

UNIVERSITY COLLEGE OF THE FRASER VALLEY

COURSE INFORMATION

DISCIPLINE/DEPARTMENT: Geography

IMPLEMENTATION DATE: September 1994

Revised: _____

Geography 302
SUBJECT/NUMBER OF COURSE

Advanced Geomorphology
~~DESCRIPTIVE TITLE~~

4
~~UCFV CREDITS~~

CALENDAR DESCRIPTION: A full course in geomorphology that will elaborate on many of the topics introduced in Geography 102. Course topics will include an examination of landforms beginning with the laws and theories of formation to examinations of the various types and distributions of landforms. Special emphasis will be placed on the fluvial, glacial, and coastal geomorphic systems useful in the understanding of the natural landscape of British Columbia. Field trips throughout the Fraser Valley region will be an integral component of the course.

RATIONALE:

COURSE PREREQUISITES: Geography 101 and 102, or permission of the instructor.

COURSE COREQUISITES: None

HOURS PER TERM FOR EACH STUDENT	Lecture	45	hrs	Student Directed Learning Other - specify:		
	Laboratory & Field Trips	30	hrs			
				TOTAL	75	HRS

MAXIMUM ENROLMENT: 25

Is transfer credit requested? **9** Yes **X** No

AUTHORIZATION SIGNATURES:

Course Designer(s): Dr. Sandy Vanderburgh Chairperson: Dave Gibson
Curriculum Committee

Department Head: David Gibson Dean: J.D. Tunstall

PAC: Approval in Principle _____ PAC: Final Approval: November 24, 1993
(Date) _____ (Date) _____

SYNONYMOUS COURSES:

(a) replaces _____
(course #)

(b) cannot take _____ for further credit
(course #)

SUPPLIES/MATERIALS:

TEXTBOOKS, REFERENCES, MATERIALS (List reading resources elsewhere)

Easterbrook, D.J., 1993. Surfaces Processes and Landforms, MacMillan Publishing Company, Toronto.

OBJECTIVES:

This course is intended to provide students with an understanding of the laws, processes, theories of landform development, and variety and distribution of landforms. Particular emphasis will be placed on the fluvial, glacial, and coastal landforms that are part of the diverse natural landscape of British Columbia. Upon successful completion of this course students will be able to demonstrate an understanding of basic sedimentology, fluvial geomorphology (flood frequency analysis, hydraulic geomentry, basic fluid mechanics, mechanics of open channel flow, and planform types and stratigraphy), glacial geomorphology (glacial theory, mechanics of flow, Pleistocene deposits and landforms), and coastal geomorphology (coastal processes and sediment transport, and deltas). Throughout the course the applied uses of the lecture material will be emphasized.

METHODS:

The format of the course includes lectures, laboratory sessions and assignments, assigned readings, and field trips. The lecture topics will emphasize conceptual and theoretical issues and will be supplemented by the use of audio visual aids throughout the course. Laboratory assignments will mainly emphasize techniques and the analysis and interpretation of geomorphic data. Numerous field trips will be conducted during the course that will provide students with practical experience in different geomorphic settings.

STUDENT EVALUATION PROCEDURE:

Laboratory Exercises and Exams	20-30%	
Field Trips	20-30%	
Mid-Term Examination		20%
Final Examination	30%	

COURSE CONTENT

Lecture Topics

1. Nature and scope of Geomorphology, history of geomorphic inquiry
2. Basic sedimentology, facies analysis, logging sediments, vertical profiles
3. Weathering of rocks, fundamentals of soil mechanics
4. Mass Movements; landslides and rockslides, slumps, debris flows
5. Drainage basin analysis, flood hydrology and flood frequency analysis
6. Fluvial geomorphology; hydraulic geometry, basic fluid mechanics, mechanics of open channel flow and fluvial processes
7. Alluvial channels; planform types and stratigraphy (meandering, braided, anastomosing, and wandering gravel-bed)
8. Glacial geomorphology, glacial theory, mechanics of flow, landforms, Pleistocene deposits
9. Coastal geomorphology; coastal processes and sediment transport, delta morphology and stratigraphy, estuaries and estuarine processes
10. Applications of Geomorphology to floodplain occupancy, mass movement engineering

Laboratory Sessions and Assignments (6-10 assignments per semester):

1. Sediment analysis
2. Drainage basin analysis
3. Flood frequency analysis
4. Hydraulic Geometry; hydraulic geometry and flood frequency analysis
5. Mechanics of open channel flow
6. Fluvial processes; related empirical relationships
7. Map and aerial photographic interpretation of river-related landforms
8. Glaciers; mechanics of flow
9. Map and aerial photographic interpretation of glacier-related landforms
10. Coastal Processes; sediment transport and estuarine processes
11. Map and aerial photograph interpretation of coastal features

Field Trips

Cache Creek: a two-day trip through the Fraser Valley and Fraser Canyon. The trip will introduce students to a variety of geomorphic environments with particular emphasis on mass movements and the impact of mass movements on the landscape and human structures.

Fraser River at Chilliwack: a one-day trip to a wandering gravel-bed river planform, includes analysis of surficial sediments and exposed sections.

Glacial Features of the Fraser Valley: a one-day trip in the Fraser Valley that introduces students to landforms associated with Pleistocene glaciations and related stratigraphy.

Stream Gauging Exercise: a one-day trip to a local stream to introduce students to the use of a current meter and techniques of channel measurement.

NOTE: All laboratory sessions and assignments are an essential supplement to the lecture component and are designed to tie in to various lecture topics.