Course Coordinator | Dr. Melissa Lafrenière | Email: Melissa.lafreniere@queensu.ca
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Office | D124 Macintosh-Corry Hall | Phone: 613-533-6000 ext 78720
Contact Time | Three 1 hour lectures, 3 practical hours per week |  
Format | Lectures, laboratory and practical assignments based on field, map, and airphoto analyses |  
Class Assessment | Quizzes 40% 5 Quizzes (best 4 of 5)  
Practical Assignments 40% 4 assignments Weeks 3-11  
Participation and Engagement 20% Weekly (best 10 of 12) |  

**COURSE OVERVIEW**

Surface Processes and Landforms involves the study of aspects of geomorphology, weathering processes, and soil formation (pedology). Geomorphology is the study of the materials, forces and processes that shape the earth's surface, and generate landforms. Earth surface materials (minerals and rocks) are derived at depth in the earth's crust, with structures resulting from tectonic activity, volcanism or burial. Surface materials may then be broken down further and/or rearranged by weathering, gravity and fluid media driven by solar and gravitational energy. Pedology involves the study of the development, composition, and structure of soils, that result from the break down of rocks at the surface by weathering.

Students are introduced to the chemical and physical nature of the materials that makeup the earth’s surface, and the variety of processes that govern the movement, deposition, shaping, and breakdown of these materials. The labs are designed to enhance the students' ability to recognize landforms using aerial photographs and topographic maps, and to interpret and analyse the processes responsible for the different landforms. These assignments provide students an opportunity to enhance their technical, numerical, and writing skills; and require the use of spreadsheets, word processing and problem solving skills.

**LEARNING OUTCOMES**

- Understand and explain the processes that shape the earth's surface.
- Identify landforms, soils, and sediment structures and explain their genesis. Emphasis will be placed on weathering, soil forming processes, and tectonic, volcanic, mass wasting, glacial, and fluvial landforms and processes.
- Apply air photo and mapping techniques to interpret and analyse earth surface features and their formation.
- To highlight the importance of geomorphology and pedology in physical geography and environmental earth sciences.
- Discuss the relevance of geomorphology and pedology in the environmental earth sciences.

**COURSE TOPICS**

1) Geomorphic systems, feedback and equilibrium
2) Chemical and physical weathering processes
3) Soil forming processes and soil orders of the Canadian Soil Classification System
4) Tectonic and volcanic processes and landforms
5) Mass wasting processes and landforms
6) Fluvial processes and landforms
7) Glacial processes and landforms

**SELECTED COURSE TEXTS & READINGS**


The fifth and fourth editions of this text are also acceptable.

**Supplementary Readings**

*Rocks, Weathering and Soils sections*

*Volcanic and Tectonic Processes and Landforms*