Earth Sciences 4462A Course Outline

Title: Glacial and Quaternary Geology

Aim of the Course: Covers glacial behaviour and evidence for glaciation over the last 2 million years of Earth's history. Glacial deposits and landforms, their uses and environmental implications. Glacial-interglacial cycles as revealed in deep sea cores, ice cores, and terrestrial materials. Global sea level, climatic changes and causes of glaciation. Quaternary history concentrating on the Great Lakes region.

Prerequisites: 0.5 course from Earth Sciences 2260A/B, 3314A/B, Geography 2330A/B, 3333A/B, 3334A/B, 3350A/B, the former 3331A/B, 3332A/B, or permission of the Department. Be sure to check prerequisites.

Antirequisites: the former Earth Sciences 462a/b, 463b

Lectures: 10^{30}-11^{30}: M in Kresge 106, W in SH 3317 **Labs**: W 2^{30}-4^{30} in BGS 1053; readings suggested

Instructor: Dr. S.R. Hicock B&G 1076, shicock@uwo.ca; see Prof. with official note if you miss a test or lab; no electronic devices allowed in tests; no texts, manuals or electronic devices required for course

Marks: labs 30%; midterm 20% (mid Oct); term paper 30% (due early Dec); final exam 20%

Topics:

Glaciology: glaciers - how they form, move, entrain, erode, transport, and deposit

Glacial theory: brief history and erosional evidence

Glacial systems, past and present: supraglacial, proglacial, subglacial processes, deposits, and landforms

Till: genesis, classification, properties, and uses

Drift prospecting: principles, methodology, case studies

Applied glacial geology: ground stability, drainage, waste disposal, aquifer contamination, placer and aggregate exploration

Global sea level and glacial isostatic changes

Deep-sea and ice cores and oxygen isotopes

Terrestrial evidence of glacial-interglacial cycles: caves, saline lakes, loess, paleosols, tephra markers

Quaternary history of North America

Causes of glaciations: orbital (Milankovitch) cycles, hemispheric synchroneity, greenhouse effect, atmosphere-hydrosphere-biosphere interactions

Laboratory: map, air photo, stratigraphic, applied and environmental exercises

Scholastic offenses are taken seriously and students are directed to read the appropriate policy, specifically, the definition of what constitutes a Scholastic Offense, at the following Web site: http://www.uwo.ca/univsec/handbook/appeals/scholastic_discipline_undergrad.pdf

Accommodation for missed work worth less than 10% of the total course grade due to illness will not require medical documentation; instead, contact the professor and refer to the Policy on Accommodation for Medical Illness at https://studentservices.uwo.ca/secure/index.cfm

Please contact the professor if you require material in an alternate format, or any other arrangements to make this course more accessible to you. You may also wish to contact Services for Students with Disabilities (SSD) at 661-2111x82147 about an accommodation.