



COURSE OUTLINE

GEOL 214

FUNDAMENTALS OF SURVEYING FIELD COURSE

**80 HOURS
3 CREDITS**

PREPARED BY: _____
George Wilcox, Instructor

DATE: _____

APPROVED BY: _____
Margaret Dumkee, Dean

DATE: _____

YUKON COLLEGE

Copyright April, 2017

All rights reserved. No part of this material covered by this copyright may be reproduced or utilized in any form or by any means, electronic or mechanical, traded, or rented or resold, without written permission from Yukon College.

Course Outline prepared by George Wilcox, April 20th, 2017.

Yukon College
P.O. Box 2799
Whitehorse, YT
Y1A 5K4

APPLIED SCIENCE AND MANAGEMENT DIVISION
Fundamentals of Surveying Field Course
3 Credit Course
Winter, 2017

FUNDAMENTALS OF SURVEYING FIELD COURSE

INSTRUCTOR: George Wilcox

OFFICE HOURS: n/a

OFFICE LOCATION: M111

CLASSROOM: M111

E-MAIL: GWilcox@ChallengerGeomatics.com

TIME: 9:00 – 17:00

TELEPHONE: 867-689-1847

DATES: April 25 – May 3, 2017

COURSE DESCRIPTION

This field course covers fundamental concepts and principles of surveying for the mining and mineral exploration industries. Topics include the role of surveying in exploration, surface and underground mining; datums and coordinate systems; directions and bearings; field note-keeping; measurement and calculation techniques; basics of total station and differential GPS use, digital data collection and transfer techniques; and error analysis. Students will be introduced to surveying using industry-standard equipment and software.

PREREQUISITES

Academic Mathematics 12 (OR Yukon College equivalent, MATH 060), and GEOG 250 (Introduction to Geographical Information Systems (GIS)) OR permission from the instructor. Students must have their Wilderness and Remote First Aid/CPR-C certification (Yukon College equivalent WFA 010)

EQUIVALENCY OR TRANSFERABILITY

In progress.

LEARNING OUTCOMES

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

- explain the importance and application of surveying in mine excavations (underground and surface mining)
- identify standard surveying equipment, explain the purpose of each piece, and demonstrate basic use
- evaluate the propagation and scale of error when conducting surveying measurements.
- measure distances and angles and create grids using standard surveying equipment including total stations and differential GPS
- use levels to determine differences in elevations and perform topographic surveys
- transfer field data to electronic databases and output data using industry-standard reporting and notation

DELIVERY METHODS/FORMAT

This 9-day field course will be conducted with a combination of classroom and field-based instruction in the Whitehorse area. Lectures and field activities will be delivered daily.. Students will be expected to participate actively from 9 am to 5 pm every day, and homework/data analysis will require additional time commitment in the evenings. Transportation will be provided to and from field sites for all participants. All course requirements will be completed prior to leaving on the final day.

COURSE REQUIREMENTS

Attendance

Students are required to attend the field school in its entirety. If extenuating circumstances arise, a course of action will be decided upon by the instructor and the Chair of the School of Science. The instructor must be informed *prior* to absence.

Participation

Participation accounts for 15% of the course grade and this mark is at the discretion of the field school instructor(s). Students are required to come to class each day alert, engaged, and open to actively participating in activities. In addition, students must be prepared for inclement weather.

In case of severe weather (e.g. lightening), appropriate safety precautions will be taken.

Assignments

The main evaluation mechanism for this course is a series of daily assignments based on field and classroom activities and a final mapping project. These assignments are intended to give students the opportunity to use their surveying knowledge and collected data to perform tasks common in the mineral exploration, mining, and environmental geoscience fields. Most assignments will be due during class time others at the start of the next class. Final report will be due at 5pm on the last day of class.

Tests

There will be no formal tests.

Equipment

An equipment list will be sent to students in advance of the start of the field course. The College is not responsible for basic field gear (e.g. hiking boots, rain coat, etc.). Specialized surveying equipment (levels, GPS units, total stations, etc.) will be provided by the Geological Technology Program and/or industry partners, as will standard personal protective equipment (PPE).

EVALUATION

<i>Tests and Assignments</i>	<i>Weight</i>	<i>Dates</i>
Daily Activity Assignments	30%	Assignments will be due during class or at the start of the following class.
Participation	15%	Evaluated based on daily participation.
Final Project	55%	May 3 rd , 2017 – 17:00
Daily Photos (9) Bonus	9%	May 3 rd , 2017 – 17:00
Total	109%	

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

REQUIRED TEXTBOOKS AND MATERIALS

No textbook purchase is required for this class. All reference materials will be provided by the course instructor.

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.

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 (867) 668-8785 or lassist@yukoncollege.yk.ca.

TOPIC OUTLINE

Module	Topic
1	Introduction to applications of surveying in exploration and mining
2	Industry-standard surveying equipment; function, operation and limitations
3	Remote sensing
4	Field notes
5	Data collection for topographic surveys
6	Size and shape of the earth; mapping projections.
7	Understanding and mitigating errors
8	Geomatics tools
9	Traversing: distance and angle measurement.
10	Introduction to open pit blasting