

Earth and Space Exploration (Exploration Systems Design), BS

LASESESDBS

Cross the boundaries of science and engineering while preparing for a new era of exploration. Learn to build space-flight hardware, engineer solutions to explore extreme environments and take a systems-based approach to scientific discovery.


Program description

The BS program in Earth and space exploration with a concentration in exploration systems design offers students a fundamental curriculum in geology, physics and astrophysics while providing tools that enable them to design and build hardware and software to explore Earth and the universe beyond.

The program has a rigorous and quantitative grounding in the fundamentals of physics, mathematics and chemistry. Coursework focuses on conceiving the requirements needed for a mission or project destined for space or extreme environments on Earth. All students are expected to complete a senior project that takes a desired scientific measurement and realizes the technological solution to achieve the observation.

In addition to 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.

At a glance

- **College/School:** [The College of Liberal Arts and Sciences](#)
- **Location:** [Tempe](#)
- **Second language requirement:** No
- **First required math course:** MAT 265 - Calculus for Engineers I
- **Math intensity:** Substantial 

Required courses (Major Map)

[2024 - 2025 Major Map](#)

[Major Map \(Archives\)](#)

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](#)

[Electrical Engineering, MSE](#)

[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.

Global opportunities

Global experience

Space exploration is an international endeavor, and an international experience provides students opportunities for cross-cultural engagement and improvement of language and communication skills. [Global Education](#) allows students to take relevant classes while living in another country. Each of the more than 300 Global Education program options provide an opportunity for students to develop a valuable skill set that can give them an advantage in their career and 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 possess the skills required for a career in systems engineering, space systems engineering, scientific instrument engineering and engineering-focused careers in astronomy, geoscience and planetary science, opening up diverse opportunities for employment in industry, government, education and other organizations. They also are prepared to pursue graduate school in astrophysics, physics and engineering, or to perform laboratory research or data-intensive analyses that enable scientific progress or inform public policy.

Career opportunities include:

- astronomer
- computer software quality engineer
- computer systems architect
- engineering or technical services manager
- planetary scientist

- research scientist or instrumentation specialist
- science policy consultant
- science teacher (K-12)
- space systems engineer
- systems engineer

Career settings include:

- aerospace industry organizations
- educational institutions
- federal, state and local government agencies
- manufacturing centers
- NASA centers
- NSF facilities
- museums or planetariums
- national laboratories
- observatories
- space industry organizations

For more information, students can see 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
<u>Aerospace Engineer</u> ☀	6.1%	\$126,880
<u>Aerospace Engineer Technician</u> ☀	8.3%	\$74,410
<u>Astronomer</u> ☀	4.6%	\$128,330
<u>Computer Systems Architect</u> ☀	9.7%	\$98,740
<u>Electrical Engineer</u>	4.2%	\$103,320
<u>Engineering Manager</u>	4.1%	\$159,920
<u>Geologist</u> ☀	5.1%	\$87,480
<u>Mechanical Engineer</u> ☀	10.0%	\$96,310
<u>Project Manager</u> ☀	6.2%	\$95,370

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

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Contact information

