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.

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.

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

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 Code</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>GEOL410</td>
<td>PLANETARY GEOLOGY</td>
<td>3.0</td>
</tr>
<tr>
<td>GPGN438</td>
<td>GEOPHYSICS PROJECT DESIGN</td>
<td>3.0</td>
</tr>
<tr>
<td>GPGN470</td>
<td>APPLICATIONS OF SATELLITE REMOTE SENSING</td>
<td>3.0</td>
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<tr>
<td>or GEOL470</td>
<td>APPLICATIONS OF SATELLITE REMOTE SENSING</td>
<td></td>
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<tr>
<td>PHGN324</td>
<td>INTRODUCTION TO ASTRONOMY AND ASTROPHYSICS</td>
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<tr>
<td>PHGN424</td>
<td>ASTROPHYSICS</td>
<td>3.0</td>
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<tr>
<td>PHGN471 &amp; PHGN481</td>
<td>SENIOR DESIGN PRINCIPLES I and SENIOR DESIGN PRACTICE</td>
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<tr>
<td>PHGN472 &amp; PHGN482</td>
<td>SENIOR DESIGN PRINCIPLES II and SENIOR DESIGN PRACTICE</td>
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Professor
Uwe Greife, Department of Physics

Assistant professor
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

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

Assistant research professor
Christopher Dryer, Department of Engineering