Douglas College

EFFECTIVE: JANUARY 2003
CURRICULUM GUIDELINES

A. Division: **INSTRUCTIONAL** Effective Date: **JANUARY 2003**

B. Department / Program Area: **GEOGRAPHY**
FACULTY OF HUMANITIES & SOCIAL SCIENCES

Revision [X] New Course [ ]

If Revision, Section(s) Revised: **F, G, M, N, O, P, Q, R**

Date of Previous Revision: November 1991

Date of Current Revision: September 2002

C: **GEOG 220** **D:** **GEOMORPHOLOGY** **E:** **3**

Subject & Course No. | Descriptive Title | Semester Credits

F: Calendar Description: This course follows Geography 120 with a more detailed examination of the geomorphic processes shaping the Earth's surface and the resulting landforms. This course considers questions such as: What is the effect of damming a river? How has glaciation created the landscape we live in? How does human activity affect slope stability? How are caves formed? Why is this area vulnerable to earthquakes? Landforms and processes are analysed at various temporal and spatial scales, and in terms of the theories and principles which may account for their development. Field trips investigate the geomorphology of the local area.

G: Allocation of Contact Hours to Type of Instruction / Learning Settings

Primary Methods of Instructional Delivery and/or Learning Settings:

Lecture
Lab

Number of Contact Hours: (per week / semester for each descriptor)

Lecture: **2 hrs. per week**
Lab: **2 hrs. per week**

Number of Weeks per Semester: **14**

H: Course Prerequisites:

GEOG 120 or GEOL 120

I: Course Corequisites:

NONE

J: Course for which this Course is a Prerequisite

NONE

K: Maximum Class Size:

35

L: PLEASE INDICATE:

[ ] Non-Credit
[ ] College Credit Non-Transfer
[X] College Credit Transfer:

SEE BC TRANSFER GUIDE FOR TRANSFER DETAILS (www.bccat.bc.ca)

M: Course Objectives / Learning Outcomes

At the conclusion of the course, a successful student will be able to:

1. Describe the morphology of the landscape and the major processes that form it in areas influenced by fluvial, glacial, periglacial, aeolian, coastal, and semi-arid systems.

2. Describe major scientific ideas and theories about the development of the landscape.

3. Critically analyse geomorphological issues in a scientific context at local, regional and global scales.

4. Use topographic maps, aerial photographs, and other quantitative techniques to analyse landforms and processes of land formation.

5. Use basic field techniques to identify,describe, and analyse landforms and processes of land formation.

N: Course Content:

1. History and Methodology of Geomorphology
   a) Objectives and history of geomorphology
   b) Time scales
   c) Development of scientific methods
   d) Development of major scientific principles pertaining to geomorphology
   e) Reconstructing the past: dating techniques

2. Structural Geomorphology
   a) Plate tectonics and global scale landforms
      - Seismic activity
   b) Development of continents
      - orogens
      - continental boundaries
      - cratons
      - volcanism
   c) Structural geomorphology of deformed rocks
      - fractures and faults
      - mountain building
      - landforms controlled by faults and folds

3. Process Geomorphology
   a) Weathering and Karst landforms
      - physical and chemical weathering
      - weathered profiles
      - landforms associated with weathering
      - karst processes
      - surface landforms associated with karst
      - subsurface landforms associated with karst
   b) Slope processes / mass movement
      - strength and behaviour of plastics and solids
      - resistance of various materials (rocks, soils) to shear stress
      - slope processes
      - types of mass wasting
      - landforms associated with mass wasting and slope deposits
   c) Hydrology
      - flow principles in open channels
      - scientific means to determine discharge and velocity
      - rating curves
      - hydrographs
      - flood frequencies

Course Content Cont'd.

d) Fluvial processes and landforms
- drainage basins
- principles pertaining to sediment entrainment, transport and deposition
- fluvial erosion of bedrock
- hydraulic geometry of stream channels
- alluvial and bedrock channels
- landforms associated with fluvial processes
- long-term response of rivers

e) Glacial processes and landforms
- ice flow patterns and temperatures
- glacial budgets
- glacial erosion, transportation and deposition of material
- landforms of glacial erosion
- landforms of glacial deposition
- glacial meltwater processes and associated landforms

f) Glacial Periods
- history and development of ice ages
- scientific methods of identifying and dating past ice ages
- the Quaternary
- the Pleistocene on a global scale and in North America
- the Holocene on a global scale and in North America
- local glacial history

g) Periglacial processes and landforms
- nival processes and resulting landforms
- processes of frozen ground
- processes of frost action
- landforms associated with permafrost
- thermokarst processes and landforms

h) Coastal and aeolian processes and landforms
- tides, waves and currents
- depositional and erosional coasts
- coastal processes and landforms
- deltas and estuaries
- long-term sea-level changes
- aeolian processes and resulting landforms

i) Geomorphic change: long-term evolution of landscapes
- cycle of erosion
- geomorphic response to global climate changes
- geomorphic response to changing sea levels
- geomorphic response to tectonic processes

O: Methods of Instruction

The course content will be presented by means of lectures, field work, labs and lab demonstrations. Audio-visual material, such as slides and videos, will be incorporated as necessary.

P: Textbooks and Materials to be Purchased by Students

Textbooks will be updated periodically. A typical example of an appropriate textbook is:

Easterbrook, D.J. (1999). *Surface Processes and Landforms*, (2nd ed.) Prentice-Hall.

Q: Means of Assessment

Evaluation will be based on course objectives and will be carried out in accordance with Douglas College policy. The instructor will provide a written course outline with specific criteria during the first week of classes.

Evaluation will include some combination of the following:

1. Lab assignments of a combined value of up to 50%
2. Field work with a value of up to 25%
3. Term paper or project of a value of up to 25%
4. Tests / examinations of a combined value of up to 50%

An example of a possible evaluation scheme would be:

Midterm	20%
Labs	30%
Field Trip Reports	20%
Final Exam	30%

R: Prior Learning Assessment and Recognition: specify whether course is open for PLAR

Yes, students may take a challenge exam to apply for recognition of prior learning

Course Designer(s): Wendy Hales

Education Council / Curriculum Committee Representative

Dean / Director

Registrar

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