

GL9577a Exploration Drilling Practices

Instructor: Robert Linnen

office B&GS 1000B; **email:** rlinnen@uwo.ca; **ext.** 89207

Schedule

Lectures: 6 weekends (Saturday-Sunday), 8 hrs per day (including lunch and breaks) throughout the fall 2016 term. A more detailed schedule is provided below

Course Description

The principles of exploration drilling for mineral deposits are examined and practical exercises are completed in order for students to understand the information that can be obtained from drilling. The course is divided into 6 modules, given by experts in each area. Module topics may include, but are not limited to, an introduction to drilling, core logging, downhole geophysical analysis, structural analysis, in situ chemical analysis and computer modelling of drill core results. Each topic is covered over a weekend and consists of a combination of lectures (typically 2-3 hrs/day) and practical assignments (typically 4-5 hrs/day), to be completed by the end of the weekend. Completion of the assignments will be done as teams and the size of the teams will depend on the number of students who register for the course. The course also involves an individual project where the student evaluates drill hole data from a case study and proposes future work.

Detailed Schedule

September 24-25: Sept. 24 Introduction to the course; philosophy of drilling; types of drilling; planning drill programs; drill contracts; environmental impact and licencing; NI-43-101. Sept 25 Second day downhole geophysics.

October 15-16 Core logging. Oct. 15 Logging drill core for geology, alteration and mineralization. Oct. 16 geotechnical core logging and petrophysical measurements of drill core

October 22-23 QA/QC and in situ whole rock geochemical analysis (pXRF) and mineral analysis (Benchtop SEM-EDS). Oct. 23 data treatment.

November 5-6 Structural Analysis of drill core.

November 19-20. Computer programs for drill core results: Nov. 19 ioGAS (geochemistry). Nov. 20 Leapfrog (2D & 3D modelling) of drill hole data.

December 10 Final Projects. Each student will make a 20 minute presentation of their proposed drill program in front of a board of Vice Presidents. See details below.

Final Project

At the beginning of the term each student will be assigned a NI-43 101 report of a specific deposit and will be given the scenario: Your company has just purchased the company that owns this deposit. You will be given a budget and costs for drilling and analyses of drill core and bore holes. The final report will consist of background on the geology of the deposit and region and an evaluation of the NI-43 101 report. Depending on the evaluation, drill holes may be proposed to confirm reserves/resources or may be proposed for exploration to discover new zones of mineralization at the property. The reasoning for each hole, and analytical costs including use of new technology and justification for using this technology needs to be included. 20 minute presentations of each student will be given to a panel of Vice President Exploration.

Marking

Students will attend all six modules. A maximum of one of the modules can be missed if a valid reason is given and the rest of the module mark will be pro-rated. Valid reasons for missing a module include medical, compassionate, religious holidays, personal (family or work) obligations. The instructor and student will agree upon what is valid, but in the case where there is no consensus advice from the Dean's office will be sought. The final project is required for all students.

Modules: 10% for each of the five modules. Each module will have a practical laboratory or assignment which will be completed as a team. All team members will receive the same mark. **The modules account for 50% of the course mark.** All students complete a final project individually and this has marks of **15% for the oral presentation and 35% for the written report.**

General Information

University of Western Ontario policies are listed at http://www.uwo.ca/univsec/academic_policies/. Scholastic offences are taken seriously and graduate students are directed to read the policy, specifically, the definition of what constitutes a Scholastic Offence, at the following Web site: www.uwo.ca/univsec/pdf/academic_policies/appeals/scholastic_discipline_grad.pdf

A student requiring academic accommodation due to illness, should use the Student Medical Certificate when visiting an off-campus medical facility or request a Records Release Form (located in the Dean's Office) for visits to Student Health Services. The form can be found here: https://studentservices.uwo.ca/secure/medical_document.pdf

Accessibility Statement

Please contact the course instructor if you require material in an alternate format or if you require any other arrangements to make this course more accessible to you. You may also wish to contact Services for Students with Disabilities (SSD) at 661-2111 x.82147 for any specific question regarding an accommodation. Students are not required to sit for more than one hour at a time. For additional information please see www.uwo.ca/univsec/pdf/academic_policies/appeals/accommodation_disabilities.pdf

GL 9577 Room Locations

Date	Room	Topic
Sept. 24-25	B&GS 1084	Introduction/Geophysics
Oct. 15-16	B&GS 1015	Core logging
Oct. 22-23	B&GS 1084	pXRF/data treatment
Nov. 5-6	B&GS 1015	Structural analysis
Nov. 19-20	B&GS 0184	ioGAS/Leapfrog
Dec. 10	B&GS 1084	presentations

All modules run 9:00 am to 5:00 pm, and include coffee breaks and a lunch break