MIN E 402 Mine Design Project I

Fall 2024 - September 03 to December 09

Class time: Tuesday 13:00-13:50 Location: MEC 3-1

Instructor:

Hunter Dunn, BSc, P.Eng

hmdunn@ualberta.ca
Donadeo Innovation Centre For Engineering 6-247
Office Hours:

Course Description:

*4.5 (fi) (first term, 1-1S-6) First phase of a dynamic scenario-based mine feasibility study from exploration through operations to final mine closure plan. Includes preparation of a geological model, calculation of resources, generation of focused technical reports, community consultation and economic reports. Identify and compare conceptual mining methods for consideration in Mine Design Project II (see MIN E 403). Prepare regular team reports and presentations. Present findings during a half-day final industry seminar. Weekly seminars with instructor and industry experts. Corequisites: MIN E 413 and MIN E 414. Note: Restricted to fourth-year traditional and fifth-year co-op engineering students

Prerequisites: Corequisites: MIN E 413 and MIN E 414. Note: Restricted to fourth-year traditional and fifth-year co-op engineering students.

Course synchronous and asynchronous content delivery schedule:

This course is a group based project course where course material learned to date is applied in developing a pre-feasibility study for a new mining project. There is no new material taught in this course and all work is done within your group. Mentorship can and will be provided by the instructor, TAs and a group of industry experts as needed.

Land Acknowledgment:

The University of Alberta acknowledges that we are located on Treaty 6 territory, and respects the histories, languages, and cultures of First Nations, Métis, Inuit, and all First Peoples of Canada, whose presence continues to enrich our vibrant community.

TA Information:

Khaleeq Ahmed, khaleeq1@ualberta.ca

Lab Sections:

Section	Day	Time	Location
LAB D1	Monday / Wednesday	14:00 - 16:50	NRE 2-043 / ETLC E1-008

Seminar Sections:

Section	Day	Time	Location
SEM E01	Tuesday	1:00 - 1:50	NRE 2-043 / MEC 3-1

Course Objectives & General Content:

Learning Outcomes:

By the end of this course, students should be able to:

1. Meet stated GA's.
2. Develop critical thinking and problem solving skills applied to mine feasibility assessments
3. Investigate the environmental, political, and sociological factors impacting mine feasibility (Section 1)
4. Demonstrate the ability to assess the regional and local geological features of a mine (Section 2)
5. Generate and evaluate a numerical model of a mineral deposit (Section 3)
6. Compare and evaluate two or more options for mineral extraction (Section 4)
7. Demonstrate competence in presenting project results through written and oral modalities
8. Demonstrate the ability to work effectively in a team environment

Marking Scheme:

Activity	(A)Synchronous	Due/Scheduled	Weight
Evaluations: group/instructor	Synchronous		10%
Oral Midterm	Synchronous	Nov 4th	10%
Sections and Executive Summaries	Synchronous		40%
Interim Presentation	Synchronous		15%
Final Presentation	Synchronous	Dec 4th	20%
Pass/Fail Activities	Synchronous		5%

The Faculty recommended grade point average for a 400 level course is 3.1. Instructors have the leeway to deviate from this average and can assign grades based on their own scheme. All grades are approved by the department chair (or delegate). The office of the Dean has final oversight on all grades.

Term Work

All term work solutions will be posted no later than the last day of classes. All term work will be returned to

students by the final day of classes, with the exception of major term work due in the last week of classes. The latter will be returned by the day of the final examination or the last day of the examination period if there is no final examination in the course as per university policy; instructors will make accommodations to return these term work. It is the responsibility of the student to pick up all their term work at the specified time and place. Any unreturned term work, shall be retained and then shredded six months after the deadline for reappraisal and grade appeals. Final examinations will be kept for one year as required by university guidelines and the Government of Alberta's Freedom of Information and Protection of Privacy Act.

Additional Notes

Monday/Wednesday Labs
There will be a lecture, or groups will meet individually with Hunter Dunn or their industry advisor to present and discuss their main issues/concerns/questions. There will be weekly guiding questions to explore different aspects of engineering and critical thinking. Schedules provided in class. Each member of the group should be prepared to answer questions posed.
Often, an industry leading expert will be invited to give a guest lecture. You must start the section before the guest speaker arrives. Every group must ask the guest speaker one general question and one project specific question.
Tuesday Lecture
Starting September 26th, TA's will be available at exactly 1:00 in NREF 2-043 and answer questions until there are no questions left, this may be 2min or the entire 50min session, depending on student questions. Various lectures by the instructor will be held during this time as needed. One member from each group will meet with the instructor at 1:00 in NREF 2-043. Zoom will be provided if anyone is ill, email instructor.
NI 43-101
This national instrument is very important. It would not be appropriate for you to complete an NI 43101 report for MinE 402 but you need to have some familiarity with the industry standard. There is very little asked of you in MinE 402 that is beyond the scope of an NI 43101 report, but there are many things that are in an NI 43101 report that will not be in your project. At the end of each section, include a short summary (maximum one page) of what is in the corresponding NI 43101 sections that you did NOT include in your report.
For any section you are working on, if you ever wonder "what should I include in this section?" one answer would be to include all the material that is in the corresponding section(s) of an NI 43101 report, of course this would likely be too much material, but gives you an infinite source of exemplars. NI 43101 reports can provide you some optional topics to develop and enrich your report.
Interim and Final Presentations
Each group will have 20 minutes to present and up to 20 minutes of questions from the class, mining faculty, TA's, industry advisors, instructor, and invited industry experts. The presentations will be graded on individual performance (coherence, clarity, and knowledge) and as a group on technical content.
Pass/Fail Activities
These include attendance during events, mentor meeting minutes (submit on eClass), Section 0, and other activities.

Calculator Policy

There is no calculator policy in this course; students are free to use the calculator they wish for all assessments.

Expectations for AI use

In this course, we commit to AI use guided by ethical and transparent principles. While students are allowed to use advanced automated tools (such as ChatGPT or Dall-E 2) for certain written assignments, it is crucial to adhere to the following guidelines:

Seek prior approval from the instructor for AI use in specific assignments.
When allowed, clearly attribute and cite any AI-generated content in your work, including prompts and AI outputs as part of your academic record. Include an additional reflection component in your assessments, discussing how AI tools contributed to your learning process.
IMPORTANT: Please note that AI use is strictly prohibited in assessments and assignments not approved by the instructor. Failure to abide by this guideline may be considered an act of cheating and a violation as outlined in the relevant sections of University of Alberta (November 2022) Code of Student Behaviour .

Text and References (Recommended):

NI 43-101

Previous Examples of Evaluative Materials:

Previous examples are provided on eClass. Please note these do not represent exemplar submissions. They are randomly chosen as examples to use as a starting point.

Did you know that the University of Alberta has various low-to-no-cost services to help students succeed? Visit http://www.deanofstudents.ualberta.ca/ for information about the academic, wellness, and various other support services available to U of A students. It's never too early or too late to seek help!

University and faculty policies

Respect and professionalism

The Faculty of Engineering is committed to fostering and protecting an equitable, inclusive, and respectful work and study environment in line with University of Alberta policies and professional engineering industry standards.

The faculty prepares students to uphold industry standards to become a Professional Engineer (P.Eng). Therefore, respect, professionalism, and accountability must be upheld within the Faculty of Engineering and the University of Alberta.

Academic integrity

All students are expected to follow the University of Alberta's Student Code of Behaviour and Student Conduct Policy. The faculty expects an environment free of harassment, discrimination, and bullying. We encourage you to talk to the Office of Safe Disclosure and Human Rights about experiences, questions, or concerns. Additional resources and support for students are attached below.

Engineering students studying in the province of Alberta must also follow the Code of Ethics set by the Association of Professional Engineers and Geoscientists of Alberta (APEGA).

Course outline policies, course requirements, evaluation and grading information can be found in the University Calendar.

Safety during learning activities

In all Faculty of Engineering courses, labs, seminars or other learning activities, safety is of paramount importance. In some cases, laboratory work in a program requires high standards for risk management to keep potential hazards safely under control.

Anyone found to be unable to function safely in the class, lab, seminar or other learning activity may be asked to leave or be removed for their and the safety of other participants and instructors in alignment with the Student Code of Behaviour and Student Conduct Policy. As members, or prospective members, of the engineering profession, it is your responsibility to identify and inform the proper authorities of unsafe work.

Audio and video recording

Audio or video recording, digital or otherwise, of lectures, labs, seminars or any other teaching environment by students is allowed only with the prior written consent of the instructor or as a part of an approved accommodation plan.

Student or instructor content, digital or otherwise, created and/or used within the context of the course is to be used solely for personal study and is not to be used or distributed for any other purpose without prior written consent from the content author(s).

Only those items specifically authorized by the instructor may be brought into the exam facility. Students must not bring any unauthorized electronic device into an examination room, including cell phones or other devices.

Student services and support

Health & Wellness Support

Counselling and Clinical Services

Free, short-term, appointment-based counselling and psychiatric services. Also offers drop-in workshops. Book an initial consultation. Visit uab.ca/CCS to learn more.

Wellness Supports Social Workers

Free one-on-one support for students in the areas of housing, finances, academics, personal wellness, life skill development, family dynamics, system navigation, and any area of life where there is a desire to invite change. Visit uab.ca/wellness to learn more.

Sexual Assault Centre

Free, anonymous, and confidential drop-in counselling. Visit uab.ca/UASAC to learn more.

The Office of Safe Disclosure & Human Rights (OSDHR)

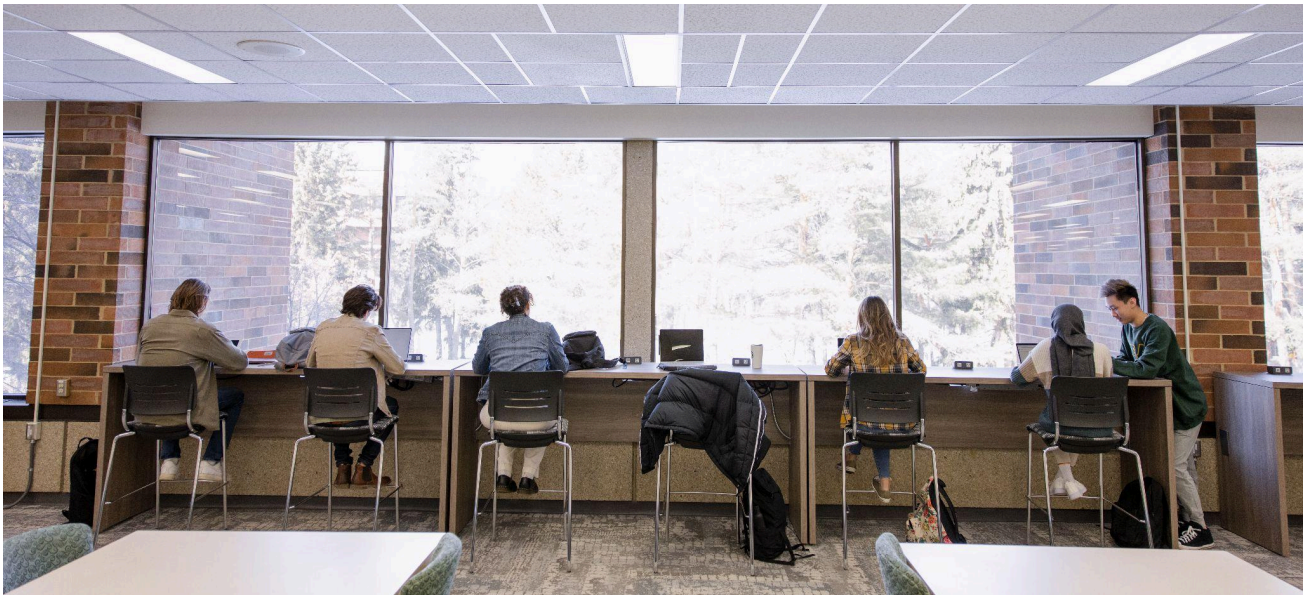
The OSDHR advises confidentially on sensitive issues you may not feel comfortable solving on your own. Contact the OSDHR if you want to get help or to make a report while keeping your privacy. Visit uab.ca/OSDHR to learn more.

HIAR (Helping Individuals at Risk)

If you're worried about someone, contact HIAR, who can help assess risk and connect individuals to support. Learn more at uab.ca/HIAR.

Immediate External Supports

Health Link Alberta: 811
Suicide Crisis Helpline: 988



Academic support

Academic Success Centre
Access to a variety of services to maximize your academic success. Learn more at uab.ca/ASC.

Accessibility Resources
Connects students with disabilities to accommodations. Learn more at uab.ca/Access under accommodations + accessibility.

Decima Robinson Support Centre
Academic support for 100- or 200-level introductory calculus, linear algebra and statistics courses. Visit uab.ca/DSC to learn more.

Engineering Student Success Centre
The Faculty of Engineering provides drop-in tutoring for first-year courses. Visit uab.ca/ESSC to learn more.

Office of the Student Ombuds
Call for complex problems and conflict mediation. Learn more at uab.ca/ombuds.

Financial support

Student Service Centre

For awards and other funding support. Learn more at uab.ca/ask.

Campus Food Bank

The Campus Food Bank Society is an independent charity supporting University of Alberta students, faculty, staff, and alumni for up to five years. For additional information visit their website at campusfoodbank.com.