the institutional and degree level learning objectives, graduates of this program are expected to achieve these learning outcomes:

- Apply knowledge of mathematics, earth science, and space science to identify and solve space/earth studies problems.
- Conduct experiments, analyze, and interpret data.
- Communicate effectively with a range of audiences.
- Assess ethical and professional responsibilities and the impact of technical and/or scientific solutions in global, economic, environmental, and societal contexts.
- Function on multidisciplinary teams.

Degree at a Glance

Code	Title	Semester Hours
	General Education Requirements	30
	Major Required	28
	Select one of the following concentrations:	15
	Aerospace Science (p. 2)	
	Astronomy (p. 3)	
	Space Policy (p. 3)	
	Final Program Requirements	3
	Elective Requirements	44
	Total Semester Hours	120

Degree Program Requirements

General Education Requirements (30 semester hours)

Code	Title	Semester Hours
Arts and Humanities (6 semester hours)¹		
PHIL202	Philosophy of Science	3
Select 1 course from the following:		3
ARAB100	Arabic I	
ARAB101	Arabic II	
ARTH200	Art Appreciation	
ARTH241	Film and Literature	
DSIN141	Image Enhancement using Adobe Photoshop	
FREN100	French I	
FREN101	French II	
GERM100	German I	
GERM101	German II	
JAPN100	Introduction to Japanese	
LITR215	Literature of American Encounters, Revolution, and Rebellion	
LITR218	From Abolition to #MeToo: Literature of the American Civil Rights Movement	
LITR222	Pivotal Figures in Early British Literature	
LITR225	British Literature from Wordsworth through the Wasteland	
LITR231	Leadership in World Literature: Antiquity to the Early Modern Period	
LITR233	Literature of the Newly Globalized World: The Individual's Struggle to Adapt	
MUSI200	Music Appreciation	
MUSI250	World Music and Cultures	
PHIL101	Introduction to Philosophy	
PHIL110	Critical Thinking	
PORT100	Introduction to Brazilian Portuguese	
RELS201	Introduction to World Religions	
RUSS100	Russian I	
SPAN100	Spanish I	
SPAN101	Spanish II	
STEM270	Thinking and Acting Ethically	
Civics, Political and Social Sciences (6 semester hours)¹		
Select 2 courses from the following:		6
ANTH100	Introduction to Anthropology	
ANTH202	Introduction to Cultural Anthropology	

CHFD220	Human Sexuality
COMM211	Social Media and Society
COMM240	Intercultural Communication
ECON101	Microeconomics
ECON102	Macroeconomics
EDUC200	Humane Education: A Global Interdisciplinary Perspective
GEOG101	Introduction to Geography
HOSP110	Practical Food Safety and Awareness
IRLS210	International Relations I
LITR212	Forgotten America--Under Represented Cultures in American Literature
LITR235	Four Points of the Compass: Culture and Society Around the World
POLS101	Introduction to Political Science
POLS210	American Government I
PSYC101	Introduction to Psychology
SOCI111	Introduction to Sociology
SOCI212	Social Problems
SOCI220	American Popular Culture
STEM280	Exploring Society and Cultures via Science Fiction

Communication: Writing, Oral, and Multimedia (9 semester hours)		
COMM120	Information and Digital Literacy	3
ENGL110	Making Writing Relevant	3
ENGL221	Scientific Writing	3
History (3 semester hours)		
HIST270	History of Science	3
Mathematics and Applied Reasoning (3 semester hours)		
MATH110	College Algebra	3
Natural Sciences (3 semester hours)		
ERSC181	Introduction to Geology	3
Total Semester Hours		30

¹ All literature courses require successful completion of ENGL101 - Proficiency in Writing or ENGL110 - Making Writing Relevant.

Major Required (28 semester hours)

Code	Title	Semester Hours
SCIN134	Introduction to Astronomy with Lab	4
CHEM133	General Chemistry I with Lab	4
MATH111	College Trigonometry	3
SCIN133	Introduction to Physics with Lab	4
SPST200	Introduction to Space Studies	3

SPST203	History of Space Flight	3
SPST201	Introduction to Space Flight	3
SCIN261	Introduction to Planetary Science with Lab	4
Total Semester Hours		28

You must choose a concentration for this degree program and may select from the Concentration in Aerospace Science, Concentration in Astronomy, or Concentration in Space Policy.

Concentration in Aerospace Science (15 semester hours)

The aerospace science concentration provides an in-depth study of space transportation systems. You take courses with comprehensive overviews of such topics as rocket propulsion, orbital mechanics, launch / reentry systems, and spacecraft design.

Objectives

Upon successful completion of this concentration, the student will be able to:

- Solve the laws of orbital mechanics, including spacecraft maneuvers such as transfer orbits and rendezvous.
- Analyze liquid and solid rocket propulsion fundamentals including propellants, combustion principles, components, and general turbo-pump, and motor design.
- Assess the technology related to various launch and reentry systems.
- Synthesize the fundamentals of modern space transportation systems, from Apollo to NASA's new Space Launch System.

Concentration Requirements (15 semester hours)

Code	Title	Semester Hours
SPST305	Introduction to Orbital Mechanics	3
SPST310	Rocket Propulsion	3
SPST330	Launch and Reentry Systems	3
SPST425	Satellite and Spacecraft Systems	3
SPST445	Space Transportation Systems	3
Total Semester Hours		15

Concentration in Astronomy (15 semester hours)

The astronomy concentration is designed to prepare you for employment in the observatory, planetarium, or science center environment. A range of courses are offered that prepare you for graduate work in the space studies field. You'll acquire experience with the university's new 24-inch robotic telescope.

Objectives

Upon successful completion of this concentration, the student will be able to:

- Demonstrate an in-depth understanding of operation of the modern observatory and planetarium.
- Analyze the celestial objects found within our Solar System and their study by space probe.
- Evaluate the importance of space weather and its potential harmful effects on our technological society.
- Synthesize celestial objects found beyond the Solar System, including stars, exoplanets, and galaxies.

Concentration Requirements (15 semester hours)

Code	Title	Semester Hours
SPST340	Tools of the Observatory	3
SPST341	Tools of the Planetarium	3
SPST435	Planetary and Space Exploration	3
SPST440	Stars and Galaxies	3
SPST465	Space Weather	3
Total Semester Hours		15

Concentration in Space Policy (15 semester hours)

Space policy is designed to cultivate leaders in the space industry – both in NASA as well as the commercial space operations industry. This concentration is ideal if you have an administrative / business interest. Coursework considers space diplomacy, with extensive emphasis on space operations and organizations.

Objectives

Upon successful completion of this concentration, the student will be able to:

- Examine the political and commercial significance of major national and international space missions, projects, and operations.
- Evaluate organizations that are critical to the success of the technological advance of space infrastructure in the United States.
- Synthesize the status of space cooperation and diplomacy between various space faring nations.
- Synthesize space laws and how the governing institutions affect applications such as remote sensing, communications, navigation, launch services, satellite exports, and arms control.

Concentration Requirements (15 semester hours)

Code	Title	Semester Hours
SPST304	National Space Organization	3
SPST306	Human Space Flight	3
SPST307	Space Policy	3
SPST415	Space Station Systems and Operations	3
SPST485	Space Wargaming	3
Total Semester Hours		15

Final Program Requirements (3 semester hours)

Code	Title	Semester Hours
SPST499	Senior Seminar in Space Studies (to be taken as the last course before graduation) ¹	3
Total Semester Hours		3

¹ Prerequisite: Senior Standing and completion of major courses prior to enrollment.

Elective Requirements (44 semester hours)

Select any courses that have not been used to fulfill major requirements. Credits applied toward a minor or certificate in an unrelated field may be used to fulfill elective credit for the major.