

COURSE OUTLINE 2006 (Winter)

**GEOGRAPHY 307 H(3-2) (AREA III)
LANDFORM PROCESSES AND MORPHOLOGY**

Timetable: WINTER SESSION

Lec 01 TR 9:30-11:00 AM 75 SB 142
Labs Replaced with three one-day field trips, field trip reports, and three two-hour core logging, map interpretation and aerial photo labs

Instructor:

Derald G. Smith

Office: ES 448**Office Hours:** anytime**Phone:** 220-6191**E-mail:** dgsmi@ucalgary.ca**Teaching Assistant:**

Jean Michel

Wan Bun Tseung

Office: ES 922**Office Hours:** TBA**Phone:** 220-3176**E-mail:** jm.wanbt@ucalgary.ca**Official Course Description:**

A systematic study of the origin, nature and distribution of landforms. Laboratory work will include several field trips and geomorphic interpretation of maps and air photographs.

Note: Credit for both Geography 307 and Geology 373 will not be allowed.

Prerequisite:

One of Geography 201, 211, Geology 201, 203 or 209.

Supplementary Fees: (*field trips etc*). Course has a mandatory supplementary fee attached of \$50.00.

DATE	TENTATIVE LECTURE SCHEDULE & TOPICS
January 10	Introduction, course objectives, grading scheme, laboratory information, tips on how to study, take notes, field trips, write field trip reports, aerial photo interpretation, labs and exams. Glaciology lecture.
January 12	Glaciology: causes, glacier flow behaviour, surges, thermal regimes, mass balance and movements, time lags and ice structures.
January 17	Mountain glacial landforms (erosional and depositional) plus glaciofluvial and glaciolacustrine processes and deposits.
January 19	Continental glacier landforms and deposits.
January 24	Glacial chronology (advances and retreats, problems, sea level fluctuations and rebound). Extent of North American and Eurasian ice sheets. Glacial history of Banff-Yoho Parks, Calgary area and southwestern Alberta.
January 26	Glacial and pluvial lakes (Agassiz, Champlain, McConnell, Missoula, Bonneville, and others). Video (Missoula Flood, pers. copy).
January 27	First lab (due Feb 3) (Lab 01 from 1:00 to 3:00 PM) (Lab 02 from 3:00 to 5:00 PM) in ES 355

Updated: 1/3/06

January 31	Major Quaternary scientific problems: 1) extinction of Pleistocene megafauna; 2) ice free corridor and peopling of North America; 3) causes of global climate changes and glaciations (past, present, future); 4) impacts of sea level rise or fall due to glaciation.
February 2	Permafrost; defn., extent, thermokarst, how people cope with developments on frozen ground.
February 7	Periglacial forms; ground ice, pingos, rock glaciers, soliflucation, needle ice, peatlands.
February 9	River hydrology (flow discharge) and sediment transport.
February 11	Second lab in ES 355 (Lab 01, 1:00 to 3:00 PM) (Lab 02, 3:00 to 5:00 PM)
February 14	Concept of the graded, degraded and aggrading river, river classification schemes, channel morphology, bed and bank processes. Hjulstrom sediment erosion curve.
February 16	Meandering river and lateral accretion deposition model, anastomosing river model.
February 20-24	Reading Week – NO CLASSES
February 28	Braiding river plains and Alluvial fans, river planning.
March 2	Degrading rivers; terraces, gorges, shale badlands, pediments
March 3	Third lab (ES 355) (Lab 01, 1:00 – 3:00PM) (Lab 02, 3:00 – 5:00 PM)
March 7	MID-TERM EXAM (20%) all material from January 10 through March 2
March 9	Aeolian (wind) processes and landforms; impact of devegetation and recreation vehicles.
March 11	First field trip, Departs 8:00 AM from Lot #20 (report due March 17/06, 4:00 PM)
March 14	Karst (limestone solution) processes and terrain.
March 16	Mass movements, classification, causes, fall, slides, debris flows.
March 21	Mass movements, earth flows, colluvial processes, and colluvial debris flows, (video, Debris Flow Dynamics XMV055518).
March 23	Coastal beach processes (short movie film, XMP00640-01), Waves and Currents. Coastal landforms, beach types, sediment characteristics, barrier islands, wave-influenced coasts.
March 25	Second field trip, departs 8:00AM from Lot #20 (report due March 3/06, 4:00 PM)
March 26	Third field trip, departs 8:00AM from Lot #20 (report due April 7/06, 4:00 PM)
March 28	Marine river deltas, tides and tidal estuaries (video Miss. Delta, XMV57412).
March 30	Lacustrine (lake) systems: importance in Canada, causes of lakes, shore processes, river deltas in lakes, major problems.
April 4	Coastal processes, sea shelf and deep sea terrain processes.
April 6	Global tectonics (video, XMV60877). Global tectonics, mega scale terrain features - continents and ocean basins, earthquakes, tsunami.
April 11	Volcanism classification volcanoes and flows (short film, XMP-01452), Hawaiian Volcanoes.
April 13	Volcanic intrusives and associated terrain (short film, XMP00918), Fire Under the Sea, Origin of Pillow Lava, concluding remarks.

April 17-28 **FINAL EXAM** (25%) to be scheduled by the Registrar's Office.

Field Trip Reports:

All lab and field trip reports are to be turned in to the Teaching Assistant, (fourth floor dropbox) by 4:00 PM on the day they are due. Late reports will be deducted a half-point per day unless the student has a medical or other excuse (i.e., a letter signed by an authorized physician). Reports will be graded and returned to the students in lecture one week following the report due dates listed below. All questions about grading of lab and field reports, should be discussed with the teaching assistant. Lectures and examination questions should be discussed with Professor Smith.

DATES:	FIELD TRIP REPORTS:	DUE:
March 11	West of Calgary & Middle Bow and Kananaskis R. Valleys.	March 17 (4 PM)
March 25 & 26	Field Trips: South of Calgary & Drumheller	March 31 (4 PM) and April 7 (4PM)

All field trip and lab reports will be graded by teaching assistant Jean Michel Wan Bun Tseung.

Field Trip Information:

All field trips will leave from parking lot #20 immediately north of the Earth Sciences Building at 08:00 and returns by 18:00 hrs and use 14-passenger University rented vans. Always bring a substantial lunch, snack and a non-alcoholic beverage(s) (or water bottle). Due to often adverse weather conditions, bring warm clothing (i.e., ski jacket, windbreaker, sweaters, toque, gloves, sun glasses, runners with grip soles (not smooth), or hiking boots). Bring a notebook, pens or pencils, and camera to record field observations for your field reports.

NOTE: A university-approved mandatory field trip fee of \$50.00 has been assessed for this course; and will be added to your university course fees.

Labs:

Three labs in January and February will meet in two groups in ES 355 (see lecture schedule). Some labs will use the book Landforms of Alberta and stereoscopes (provided by the department) to better understand landforms through the interpretation of aerial photographs and maps. Laboratory exercises will be held January 7, February 11 and March 3 (Lab 01 Friday, at 1:00pm in ES 355 and Lab 02 Friday at 3:00 pm in ES 355). Completed lab exercises are to be returned to the Teaching Assistant. Please place completed exercises in Jean Michel Wan Bun Tseung's 4th floor drop box one week after the lab session. Graded labs will be returned about one week after the due date.

Grading:

Lab exercises	15% (3 aerial photo labs, 5 points each lab)
Three field trip reports	35% (3 reports will each count 12% of total grade)
Mid-term exam	25% (March 7)
Final exam	25% (to be scheduled by the Registrar's Office)

**Course Grade
Percentage to letter conversion**

% Score	Letter Grade
0-50	F
50-58	D
58-62	D+
62-66	C-
66-70	C
70-74	C+
74-78	B-
78-82	B
82-86	B+
86-90	A-
90-94	A
94-100	A+

It is necessary to attend and pass both field trips and reports, labs and all exams in order to receive a passing grade for the entire course. A passing grade is greater than 50% of the possible 100 percentage points for the course.

Textbooks:

Course textbooks from the bookstore are not mandatory, but are strongly suggested as supplementary reading to the lecture material.

Ritter, Kochel and Miller, *Process Geomorphology* (about \$100.00 paperback)

or

Easterbrook, 1998. *Surface Processes and Landforms*. (about \$100.00 hardback)

and

Beaty, 1975. *Landscapes of Southern Alberta*, about \$5.00 paperback.

Prerequisite: Geography 201 or Geology 201, 203 or 209.

The above could be revised and changed before the beginning of classes.

Re: Posting of Grades and Picking-up of Assignments

- Assignments will be handed back only in class or by the Professor at pre-arranged time(s).
- If you would like to receive your assignment through the mail, please include an appropriately sized self-addressed, stamped envelope with your assignment when you hand it in to the professor.
- Posting of grades will be at the discretion of each Professor and, if posted, they will be scrambled. Please note, grades will not be available in the Geography office.