EARTH AND PLANETARY SCIENCES (EPSC)

About Earth and Planetary Sciences

Earth and Planetary Sciences is a multidisciplinary field that includes the solid Earth and its hydrosphere and extends beyond geology and geophysics to the neighbouring terrestrial planets and exoplanets. Principles of chemistry, physics, and mathematics are applied to elucidate the complex and diverse planetary processes at play as we seek to understand how planets like the Earth changed over time and continue to evolve. The emerging field of geomicrobiology contributes to our search for the earliest life and for extra-terrestrial life forms.

The Department of Earth and Planetary Sciences has a full-time staff of 16 professors and 2 faculty lecturers. There are approximately 70 graduate and 20-30 undergraduate students registered in the various programs offered. Most classes are therefore small at all levels, resulting in an informal and friendly atmosphere throughout the department, in which most of the faculty and students generally interact on a first-name basis. Emphasis is placed equally on quality teaching and research, providing undergraduate students with a rich and exciting environment in which to explore and learn.

Career opportunities are many and diverse in the Earth and Planetary Sciences. Graduates of the major and honours in geology are often hired by resource exploration and extraction companies (industrial minerals; fossil and nuclear fuels; geothermal energy; ore deposits of base, precious, and critical metals). Knowledge of geochemistry and hydrogeology is also valued in the environmental consulting sector. Geophysics and structural geology are widely applied in the geotechnical consulting sector. Industry or government agencies may hire undergraduate students during the summer months, providing them with both financial benefits and first-hand geoscientific experience. Career opportunities in planetary science can also be found in universities and research organizations.

Undergraduate Studies

The undergraduate curriculum is designed to provide both a strong foundation in the physical sciences and the flexibility to create an individualized program in preparation for careers in industry, teaching, or research.

Major and Honours Programs:

In addition to the major and honours undergraduate programs, the department actively contributes to the **Earth System Science Interdepartmental Program**. It also offers a **Joint Major in Physics and Geophysics**, which combines a rigorous mathematics and physics curriculum with exposure to the geosciences.

Minor Programs:

- **Minor in Geology** offers students from other departments the opportunity to discover the earth sciences in the classroom and in the field. Some required courses assume familiarity with general chemistry (CHEM 110 General Chemistry 1. or equivalent) and foundational science courses (CHEM 120 General Chemistry 2., MATH 139 Calculus 1 with Precalculus., MATH 141 Calculus 2., PHYS 131 Mechanics and Waves., PHYS 142 Electromagnetism and Optics.). Regular consultation with the departmental advisor is recommended.
- **Minor in Geochemistry** is designed for chemistry major students who want to apply chemical principles to the study of planetary processes.

Minor Concentration for Arts Students: Students in a B.A. program may choose Earth and Planetary Sciences as their area of specialization.

Additional Programs:

- **B.Sc. in Earth System Science**: An interdisciplinary program that integrates all Earth systems (solid Earth, hydrosphere, atmosphere, and biosphere).
- **B.Sc. in Geology**: Recommended for students interested in pursuing a career as a licensed professional geoscientist in Quebec or elsewhere in North America.

Available Programs

- Earth and Planetary Sciences Liberal Program - Core Science Component (B.Sc.) (45 credits)
- Geochemistry Minor (B.Sc.) (18 credits)
- Geology Honours (B.Sc.) (75 credits)
- Geology Major (B.Sc.) (66 credits)
- Geology Minor (B.Sc.) (18 credits)
- Planetary Sciences Honours (B.Sc.) (78 credits)

Earth and Planetary Sciences (EPSC) Related Programs

Joint Major in Physics and Geophysics

For more information, see Physics (PHYS).

Earth System Science Interdepartmental Major

This program is offered by the Departments of Atmospheric and Oceanic Sciences; Earth and Planetary Sciences; and Geography. Students in the Department of Earth and Planetary Sciences who are interested in this program should contact Professor William Minarik (william.minarik@mcgill.ca).

For more information, see Earth System Science (ESYS).

Earth System Science Interdepartmental Honours

This program is offered by the Departments of Atmospheric and Oceanic Sciences; Earth and Planetary Sciences; and Geography. Students in the Department of Earth and Planetary Sciences who are interested in this program should contact Professor William Minarik (william.minarik@mcgill.ca).

For more information, see Earth System Science (ESYS).

Location

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