Space and Planetary Science and Engineering

General CSM Minor/ASI requirements can be found here (catalog.mines.edu/undergraduate/undergraduateinformation/minorasi).

Programs 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 CSM 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.

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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 or Associate Director. Students will then be assigned to an SPSE ASI advisor from among the faculty listed above, 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, 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 EPICS or Senior Design credits towards the ASI requires choice of a space or planetary related project and approval by the students' SPSE ASI advisor.

SPSE-approved Courses

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
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<tr>
<td>EDNS251</td>
<td>THE PRACTICE OF DESIGN</td>
<td>3.0</td>
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MEGN408 INTRODUCTION TO SPACE EXPLORATION 1.0
EDNS491 SENIOR DESIGN I 3.0
EDNS492 SENIOR DESIGN II 3.0
GEGN469 ENGINEERING GEOLOGY DESIGN 3.0
GEOL410 PLANETARY GEOLOGY 2.0
GPGN438 GEOPHYSICS PROJECT DESIGN 3.0
GPGN470 APPLICATIONS OF SATELLITE REMOTE SENSING 3.0
GPGN475 PLANETARY GEOPHYSICS 3.0
PHGN324 INTRODUCTION TO ASTRONOMY AND ASTROPHYSICS 3.0
PHGN424 ASTROPHYSICS 3.0
PHGN471 SENIOR DESIGN PRINCIPLES I
& PHGN481 SENIOR DESIGN PRACTICE 3.0
PHGN472 SENIOR DESIGN PRINCIPLES II
& PHGN482 SENIOR DESIGN PRACTICE 3.0

Professors

Uwe Greife, Department of Physics
Thomas Furtack, Department of Physics, Department Head
Thomas Furtak, Minors and Areas of Special Interest Only, SPSE Program Advisor
Gary R. Olhoeft, Department of Geophysics and Geophysical Engineering

Assistant professors

Jeffrey C. Andrews-Hanna, Minors and Areas of Special Interest Only, SPSE Director
Jeffrey C. Andrews-Hanna, Department of Geophysics and Geophysical Engineering
John R. Spear, Department of Environmental Science and Engineering

Professor emeritus

F. Edward Cecil, Department of Physics

Teaching professor

Joel G. Duncan, Department of Geology and Geological Engineering

Teaching associate professor

Cynthia Norrgran, Department of Chemical Engineering

Research professor

Robert D. Knecht, Department of Chemical Engineering, Teaching Professor in EPICS

Associate research professor

Angel Abbud-Madrid, Minors and Areas of Special Interest Only, SPSE Associate Director

Assistant research professor

Christopher Dryer, Department of Engineering
Distinguished senior scientist
Warren Hamilton, Department of Geophysics and Geophysical Engineering