LAKEHEAD UNIVERSITY – ORILLIA CAMPUS
DEPARTMENT OF GEOGRAPHY AND THE ENVIRONMENT
GEOG 2351 FAO – GEOMORPHOLOGY – 2017

Course Outline

A) COURSE INSTRUCTOR:

Florin Pendea (OA, Room 3026)
Office hours – Wednesdays 10:45-12:00 or by appointment

B) COURSE DESCRIPTION

The course aims to introduce students to the modern study of earth surface processes and landforms. The concept of landform (terrain feature) development is central to this course. Lectures will be focused on understanding the topographic response to tectonic (geologic) and climatic forcing and the concept of dynamic equilibrium in the analysis of landscape evolution. In addition, we will explore how geomorphic systems are fundamentally influenced by — and, in turn, influence — the dynamics of Earth's crust (tectonics) as well as Earth's atmosphere, hydrosphere and biosphere. Students will become familiar to the various functions of the Earth systems and their responses to change and will learn how surface deposits, landforms and landscapes can be used to interpret Earth's history.

The Earth's surface is the "product" of two sets of opposing forces, one acting from within Earth's interior (internal forces) and the other from outside the Earth's crust (external). Internal forces, drawing energy from the Earth's interior, create major landforms such as mountain chains, volcanoes or oceanic basins. External forces fuelled by the Sun's energy act to level out the surface by tearing down mountains and filling up ocean basins with eroded sediments. Yet, the balance between these forces is uneven and perfect equilibrium is never achieved. It follows therefore that the Earth's surface remains rugged and ever-changing. The scientific field studying the Earth's "ruggedness" or morphology and the processes involved in its genesis is *Geomorphology.*

Throughout the course we will explore the nature and dynamics of geologically controlled landforms (tectonic landforms), weathering and mass wasting processes, and the effects of running water, waves, ice, and cold temperatures. Examples will be drawn from different landscape and climatic settings; however, the emphasis will be placed on Canadian environments.

Students are reminded that Geomorphology is a physical science and some of the material in this course builds upon basic science theory, relationships and paradigms. Among these are the General Systems Theory, classical mechanics and thermodynamics.

C) PREREQUISITE

GEOG 1150 or permission of the Instructor.

D) STUDENT LEARNING OUTCOME

At the end of semester students will be able to:

1. **Identify** the major landforms on the Earth's surface and interpret the processes responsible for their genesis;

2. **Apply** the system concept to geomorphic systems and predict system responses to changes in internal or external forces;

3. **Explain** the basic concepts of the landform development theories, such as the feed-back linkages in which various processes are linked in such a way that the effect of one may initiate the action of another and how geomorphic systems cannot be understood independent of timescale;

4. **Analyze** simple geomorphological data from topographic maps as well as aerial photographs.

E) LECTURES and IMPORTANT DATES

Lectures are Tue and Thurs from 11:30 to 12:30 hrs in OA Room 2015 and labs are Wed from 08:30 to 10:30 in OA room 2014. Fall term runs from Sept 5 to December 4; as the semester progresses lectures in PPT format, assigned readings and supplementary material will be put on D2L. **The Midterm will be held on Tuesday, October 17th.**

F) LAB EXERCISES

Three practical exercises involving topographic maps (1/50,000 & 1/250,000 scale), aerial photographs (1:20,000 and 1:10,000) and map interpretation are planned for this course. Exercises will be available on D2L, introduced and discussed during the formal lab period, and due approximately two weeks later. Large-scale topographic maps provide a general picture of landscape relationships and landforms, and are therefore a useful tool in geomorphic studies. Map reading is an essential skill for all field scientists.

G) FIELDTRIP

There is a one-day fieldtrip planned at the end of October (weather permitting). The scope of this fieldtrip is to visualize some of Simcoe County's main geomorphological features. The fieldtrip will be introduced during lab time and a fieldtrip guide containing information on logistics and materials will be distributed a few days prior to the trip.

H) EVALUATION

Midterm Exam	30%
Practical Exercises (3 exercises)	30% (3x10%)
Final Exam	40%

The midterm test will include multiple choice and "short answer" questions as well as a hand-written essay. The essay must be limited to one page. The "short answer" questions may require

one or two paragraph answers. To insure essay answers can be well written and clearly thought out, examples of essay questions will be handed out before the exam. Typically, about 1/3 short-answer questions come from textbook material not covered in lectures. Definitions make up 10-15 percent of the exams. One-third of the final exam will be comprehensive (i.e., from the entire semester's material).

Please realise that departments have no control over the scheduling of final examinations and that individual professors do not have the authority to allow students to write the final exam outside the designated time slot. Furthermore, there will be no opportunity to "re-do" or "make-up" missed or failed assignments and midterms. Additional work to improve a grade is not an option. If you miss the midterm or fail to submit an assignment without a doctor's certificate a mark of "1" will be awarded. Students with disabilities, however, can arrange to write the exam in a special setting. Please contact Student Affairs for more information.

I) REFERENCE TEXTS

Required:

(1) **Geomorphology**: A Canadian Perspective, 6th edition, by A.S. Trenhaile, Oxford University Press.

Recommended:

(2) **Physical Geography:** Science and systems of the Human Environment (1997) by A. Strahler and A. Strahler, John Wiley and Sons.

(3) **Process Geomorphology**: 4th edition (2001) by D. Ritter, R. Kochel and J. Miller. WC Brown Publishers.

J) LECTURE TOPICS

Topic	Number of lectures
• **Introduction and course outline**	(1)
- Course objectives	
• **Basic concepts and background**	(2)
- What is Geomorphology?	
- Historical foundations	
- Scientific paradigms	
- Systems approach	
• **Endogenic processes and surface physiography**	(5)
- Continents and ocean basins	
- Volcanic, tectonic and structural landforms	
- Continental drift	
• **Weathering and mass wasting**	(3)
• **Fluvial systems**	(5)
- Infiltration and runoff	
- Stream flow	
- Stream channels	
- Fluvial landforms	

- **Glacial systems – Past and Present** (5)
  - Pleistocene glaciations
  - Current glacial activity
  - Glacial processes and landforms
- **Permafrost and periglacial systems** (2)
  - Distribution
  - Freezing and thawing
  - Landforms

K) Academic Integrity

Lakehead University values academic integrity. All students must understand the meaning and consequences of cheating, plagiarism and other academic offences. Please refer to *Lakehead University Regulations: Academic Dishonesty* *http://vpacademic.lakeheadu.ca/?display=page&pageid=46* for more information.

L) Class Etiquette

Out of common courtesy, your professors request a few things of you. While students are in class, they are expected to give their full attention to the professor. Reading, talking, sleeping, and leaving before the end of class are impolite. If you know before class that you will have to leave early sit towards the back near the door so as not to disrupt the class. Likewise, if you arrive late, please enter from the back of the class.

This course is designed to compliment other geography, geology and environmental courses. Certain important and "fundamental" topics are the domain of all of these courses and will probably be repeated.