



COURSE OUTLINE

GEOL 113

INTERMEDIATE GEOLOGY FIELD SCHOOL

3 CREDITS

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APPROVED BY: Margaret Dumkee, Dean

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INTERMEDIATE GEOLOGY FIELD SCHOOL

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DATES: April 27 - May 10, 2018

COURSE DESCRIPTION

In this follow-up to the Introductory Geology Field School (GEOL101), students will further refine their field geology skills in a camp setting near Silver City and Haines Junction, YT. Students will focus on the development of a number of skillsets fundamental to mineral exploration, including: prospecting techniques, primary mapping at a variety of scales, geochemical sampling techniques, and ground geophysics. Students will synthesize existing datasets using database and GIS management skills acquired earlier in the program, with the goal of creating a comprehensive geological overview of the field area. Students will be exposed to the logistics of working and living in a camp setting, and gain experience with standard field safety protocols. When possible, field trips to active exploration and mining operations will supplement the established curriculum.

PREREQUISITES

Successful completion of GEOL101 (Introductory Geology Field School) and GEOL105 (Physical Geology), or permission from the instructor.

EQUIVALENCY OR TRANSFERABILITY

Simon Fraser University (SFU) - EASC 206 (2) - when taken with GEOL101
University of Victoria: EOS 300 (1.5) - when taken with GEOL101
Vancouver Island University - GEOL 206 (3)

LEARNING OUTCOMES

Upon successful completion of the course, students will have demonstrated the ability to

- construct primary geology maps at a variety of scales, and record basic geologic relationships by plotting contact and structural data on digitally produced maps.
- determine the dominant geological features of field school project areas and demonstrate knowledge of primary geological principles through annotations in a written field notebook.
- positively identify and sufficiently describe a variety of lithologies in a field setting, including ore mineralization related to a number of ore deposit models.
- successfully plan, coordinate, and execute geochemical sampling programs tailored to the known geology of the field school area.
- develop field safety plans for their working groups and execute those plans in simulated emergency situations at the field site.
- conduct ground-based geophysical surveys and process resultant geophysical data, while understanding the implications of that data for mineral potential.
- collect and describe samples of geologic materials in support of field investigations and for geochemical/assay analysis.
- describe the framework of First Nations communities surrounding the project areas, and demonstrate an understanding of how hypothetical mine development would impact those communities, both positively and negatively.

COURSE FORMAT

This 2-week field camp will not be conducted on the Yukon College campus, but at one or more off-site locations that better replicate the experience of field camp employment. Students will be expected to be in the field actively participating daily, and subsequent paperwork/homework commitments will be a nightly reality. Students are required to take college transportation to and from the field areas, as use of personal vehicles is not permitted for liability reasons. All deliverables will be completed prior to leaving the field camp on the final day, and thus there will be no additional requirements on returning to Yukon College.

ASSESSMENTS

Attendance and Participation

Students are required to attend the field camp in its entirety. If extenuating circumstances arise, a course of action will be decided upon by the instructor and the Dean of Applied Science & Management. The instructor **MUST** be informed prior to absence. Field exercises must be completed during class hours, with the instructor present. Participation accounts for 20% of the course grade, and grades will reflect the judgment of the field school instructor(s).

Students are required to come to field camp each day alert, engaged, and open to actively participating in activities. In addition, students must be prepared for inclement weather. In the case of severe weather (e.g. lightning), appropriate safety precautions will be taken.

Daily safety meetings will be held in the morning after breakfast and prior to commencing the scheduled activity.

Assignments

Students will be required to keep daily field notes throughout the field course, and these notes will be critically examined and commented upon at regular intervals. The quality of note-taking is expected to improve over the duration of the course.

The course focuses on the successful completion of individual modules that relate to specific exploration skill sets (e.g. geophysics, soil sampling, mapmaking, etc.). These individual modules will typically last 1-3 days in duration, and students will be required to prepare a final deliverable (e.g. report, map, etc.) at the conclusion of each module or by a due date set by the instructor.

Each individual student will be required to complete a 30-minute oral exam administered by the instructor and teaching assistant. This exam tests students on their knowledge of concepts presented within the course - no outside material will be incorporated. An oral exam serves to separate the skills of the individual from those of the group as a whole.

Late assignments will not be accepted. If it is anticipated a deadline will not be met, please talk to your instructor as soon as possible about any available alternative submission options.

EVALUATION

<i>Tests and Assignments</i>	<i>Weight</i>	<i>Dates</i>
Participation	20%	Participation will be assessed holistically over the course of the field school. Ability to work with a team to achieve a collective goal will be a primary consideration.
Oral Examination	20%	Oral examinations will be scheduled for the final day of the field camp.
Field notebooks	10%	Field notebooks will be assessed throughout the field school, but marks will be primarily derived from the final versions during the last stages of fieldwork.
Final map and survey products	50%	Final mapping products and survey data will be due on the morning of the final day of field school.
Total	100%	

The letter-grading scheme used in this course is the standard Yukon College scheme.

TEXTBOOKS AND MATERIALS

No textbook purchase is required for this class. All needed reading materials will be provided by the course instructor. Textbooks from previous Geological Technology program courses will aid in project completion, and students are recommended to bring those materials to field school. See topic outline for applicable texts.

FIELD EQUIPMENT

An equipment list will be sent to students well in advance of the start of the course. The college is not responsible for basic field gear (e.g. hiking boots, rain coat, etc.). In addition, basic “personal” geology items (rock hammer, hand lens, etc.) will not be provided, and the equipment list will include suggestions for economical purchase of those items. More specialized geology equipment (compasses, levels, soil shovels, etc.) will be provided by the program, as will personal protective equipment (PPE).

ACADEMIC AND STUDENT CONDUCT

Information on academic standing and student rights and responsibilities can be found in the current Academic Regulations that are posted on the Student Services/ Admissions & Registration web page.

PLAGIARISM

Plagiarism is a serious academic offence. Plagiarism occurs when students present the words of someone else as their own. Plagiarism can be the deliberate use of a whole piece of another person's writing, but more frequently it occurs when students fail to acknowledge and document sources from which they have taken material. Whenever the words, research or ideas of others are directly quoted or paraphrased, they must be documented according to an accepted manuscript style (e.g., APA, CSE, MLA, etc.). Resubmitting a paper which has previously received credit is also considered plagiarism. Students who plagiarize material for assignments will receive a mark of zero (F) on the assignment and may fail the course. Plagiarism may also result in dismissal from a program of study or the College.

YUKON FIRST NATIONS CORE COMPETENCY

Yukon College recognizes that a greater understanding and awareness of Yukon First Nations history, culture and journey towards self-determination will help to build positive relationships among all Yukon citizens. As a result, to graduate from ANY Yukon College program, you will be required to achieve core competency in knowledge of Yukon First Nations. For details, please see <https://www.yukoncollege.yk.ca/yukon-first-nations-core-competency>.

ACADEMIC ACCOMMODATION

Reasonable accommodations are available for students requiring an academic accommodation to fully participate in this class. These accommodations are available for students with a documented disability, chronic condition or any other grounds specified in Section 8.0 of the Yukon College Academic Regulations (available on the Yukon College website). It is the student's responsibility to seek these accommodations. If a student requires an academic accommodation, he/she should contact the Learning Assistance Centre (LAC) at lassist@yukoncollege.yk.ca.

TOPIC OUTLINE AND TENTATIVE SCHEDULE

Module	Tentative Date(s)	Topic	Recommended resources*
1	April 27	Introduction to mineral exploration in Yukon First Nations traditional territory (Kluane Lake Field Station) Regional Geology overview discussion	Champagne and Aishihik First Nations (2013) - Mineral Industry Code for Quartz and Coal Activities or the Kluane First Nation Proponent's Guide
2 & 3	April 28	Field Safety Plan discussion and finalization (Kluane Lake Field Station) Structural analysis of the Dezadeash Fm. (Haines Junction, YT) Measurement of folded planar and linear features, stereonet analysis, lithological descriptions and fault analysis.	PDAC's e3 Plus Health and Safety in Exploration Toolkit Compton - Geology in the Field Davis et al. - Structural Geology of Rocks and Regions
4	April 29 - May 1	Bedrock mapping of the Bear Creek assemblage (Haines Junction, YT) Bedrock mapping of metamorphosed basalts, ultramafics, and volcanoclastics. Structural analysis, cross-section construction and digital map-making using ArcGIS and Geosoft. Thin section petrography of field site lithologies.	Davis et al. - Structural Geology of Rocks and Regions Klein and Philpotts - Earth Materials Lisle et al. - Basic Geological Mapping Ormsby - Getting to Know ArcGIS
5	May 02	Claim Staking Activity Staking a quartz claim that meets the requirements of the Quartz Mining Act and Yukon Government Guidelines	Yukon Energy Mines and Resources - Quartz Mining Act Guidelines for Claim Staking (2009)
6	May 03 - 04	Geochemical sampling procedures for mineral exploration and geotechnical treatment of rock core (Dusty claim block, Silver City, YT) Grid design and layout; soil sampling and soil characterization; stream sediment	Majoribanks - Geological Methods in Mineral Exploration and Mining Stevens - Mineral Exploration and Mining Essentials

		sampling; XRF analysis of soil and stream sediment samples; channel and chip sampling	
7	May 05	Geotechnical analysis of rock core (Kluane Lake Research Station) Introduction to diamond drill core and measuring: recovery, RQD, rock hardness, fracture density and marking, weathering, and alteration	Davis et al. - Structural Geology of Rocks and Regions
8	May 06	Ground geophysical surveys (Dusty claim block, Silver City, YT) Setting up a survey, conducting a survey, data processing and interpretation.	Jebrak and Marcoux - Geology of Mineral Resources Milsom and Eriksen - Field Geophysics Stevens - Mineral Exploration and Mining Essentials
9	May 07 - 08	Terrain classification and Surficial mapping activity (Cultus Creek, YT) Surficial geology mapping using aerial photographs; field identification of surficial deposits; and deposit description and proper map notation.	Bierman and Montgomery - Key Concepts in Geomorphology Trenhaile - Geomorphology: A Canadian Perspective
10	May 09	Oral exams Work day and submission of final reports	

*Bolded textbooks are those used in previous Yukon College Geological Technology courses.