Space and Planetary Science and Engineering

Program Offered

Area of Special Interest in Space and Planetary Science and Engineering

Program Description

The Space and Planetary Science and Engineering Program offers an Area of Special Interest for students interested in the science, engineering, and exploration of space. This program brings together courses from several Mines departments and programs covering a diverse array of topics, including planetary science, astronomy, space physics, and the design of engineering systems for space exploration. The curriculum can be chosen from a list of approved courses, in consultation with an SPSE program advisor. Interested students should contact SPSE Program Director, Dr. Angel Abbud-Madrid, at aabbudma@mines.edu. **(**aabbudma@mines.edu**)**

Since the advent of the space age in the middle of the last century, the pace of human and robotic exploration of space has been ever increasing. This exploration is made possible by feats of engineering to allow long-term operation of robotic systems and human explorers in the harsh environment of space. The product of this exploration is a large and growing body of knowledge about our neighbors in the Solar System and our place in the universe. The mission of the Space and Planetary Science and Engineering (SPSE) program is to provide students with a pathway for studying extraterrestrial applications of science, engineering, and resource utilization through an Area of Special Interest.

The Mines guidelines for Minor/ASI can be found in the Undergraduate Information section of the Mines Catalog.

Program Requirements

Area of Special Interest in Space and Planetary Science and Engineering:

Enrollment in the Area of Special Interest is approved by the Director. Students will then be assigned to an SPSE ASI advisor from among the affiliated faculty, who will monitor and advise their progress. The Area of Special Interest requires a total of 12 credits, up to 3 of which may be at the 200 level or below and up to 3 of which may overlap with the requirements of the degree-granting program. Students may choose their ASI courses from the list of approved courses below or from any additional courses approved by the students' ASI advisor. Application of EDNS Cornerstone or Capstone project credits towards the ASI requires choice of a space or planetary related project and approval by the students' SPSE ASI advisor.

SPSE-approved Courses

EDNS251	DESIGN II	3.0
MEGN408	INTRODUCTION TO SPACE EXPLORATION	3.0
EDNS491	SENIOR DESIGN I	3.0
EDNS492	SENIOR DESIGN II	3.0
GEGN469	ENGINEERING GEOLOGY DESIGN	3.0
GEOL410	PLANETARY GEOLOGY	3.0
GPGN438	GEOPHYSICS PROJECT DESIGN	3.0
GPGN470	APPLICATIONS OF SATELLITE REMOTE SENSING	3.0
PHGN418	GENERAL RELATIVITY	3.0
PHGN324	INTRODUCTION TO ASTRONOMY AND ASTROPHYSICS	3.0
PHGN423	PARTICLE PHYSICS	3.0
PHGN471 & PHGN481	SENIOR DESIGN PRINCIPLES I and SENIOR DESIGN PRACTICE	3.0
PHGN472 & PHGN482	SENIOR DESIGN PRINCIPLES II and SENIOR DESIGN PRACTICE	3.0
MEGN451	FLUID MECHANICS II - AERODYNAMICS	3.0
MEGN498	AEROSPACE STRUCTURES	3.0

Director, SPSE Area of Special Interest

Angel Abbud-Madrid, Mechanical Engineering & Space Resources

Affiliated Faculty

Christopher Dreyer, Mechanical Engineering & Space Resources

Alex Flournoy, Physics

Leslie Lamberson, Mechanical Engineering

Derrick Rodriguez, Mechanical Engineering

Frederic Sarazin, Physics

Paul Sava, Geophysics

Matthew Siegfried, Geophysics

George Sowers, Mechanical Engineering & Space Resources Program

John Spear, Civil and Environmental Engineering

Neal Sullivan, Mechanical Engineering

Lesli Wood, Geology and Geological Engineering