Explore Systems Design (Instrumentation), MS

Prepare for a professional or academic career with a program that combines the strengths of science and engineering. You can work with faculty in the natural sciences and engineering to design instrumentation for exploration including digital systems and circuits, computer-controlled systems, analog-to-digital converters and solid-state electronics.

Program Description

**Degree Awarded:** MS Exploration Systems Design (Instrumentation)

The MS program in exploration systems design with a concentration in instrumentation promotes the development and growth of engineering-literate scientists and science-literate engineers who are interested in the design, construction and implementation of scientific instrumentation. Its unique curriculum combines science applications with engineering knowledge and skills through engineering and science courses focused on Earth science, space science and astrophysics. The concentration trains students to design the next generation of in-situ or remote sensing instrumentation for exploration of the Earth, space and the universe.

At a Glance

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

Degree Requirements
30 credit hours including capstone course (SES 511)

**Required Core (5 credit hours)**
SES 501 SESE Colloquium (1)
SES 502 Exploring SESE Research (1)
SES 510 Graduate Exploration Project I (3)

**Concentration (9 credit hours)**
AST 540 Astronomical Instrumentation and Data Analysis (3)
EEE 543 Antenna Analysis and Design (3)
EEE 545 Microwave Circuit Design (3)
EEE 548 Coherent Optics (3)
EGR 608 Advanced Simulation (3)
MAE 503 Finite Elements in Engineering (3)
MAE 557 Mechanics of Composite Materials (3)

**Electives or Research (13 credit hours)**

**Culminating Experience (3 credit hours)**
SES 511 Graduate Exploration Project II (3)

**Additional Curriculum Information**
Students select three courses from the available concentration coursework.

For elective coursework, students select from the AST, GLG, SES or engineering courses in consultation with their faculty advisor. Six credit hours must be science coursework approved by the faculty advisor. Other courses can be used with academic unit approval.

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**Admission Requirements**

Applicants must fulfill the requirements of both the Graduate College and The College of Liberal Arts and Sciences.

Applicants are eligible to apply to the program if they have earned a bachelor's or master's degree in engineering, physical science or a related field from a regionally accredited institution.

Applicants must have a minimum cumulative GPA of 3.00 (scale is 4.00 = "A") in the last 60 hours of their first bachelor's degree program, or applicants must have a minimum cumulative GPA of 3.00 (scale is 4.00 = "A") in an applicable master's degree program.

All applicants must submit:

1. graduate admission application and application fee
2. official transcripts
3. written statement
4. three letters of recommendation
5. proof of English proficiency

Additional Application Information
An applicant whose native language is not English must provide proof of English proficiency regardless of current residency.

Application Deadlines

Fall
Spring

Career Opportunities

The U.S. Department of Labor predicts that the economy will add an additional 63,000 jobs in engineering fields related to instrumentation and exploration systems design (involving electrical and electronics, aerospace and mechanical engineering). This is in addition to the 900,000 jobs already existing in the economy in these fields. [https://www.bls.gov/ooh/architecture-and-engineering/home.htm](https://www.bls.gov/ooh/architecture-and-engineering/home.htm)

The state of Arizona has a considerable presence from aerospace and other technology companies with high demand for skilled labor. In particular, local aerospace companies have high demand for students with direct experience and training in the space sector. The concentration in instrumentation is uniquely positioned to provide this training.

Contact Information

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