Planetary Science Major

Program Requirements

- **Total units required:** 52-57

The Department of Earth, Environmental, and Planetary Sciences (EEPS) offers majors in Earth Science, Environmental Science, and Planetary Science. The curriculum is broad, and the requirements are flexible enough to accommodate diverse needs and interests. Many courses present hands-on, problem-oriented experiences, including ample opportunity for fieldwork, laboratory work, and the use of state-of-the-art computational facilities and research instrumentation. All majors are required to complete certain core courses as well as electives and a capstone experience that must be presented at the Spring EEPS Undergraduate Research Symposium.

Requirements for All Majors

Required Core Courses

Students pursuing any Earth, Environmental, and Planetary Sciences major must complete the following courses:

Code	Title	Units
Chem 105	Principles of General Chemistry I	3
EEPS 202	Introduction to Earth, Environmental, and Planetary Science	3
Math 131	Calculus I	3
Math 132	Calculus II	3
Physics 191	Physics I	3
SDS 2200	Elementary Probability and Statistics	3
or SDS 3200	Elementary to Intermediate Statistics and Data Analysis	
Total Units		**18**

Additional Electives

In addition to the disciplinary electives below, which are specific to each major, students must choose three L19 EEPS elective courses at the 300, 400, or 500 level, excluding the following courses: EEPS 390 Independent Study, EEPS 490 Independent Study, EEPS 493 Internship, and EEPS 499 Honors Research.

Skills Course

Students must complete one of the following:

Code	Title	Units
EEPS 387	Geospatial Science	4
EEPS 400	Special Topics	3
EEPS 492	Field Camp	6
EEPS 496	Field Geology	3
EnSt 380	Applications in GIS	3
EnSt 364	Field Methods for Environmental Science	3

Capstone Experience

Students completing any Earth, environmental, and planetary sciences major must also build a portfolio of their work from projects completed in courses such as EEPS 496 Field Geology, EnSt 405 Sustainability Exchange: Community and University Practicums, EnSt 539 Interdisciplinary Environmental Clinic, or EnSt 452 International Climate Negotiation Seminar; internship experiences; or research. All capstones must be presented at the Spring EEPS Undergraduate Research Symposium.

Students must complete all of the requirements listed above for all majors as well as the following:

Disciplinary Required Courses

Students must complete all of the requirements listed above for all majors as well as the following two courses:

Code	Title	Units
EEPS 373	Fundamentals of Planetary Science	3
EEPS 340	Minerals, Rocks, Resources and the Environment	4
or EEPS 353	Earth Forces	

Disciplinary Electives

Students select five of the following courses:

Code	Title	Units
EEPS 401	Earth Systems Science	3
EEPS 407	Remote Sensing	3
EEPS 437	Igneous & Metamorphic Petrology	4
EEPS 441	Introduction to Geochemistry	3
EEPS 459	Geodynamics	3
EEPS 460	Introduction to Structural Geology	4
EEPS 467	Planetary Mission Design	3
EEPS 473	Planetary Geology	3
EEPS 474	Planetary Geochemistry	3
EEPS 567	Planetary Materials	3
EEPS 568	Scientific Exploration of the Moon	3
EEPS 570	Planetary Geophysics & Dynamics	3
EEPS 576	Advanced Planetary Geology: Ice Worlds	3

Additional Information

- A grade of C- (C for summer field camp) is the minimum acceptable performance for each unit of credit for each required course, including those in mathematics, chemistry, and physics. Courses with grades of D may fulfill the College's 120 total hours requirement, but they do not meet the departmental requirements. A grade of C- is also the minimum acceptable performance for each unit of credit for any course required as a prerequisite to enrolling in advanced or sequential courses.
- If a student has two majors, only introductory (100- and 200-level) courses may be counted, when relevant, toward the requirements of both majors. All advanced (300- and 400-level) courses must be unique to each major; in other words, no advanced course may "double-count" for the course work needed to fulfill the minimal requirements for either major. Should both major programs require the same course, a departmentally sanctioned elective must be chosen to replace the course in one of the programs.
- Credits to be transferred from another institution must have prior approval from the Director of Undergraduate Studies in the relevant Arts & Sciences department.
- Students may transfer up to 9 credits (or three courses, whichever is greater) of advanced course work (course numbers 300 or above) toward the completion of a major in the Department of Earth, Environmental, and Planetary Sciences. Students may transfer up to 3 credits (or one course, whichever is greater) of advanced course work (course numbers 300 or above) toward the completion of a minor in the Department of Earth, Environmental, and Planetary Sciences. This policy includes credit earned for courses taken while studying abroad or studying at another U.S. institution. Credits earned through the completion of an approved field camp do not count toward this limit.
- Students may not place out of the chemistry, physics, or math requirements for the EEPS major. These courses must be taken at Washington University or at another accredited institution.
- In the Department of Earth, Environmental, and Planetary Sciences, both Latin Honors and Departmental Distinctions require the completion of a senior thesis:
  - In the spring of their junior year, the student should select a faculty member to guide the generation of this thesis. The student should then enroll in EEPS 499 Honors Research (GPA >3.65) or EEPS 490 Independent Study (GPA <3.65) with that faculty member for the fall of their senior year. At that time, the student and faculty advisor should meet and choose the two additional readers for the student's thesis (the thesis committee) and establish a set of goals for the fall semester's work. At this time, the student should fill out the Senior Honors Topic Form.
  - The student may also (but is not required to) enroll in EEPS 499 or EEPS 490 in the spring semester of their senior year. The faculty advisor will determine, with the student, a date by which a complete draft is to be given to the faculty readers for review such that the readers have ample time to review the work prior to issuing their evaluations. These drafts will be due no later than the Tuesday after Spring Break. A final copy containing revisions required by the committee is due by the first day of finals period.
  - An oral presentation of the senior honors research is expected to be presented to the department, usually late in the senior's last semester. The thesis document must be prepared following the department's formatting guidelines, which are available from the Director of Undergraduate Studies. All theses must be submitted in PDF to Erin Marshall prior to graduation for online archiving.

Undergraduate Department Awards

- **The Ernest L. Ohle, Jr., Prize** is presented to the senior judged to have the greatest promise for a successful career in Earth, environmental, or planetary sciences and who has demonstrated superior academic achievement. The prize is funded by an endowed donation from Dr. Ernest L. Ohle, Jr., an alumnus who had a distinguished career as a mining geologist.
- **The Courtney Werner Memorial Prize** is awarded to a senior student who has majored in Earth, environmental, and planetary sciences and who has demonstrated outstanding academic achievement. Courtney Werner was an associate professor in the Department of Geology and Geological Engineering at Washington University. He joined the Department in 1923, having worked as a geologist for Gulf Oil Company. The prize is funded by endowed donations from his friends and former students.
- **The Harold Levin Award** is for undergraduate students who have done outstanding jobs as assistants to the instructor. Professor Levin was a paleontologist who specialized in study of microscopic fossils as indicators of environmental conditions during deposition of sedimentary rocks. He was an outstanding teacher at all levels, ensuring through dynamic lectures and discussions that students remained engaged in his courses.
- **The Margaret E. Bewig Memorial Field Camp Award** is presented to an EEPS major selected by the faculty from those attending summer field camp, based on a combination of academic merit and financial need. The award may be used to defray part of the cost of summer field camp. Margaret Bewig was the department secretary and later the administrative assistant from 1963 to 1986. She died on May 26, 1991. The award is funded by endowed donations from her friends, faculty, and former students.

Website: https://eeps.wustl.edu/