



COURSE OUTLINE

GEOL 112

MINING INDUSTRY OVERVIEW

3 CREDITS

PREPARED BY: Mary Samolczyk DATE: November 3, 2017

APPROVED BY: Margaret Dumkee DATE:

APPROVED BY ACADEMIC COUNCIL: October 2012

RENEWED BY ACADEMIC COUNCIL:



GEOL 112 Course Outline by Mary Samolczyk is licensed under a [Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International License](https://creativecommons.org/licenses/by-nc-sa/4.0/).

APPLIED SCIENCE AND MANAGEMENT
Mining Industry Overview
3 Credit Course
Winter, 2018

MINING INDUSTRY OVERVIEW

INSTRUCTOR: Mary Samolczyk, M.Sc.	OFFICE HOURS: Tues.12:00 – 1:00 pm
OFFICE LOCATION: M105 (CNIM)	CLASSROOM: M111
E-MAIL: msamolczyk@yukoncollege.yk.ca	TIME: Tues/Thurs 1:00 - 2:30 pm
TELEPHONE: 867.456.6958	DATES: January 3 – April 12, 2018 (last day of classes)

COURSE DESCRIPTION

This course traces the industry from grassroots mineral exploration through to the processing and marketing of mining products, with guest speakers contributing their diverse knowledge in these areas. The environmental impact of mining and sustainable mining techniques will be introduced, as well as the monitoring and remediation techniques that follow mine closure. This course also provides an introduction to First Nations in the Yukon and the history, land agreements, and regulations that influence their relationship with the mining industry. Geology 112 serves as a foundation for subsequent mining-specific courses that require a base-level of understanding concerning the industry.

PREREQUISITES

Prior completion of GEOL105 (Physical Geology) and/or permission from the instructor.

EQUIVALENCY OR TRANSFERABILITY

No transfer agreements have yet been established for GEOL112.

LEARNING OUTCOMES

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

- Identify the various stages in the mine cycle, from exploration to mineral extraction and refinement to mine closure and remediation. Students should be able to demonstrate an understanding of the requirements for technical and environmental studies that bridge

these segments of the mine cycle.

- Compare and analyze different methods of extracting minerals in both surface and underground mining operations, and describe the subsequent processing techniques that separate and refine ore.
- Describe how metals and industrial minerals are sold into the marketplace, as well as the factors involved in setting mineral prices. In addition, students should be able to demonstrate an understanding of how companies raise capital to fund mining activities.
- Describe the main issues surrounding closure and reclamation of a mine site, and be able to apply that knowledge to make preliminary recommendations for currently active mining operations.
- Identify the primary characteristics of main deposit types and the ore minerals generally associated with those deposits.
- Assess the impact of mining operations on the natural and human environment, and describe the main sources of environmental pollution.
- Demonstrate a fundamental awareness of the interplay between mining companies and Yukon First Nations, and the rights and responsibilities of both partners.

COURSE FORMAT:

This course consists of two 1.5-hour lectures per week and a final exam.

ASSESSMENTS

Attendance & Participation

Students are strongly encouraged to attend all lectures.

Assignments

Students will be given 5 lecture assignments based on assigned reading that is intended to reinforce the concepts introduced in lecture. These assignments will serve as a focal point for class discussion and peer interaction. Students will also prepare two oral presentations on mining-related current events that will be presented to the class on a date assigned by the instructor.

Students are expected to complete background textbook readings in advance of each classroom lecture. Recommended readings are provided in the topic outline table below. Readings will

require ~1-2 hours per week outside of class.

Tests

Any student who is absent from a test or exam for legitimate reasons will be eligible to write a deferred exam. Please note that excuses such as car trouble, vacation travel, oversleeping, and misreading the test schedule are not considered legitimate reasons and do not qualify the student for a deferred exam. For missed exams, the student must contact the instructor within 48 hours of the missed exam by phone or email. For missed final exams, students must contact the instructor to discuss an appropriate course of action. Any deferred exams will be scheduled by the Chair.

EVALUATION

Theory Assignments	30% (6% each)
Midterm Exam	25%
Current Events Presentations	10%
Final Exam	35%
Total	100%

REQUIRED TEXTBOOKS AND MATERIALS

Stevens, Robert. 2010. *Mineral Exploration and Mining Essentials* (1st edition). Pakawau GeoManagement Inc. (www.miningessentials.com)

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 www.yukoncollege.yk.ca/yfnccr.

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.

THE LORENE ROBERTSON WRITING CENTRE

All students are encouraged to make the Writing Centre a regular part of the writing process for coursework. The Lorene Robertson Writing Centre is staffed by helpful writing coaches from across the College and offers one-on-one appointments to students in need of writing support.

The Lorene Robertson Writing Centre can help you:

- Get started on an assignment and focus your ideas
- Outline and plan your assignment
- Write clearly, logically and effectively
- Address specific needs and writing problems
- Revise the first and final drafts on your project
- Gain confidence in your writing

For in-person appointments, the Centre coaching office is located in the Academic Support Centre in room A2302. You can also participate in coaching appointments over the phone or online. See the Academic Support Centre schedule in English and Writing support time.

TOPIC OUTLINE

Module	Topic	Recommended Reading*
1	Industry Overview: mine life cycle; commodities; funding sources; participant organizations.	Ch. 1 (p. 1 - 13)
2	Mineral Deposits: formation; terminology; deposit types.	Ch. 3 (p. 47 - 108)
3	Mineral Exploration I: properties and stages; exploration agreements.	Ch. 4 (p. 113 - 130)
4	Mineral Exploration II: exploration techniques; geophysical methods; diamond drilling.	Ch. 4 (p. 130 - 167)
5	Mineral Resources and Reserves: factors in estimation; recovery; grade and tonnage.	Ch. 5 (p. 170 – 186)
6	Midterm Exam	
7	Economic Assessments: pre-feasibility and feasibility studies.	Ch. 5 (p. 186 – 197)
8	Surface Mining: types; mine layout; stripping ratios; production cycles; placer mining.	Ch. 6 (p. 199 - 214)
9	Underground Mining: mine layout; access; mining methods; production cycle.	Ch. 6. (p. 215 – 229)
10	Mineral Processing: crushing and grinding; smelting; flotation; heap-leaching, etc.	Ch. 7 (p. 230 – 251)
11	Environmental Considerations: Closure and Reclamation; Environmental Hazards; Community Considerations.	Ch. 8 (p. 253 – 274)

*All readings from Stevens (2010).