

Regional Geology of Western Canada

Earth Sciences 408

Section: D100

Term: 2013 Fall

Instructor: Dr. Dan Gibson

(Email: hdgibson@sfu.ca; Phone: 778-782-7057; Office: TASC1 Room 7413)

Discussion Topics: Why study the geology of western Canada&squots mountains?

The mountains of western Canada, formally known as Canadian Cordillera, form an evolving, growing mountain belt whose origins extend back into the Precambrian. The region is a vast natural laboratory containing examples of features and processes pertaining to most facets of the Earth Sciences, supported by a wealth of geological, geochemical and geophysical information. From the "big picture" perspective, the tectonic evolution of the region provides a model of the ways in which new continental crust was and is being formed from mantle derived, isotopically juvenile, material.

Course outline:

- Introduction: background needed to unravel Canadian Cordilleran geology.
- Physiography, active tectonics and natural hazards.
- Bedrock geology, including economic deposits, from westernmost Alberta Plains to eastern Pacific Ocean floor.
- Setting of the Canadian Cordillera in North American and world geology; comparison with other active mountain belts.
- Summary and synthesis: tectonic evolution of the Canadian Cordillera.
- Student presentations in class of selected topics.
- The real thing! Trans-Cordilleran field trip.

Grading: Midterm Exam 25%;

Lab & Class Exercises 10%;

Term Paper 20%;

Seminar Presentation 5%;

Final Exam 40%

Required Texts: There is no formal text that deals specifically with the Canadian Cordillera, instead extensive course notes are provided. It is recommended that students purchase the "Tectonic Assemblage Map of the Canadian Cordillera" (Wheeler and McFeely, 1991, Geological Survey of Canada (GSC), Map 1712A) from the MIRAGE website (<http://www.nrcan.gc.ca/earth-sciences/products-services/geoscience-data-repository/11820>).

Recommended Texts:

Materials/Supplies: None

Prerequisite/Corequisite: EASC 309

The course requires undergraduate level knowledge of sedimentary, metamorphic, and igneous

Regional Geology of Western Canada

petrology, stratigraphy and structural geology.

Notes: Note: EASC 408 will be held in conjunction with graduate course EASC 624. Graduate students will complete the same course material as undergraduates but will be expected to address seminar and term paper topics at a more advanced level. If so desired by the student, and judged by the instructor to be appropriate to the course, either seminar or term paper topics may be related to their graduate research.

Field trip: There will be a four day field trip across the southern Canadian Cordillera. Participation in the field trip is a required part of the course and will be held during the 3rd weekend of September. It will require driving to Calgary, with a three-day geologising return to Vancouver.

Field Trip Fee: The field trip fee is \$250. This will cover transportation, accommodation, and miscellaneous expenses. It does NOT cover food, so students should budget about \$50-75 in extra expenses for this trip.

"Be aware that during the field trip there will be periods of strenuous hiking, hiking close to cliffs, and crossing roads with busy traffic. Appropriate clothing and footwear should be worn. Further details regarding safety, food, housing and field supplies will be discussed prior to the field trip."

This outline is derived from a course outline repository database that was maintained by SFU Student Services and the University's IT Services Department. The database was retired in 2014 and the data migrated to SFU Archives in 2015.