

**APPLIED SCIENCE AND MANAGEMENT DIVISION
SCHOOL OF MINING AND TECHNOLOGY
SCHOOL OF SCIENCE**



COURSE OUTLINE

GEOL 112

MINING INDUSTRY OVERVIEW

**45 HOURS
3 CREDITS**

PREPARED BY: Joel Cubley
Joel Cubley, Instructor

DATE: September 20, 2012

APPROVED BY: Shelagh Rowles
Shelagh Rowles, Dean

DATE: September 20, 2012

YUKON COLLEGE

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Course Outline prepared by Joel Cubley, 20 September 2012.

Yukon College
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APPLIED SCIENCE AND MANAGEMENT DIVISION
GEOLOGY 112
3 Credit Course

MINING INDUSTRY OVERVIEW

INSTRUCTOR: Mary Samolczyk, M.Sc.
OFFICE HOURS: TBA
OFFICE LOCATION: A2320
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COURSE OFFERING: January 7 – April 26, 2013
DAYS & TIMES: Wednesdays and Fridays, 10:30am-12:00pm

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.

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.

DELIVERY METHODS/FORMAT:

This course consists of two 1.5-hour lectures per week. The lecture schedule included in this course outline details the major topics covered and when those topics will be presented throughout the course. Please note that this schedule will likely be modified throughout the term, as some topics may not be finished within the predicted lecture time.

PREREQUISITES

Successful completion of GEOL105 and/or permission from the instructor.

COURSE REQUIREMENTS/EVALUATION

Attendance and Participation

Students are strongly encouraged to attend all lectures and will be given a mark (10%) for their participation in group discussions. A student's ability to successfully complete the lecture assignments (below) will be hindered by poor attendance.

Assignments

Students will be given a weekly lecture assignment that is intended to reinforce the concepts introduced in lecture. These assignments will be due the following week and serve as a focal point for class discussion and peer interaction. Late work will not be accepted.

Tests/Exam

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

| <i>Tests and Assignments</i> | <i>Weight</i> | <i>Dates</i> |
|------------------------------|---------------|---|
| Midterm Exam | 30% | During scheduled class time in the 6 th week of classes. |
| Final Exam | 30% | During the final exam period. |
| Theory Assignments | 30% (3% each) | Due the following week at the start of class time. |
| Participation | 10% | Throughout the course. |
| Total | 100% | |

The letter-grading scheme used in this course is the standard college scheme. Final grades will be rounded up to the nearest decimal place and assigned a letter grade based on this scheme. Grades will not be raised in order to facilitate a better overall grade standing at the end of the course. Final grades will be changed in the event that an error in grade addition or entry occurs. In such a case, students are asked to contact the instructor immediately. The College policy on grading and related matters is described in the “Student Evaluation, Grades, and Records” section of the current College Calendar.

Plagiarism

Plagiarism involves representing the words of someone else as your own, without citing the source from which the material is taken. If the words of others are directly quoted or paraphrased, they must be documented according to recommended document style. The resubmission of a paper for which you have previously received credit is considered a form of plagiarism.

Plagiarism is academic dishonesty, a serious academic offence, and will result in you receiving a mark of zero (F) on the assignment or the course. In certain cases, it can also result in dismissal from the College.

Writing Centre

All students are encouraged to make the Writing Centre a regular part of the writing process for coursework. Located in C2231 (adjacent to the College Library), the Writing Centre offers half-hour writing coaching sessions to students of all writing abilities. Coaching sessions are available in person and through distance technologies (e.g. Skype or phone plus email). For further information or to book an appointment, visit the Centre’s website: dl1.yukoncollege.yk.ca/writingcentre.

STUDENTS WITH DISABILITIES OR CHRONIC CONDITIONS:

Reasonable accommodations are available for students with a documented disability or chronic condition. It is the student’s responsibility to seek these accommodations. If a student has a disability or chronic condition and may need accommodation to fully participate in this class, he/she should contact the Learning Assistance Centre (LAC) at (867) 668-8785 or lassist@yukoncollege.yk.ca.

REQUIRED TEXTBOOKS/MATERIALS:

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

EQUIVALENCY/TRANSFERABILITY

No transfer agreements have yet been established for GEOL112.

LECTURE TOPICS

| Week | Topic |
|-------------|--|
| 1 | Industry Overview: mine life cycle; commodities; funding sources; participant organizations. |
| 2 | Mineral Deposits: formation; terminology; deposit types. |
| 3 | Mineral Exploration I: properties and stages; exploration agreements. |
| 4 | Mineral Exploration II: exploration techniques; geophysical methods; diamond drilling. |
| 5 | Mineral Resources and Reserves: factors in estimation; recovery; grade and tonnage. |
| 6 | Midterm Exam |
| 7 | Economic Assessments: pre-feasibility and feasibility studies. |
| 8 | Surface Mining: types; mine layout; stripping ratios; production cycles; placer mining. |
| 9 | Underground Mining: mine layout; access; mining methods; production cycle. |
| 10 | Mineral Processing: crushing and grinding; smelting; flotation; heap-leaching, etc. |
| 11 | Closure and Reclamation; Environmental Hazards. |
| 12 | Evaluating Exploration Companies and Technical News Releases. |