Earth and Space Exploration (Astrobiology and Biogeosciences), BS

LASESABBS

How do "living worlds" work? Explore the complex connections between life and planetary systems. Learn how astronomy, biology, geology and chemistry combine to shape the habitability of planets and Earth's extreme environments. Discover how to detect life on other planetary bodies or in remote environments on Earth.

Program description

Astrobiology and biogeosciences are closely related. Astrobiology informs the exploration for life on other worlds, while biogeosciences motivates exploration of life's limits on Earth.

Students in the astrobiology and biogeosciences concentration in the Bachelor of Science program in Earth and space exploration acquire a strong and rigorous foundation in geology, biology, chemistry and astronomy. They develop the systems-thinking perspective needed to:

- contribute to the search for life on other planets
- study how the integrated Earth-life system evolves and responds to global environmental challenges
- understand the complex and evolving diversity and distribution of life on Earth

In addition to reviewing the guidelines in the Concurrent Program Options section below, students interested in pursuing concurrent or second baccalaureate degrees in The College of Liberal Arts and Sciences are advised to visit The College's website for more information and requirements.

STEM-OPT for international students on F-1 visas

This program may be eligible for an Optional Practical Training extension for up to 24 months. This OPT work authorization period may help international students gain skills and experience in the U.S. Those interested in an OPT extension should review ASU degrees that qualify for the STEM-OPT extension at ASU's International Students and Scholars Center website.

The OPT extension only applies to students on an F-1 visa and does not apply to students completing a degree through ASU Online.

At a glance

- **College/school:** The College of Liberal Arts and Sciences
- **Location:** Tempe

- **Second language requirement:** No
- **STEM-OPT extension eligible:** Yes
- **First required math course:** MAT 265 - Calculus for Engineers I or higher
- **Math intensity:** Substantial 

Curriculum

View 2025 - 2026 curriculum | View curriculum archives

Concurrent program options

Students pursuing concurrent degrees (also known as a “double major”) earn two distinct degrees and receive two diplomas. Working with their academic advisors, students can create their own concurrent degree combination. Some combinations are not possible due to high levels of overlap in curriculum.

Accelerated program options

This program allows students to obtain both a bachelor's and master's degree in as little as five years. It is offered as an accelerated bachelor's plus master's degree with:

Astrophysics and Astronomy, MS

Exploration Systems Design (Instrumentation), MS

Exploration Systems Design (Sensor Networks), MS

Exploration Systems Design (Systems Engineering), MS

Exploration Systems Design, MS

Acceptance to the graduate program requires a separate application. Students typically receive approval to pursue the accelerated master’s during the junior year of their bachelor's degree program. Interested students can learn about eligibility requirements and how to apply.

Admission requirements

General university admission requirements:

All students are required to meet general university admission requirements.
First-year | Transfer | International | Readmission

Tuition information

When it comes to paying for higher education, everyone’s situation is different. Students can learn about ASU tuition and financial aid options to find out which will work best for them.

Change of Major requirements

A current ASU student has no additional requirements for changing majors.

Students should visit the Change of Major form for information about how to change a major to this program.

Transfer options

ASU is committed to helping students thrive by offering tools that allow personalization of the transfer path to ASU. Students may use MyPath2ASU® to outline a list of recommended courses to take prior to transfer.

ASU has transfer partnerships in Arizona and across the country to create a simplified transfer experience for students. These pathway programs include exclusive benefits, tools and resources, and they help students save time and money in their college journey.

Program learning outcomes

Program learning outcomes identify what a student will learn or be able to do upon completion of their program. This program has the following program outcomes:

- Design research projects to solve scientific problems foundational to astrobiology and biogeosciences.
- Apply knowledge in the natural sciences to interdisciplinary questions in astrobiology and biogeosciences.
- Effectively apply crucial skills for employment including communication, creative and critical thinking, inquiry and analysis, and problem solving.
- Function in an interdisciplinary environment to solve complex scientific and technological problems.

Global opportunities

Global experience

Space exploration is an international endeavor, and an international experience provides students with opportunities for cross-cultural engagement and to improve their language and communication skills. Global Education programs allow students to take relevant classes while they live in another country. Each of the more than 300 Global Education program options enables students to develop a valuable skill set that can give them an advantage in their career as well as personal enrichment. Whether in a foreign country, in the U.S. or online, Global Education programs encourage students to build communication skills, challenge them to adapt and persevere, expose them to differences across the world, and increase their ability to work with diverse groups of people.

Career opportunities

Graduates of the astrobiology and biogeosciences program are well prepared for graduate studies in two rapidly advancing fields. They are also well suited for careers in earth sciences, environmental sciences and space sciences. More broadly, the program provides training across a variety of sciences and a "systems thinking" perspective, giving graduates a strong background for careers in biomedical or sustainability areas, as well as science education, writing or policy.

Career opportunities include these positions:

- astronomer
- data analyst or scientist
- ecologist or natural resource manager
- environmental monitoring and exposure assessor
- environmental or sustainability consultant
- environmental protection or remediation scientist, consultant or manager
- geoscientist
- hydrogeologist
- science policy consultant
- science teacher

Career settings include:

- educational institutions
- environmental consulting firms
- environmental engineering firms
- federal, state and local government agencies
- museums or planetariums
- NASA and National Science Foundation facilities
- national laboratories
- nonprofit organizations
- observatories
- space industry organizations

More information is available on the career opportunities page on the School of Earth and Space Exploration website.
Example job titles and salaries listed below are not necessarily entry level, and students should take into consideration how years of experience and geographical location may affect pay scales. Some jobs also may require advanced degrees, certifications or state-specific licensure.

Career	*Growth	*Median salary
Chemistry Professor	3.5%	$80,720
Climate Change Analyst	6.1%	$76,480
Environmental Protection Specialist	6.1%	$76,480
Environmental Restoration Planner	6.1%	$76,480
Environmental Sciences Professor	4.2%	$83,040
Geologist	5.1%	$87,480
Geology Professor	3.6%	$97,770
Health Sciences Manager	4.8%	$144,440
Hydrogeologist	4.8%	$144,440

Industrial Ecologist	6.1%	$76,480

* Data obtained from the Occupational Information Network (O*NET) under sponsorship of the U.S. Department of Labor/Employment and Training Administration (USDOL/ETA).

Bright Outlook

Contact information

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