MINE4710

Mine Management

Term 2, 2023

Course Overview

Staff Contact Details

Convenors

Name	Email	Availability	Location	Phone
Binghao Li	binghao.li@unsw.edu.au	Monday (16:00 - 17:00)	School of Minerals and Energy Resources Engineering, Old Main Building, 159C	(0) 2 9385 4236

School Contact Information

School of Minerals and Energy Resources
Old Main Building, Level 1, 159 (K15)
UNSW SYDNEY NSW 2052 AUSTRALIA

For current students, all enquiries and assistance relating to enrolment, class registration, progression checks and other administrative matters, please see The Nucleus: Student Hub.

Web & Important Links:
School of Minerals and Energy Resources
The Nucleus Student Hub
Moodle
UNSW Handbook
UNSW Timetable
Student Wellbeing
Urgent Mental Health & Support
Equitable Learning Services

Course Details

Units of Credit 6

Summary of the Course

The course provides an understanding of management principles and perspectives vital to a mine manager's successful running of a mining enterprise.

The course consists of four modules:

1. Mining law, safety and risk management;
2. Minerals economics and mine cost structure;
3. Management fundamentals; and
4. Mine operations management

Course Aims

This course aims to equip the student with an appreciation of management principles and practices vital to the successful running of a mining operation in the Australian and international setting. Critical aspects of mine management will be covered in this course including risk and safety, legislative frameworks, economic development, sustainable and responsible resource recovery.

Course Learning Outcomes

After successfully completing this course, you should be able to:

Learning Outcome	EA Stage 1 Competencies
1. Examine current mine safety management, HSEC/duty of care, risk management and people management (e.g., Cross-cultural and diversity issues) concepts, and compare the good from the bad practices.	PE1.1, PE1.4, PE2.1, PE2.3
2. Evaluate and analyse Australian and international legislative framework systems, statutory requirements, and approval processes and evaluate how they influence mine site management.	PE1.6, PE3.1
3. Outline and evaluate project and contract management theory and practices.	PE1.5, PE2.4
4. Analyse and summarise advanced management aspects of mineral economics, project financing, including mergers and acquisitions, and formulate strategies to incorporate them into selected mining operations.	PE3.1, PE3.2, PE3.3, PE3.5, PE3.6

Teaching Strategies

The learning outcomes will be assessed by the group and individual assignments.
Teaching & Learning Methods

1. Lectures and workshops: This course is a mix of conventional lectures and self-directed learning. The course convenor will provide further details in the first lecture. As a general rule, students will be expected to review the material and notes and work through it at their own pace.
2. Effective Communication: One of the most effective means of learning is to effectively communicate what has been learned. Part of the assessment in this course will be determined by how effectively the results are communicated. There are a number of opportunities for this in the form of presentations and final reports. The process of writing reports, brainstorming within a design team, peer assessment, preparation and presentation of report both in front of an audience and in report form, requires clarity of thinking, defending and revising a design and analysing the risks inherent in a project.

Additional Course Information

Assumed Knowledge

This course assumes that students: have a good understanding of mining terms, descriptions and systems; have been exposed to various mining methods; and are familiar with mining development, operations, production and materials handling.

Assessment

Assessment task	Weight	Due Date	Course Learning Outcomes Assessed
1. Disaster Case Study	20%	12/07/2023 11:59 PM	1, 2
2. Quiz	20%	10/07/2023 12:00 PM	1, 2, 3, 4
3. Industrial Relations Script and Role Play	30%	06/08/2023 11:59 PM	2, 3, 4
4. Final Exam	30%	Not Applicable	1, 2, 3, 4

Assessment 1: Disaster Case Study

Start date: 05/06/2023 12:01 AM
Due date: 12/07/2023 11:59 PM

The purpose of this exercise is to select a recent high-profile accident (mining or otherwise), to conduct a detailed accident investigation using the Bow-Tie analysis or Swiss-cheese model as an analysis tool, and to present your results. Written report (14 marks) and presentation (6 marks).

Assessment 2: Quiz

Start date: 10/07/2023 10:00 AM
Due date: 10/07/2023 12:00 PM

There are four questions, all questions are of equal 25-point values**.**

- Unless otherwise specified**,** questions shall be answered in **ESSAY** format. Any reference materials used shall be cited in the essay text and listed at the end of the essay for each question as per the MEA report writing guide.
- Make sure to use the **answer sheet** provided on Moodle. You are free to handwrite and/or type your answers on the answer sheet.
- **OPEN BOOK** – MINE4710 Moodle resources and any additional reference materials may be used.
- Each essay should be around **250–300 WORDS** in length excluding the reference list.

Assessment 3: Industrial Relations Script and Role Play (Group)

Start date: 29/06/2023 09:00 AM
Due date: 06/08/2023 11:59 PM

Each group (4-5 students) selects one industrial dispute from a list provided in class and develops a roleplay script based detailing what caused the dispute, who are the main players, how the dispute escalated, and how it was resolved.

This assessment has a written report (script) and presentation (dramatisation) component. The presentation (dramatisation) of each group is assessed by the convenor and all non-member students.

For the written report (script), a peer review will be submitted by each team member, indicating the proportion of each individual group member's contribution to the project. Team member marks will be moderated based on individual contributions.

Assessment 4: Final Exam

There are 4 questions, all questions are of equal 25-point values**.**

- All questions must be answered in **ESSAY** format. Any reference materials used must be cited in the essay text and listed at the end of the essay for each question as per the MEA report writing guide.
- Make sure to use the **answer sheet** provided on Moodle. You are free to handwrite and/or type your answers on the answer sheet.
- **OPEN BOOK** – MINE4710 Moodle resources and any additional reference materials may be used.
- Each essay should be around **250–300 WORDS** in length excluding the reference list.

Attendance Requirements

Students are required to attend all F2F lectures in person unless there is a good reason.

Course Schedule

View class timetable

Timetable

Date	Type	Content
Week 1: 29 May - 2 June	Lecture	Introduction to the Course | Face-to-face (A/Prof Binghao Li)
	Lecture	Operations Management I Pre-recorded (Prof Peter Knights)
Week 2: 5 June - 9 June	Lecture	Project Management I Face-to-face (Prof Serkan Saydam)
	Lecture	Operations Management-Fleet Maintenance Systems I Pre-recorded (Prof Peter Knights)
Week 3: 12 June - 16 June	Lecture	Resource Management: Critical Metals I Online (Dr Richard Alorro)
Week 4: 19 June - 23 June	Lecture	NSW Mine Safety Law I Face-to-face (Prof Ismet Canbulat)
	Lecture	Practical Risk Management in Mining | Face-to-face (Prof Ismet Canbulat)
Week 5: 26 June - 30 June	Lecture	Fundamentals of Mineral Economics/ Strategic Mineral Management 1 I Face-to-face (Steve Gemell)
	Lecture	Fundamentals of Mineral Economics/ Strategic Mineral Management 2 I Face-to-face (Steve Gemell)
Week 6: 3 July - 7 July		Flexibility week
Week 7: 10 July - 14 July	Assessment	Quiz I On campus
	Assessment	Disaster Case Study ASSESSMENT I Face-to-face
Week 8: 17 July - 21 July	Lecture	Mining Turnaround Case Study | Face-to-face (Joe Clayton)
	Lecture	Mining Turnaround Case Study- Lihir Gold Mine I Face-to-face (Joe Clayton)

Week 9: 24 July - 28 July	Lecture	Systems Engineering I Face-to-face (Dr Chengguo Zhang)
	Lecture	Contract, mining operation and asset management I Face-to-face (Ben Hosseini)
Week 10: 31 July - 4 August	Lecture	Management Mine Accidents and Disasters - A Reflection of Management Issues | Face-to-face (Dr Guangyao Si)
	Assessment	Management Fundamentals (Role Play) Role Play of an Industrial Dispute

Resources

Prescribed Resources

- AusIMM 2012 Mine Managers' Handbook, Monograph 26.
- AusIMM 2009 Australasian Coal Mining Practice, Monograph 12,3rd ed., Chapters 40-42.
- Maxwell, P. and Guj, P. (eds) 2006 Australian Mineral Economics: A Survey of Important Issues, AusIMM
- MEA Report Writing Guide for Mining Engineers. P Hagan and P Mort (Mining Education Australia (MEA)). (Latest edition available for download from the School website or a hardcopy version is available from the UNSW Bookshop)
- Guide to Authors. (Australasian Institute of Mining and Metallurgy: Melbourne) (Available for download from the AusIMM website)
- The Complete Idiot's Guide to Project Management. G Campbell and S Baker (Alpha: New York) or its equivalent.
- Style Manual for Authors, Editors and Printers, 2002. 6th edition (John Wiley & Sons)
- The Research Project – How to Write It, 2000. R Berry, 4th edition (Routledge: London) • How to Write a Better Thesis, 2002. D Evans and P Gruba (Melbourne University Press: Melbourne)

Recommended Resources

- Learning Guide: Mining Research Project
- Student Resource Book: Mining Research Project
- EndNote, software package available to UNSW students
- ELISE, the on-line study skills tutorial and ELISE Plus. Both tutorials will be useful to students when preparing the Annotated Bibliography and Project Progress Report assignment submissions. The latter in particular includes a tutorial on EndNote and RefWorks. The tutorials can be accessed at < http://info.library.unsw.edu.au/skills/tutorials.html >.
- The Learning Centre. Several resources are available at the UNSW Learning Centre website to assist students in preparing the various assessment tasks including:
- Guide for Writing Thesis Proposals, available at https://student.unsw.edu.au/thesis- proposals
- Honours Thesis Writing for Engineering and Science Students, available at https://student.unsw.edu.au/honours-thesis-writing-engineering-and-science-students

Course Evaluation and Development

At the end of each course, all students will have the opportunity to complete a course evaluation form. These anonymous surveys help us understand your views of the course, your lecturers and the course materials. We are continuously improving our courses based on student feedback, and your perspective is valuable.

Feedback is given via https://student.unsw.edu.au/myexperience and you will be notified when this is available for you to complete.

We also encourage all students to share any feedback they have any time during the course – if you have a concern, please contact us immediately.

Submission of Assessment Tasks

The School has developed a guideline to help you when submitting a course assignment.

We encourage you to retain a copy of every assignment submitted for assessment for your own record either in hardcopy or electronic form.

All assessments must have an assessment cover sheet attached.

Course completion

Course completion requires submission of all assessment items. Failure to submit all assessment items may result in the award of an Unsatisfactory Failure (UF) grade for the Course unless special consideration has been submitted and approved.

Late Submission of an Assignment

Full marks for an assessment are only possible when an assessment is received by the due date. Work submitted late without an approved extension by the course coordinator or delegated authority is subject to a late penalty of five percent (5%) of the maximum mark possible for that assessment item. The late penalty is applied per calendar day (including weekends and public holidays) that the assessment is overdue. There is no pro-rata of the late penalty for submissions made part way through a day. This is for all assessments where a penalty applies.

Work submitted after five days (120 hours) will not be accepted and a mark of zero will be awarded for that assessment item.

For some assessment items, a late penalty may not be appropriate. These will be indicated in the course outline, and such assessments will receive a mark of zero if not completed by the specified date. Examples include:

- Weekly online tests or laboratory work worth a small proportion of the subject mark, or
- Online quizzes where answers are released to students on completion, or Professional assessment tasks, where the intention is to create an authentic assessment that has an absolute submission date, or Pass/Fail assessment tasks.

We understand that at times you may not be able to submit an assignment on time, and the School will accommodate any fair and reasonable extension. We would recommend you review the UNSW Special Consideration guidelines – see section below.

Special Consideration

You may be eligible for special consideration, when an illness or other short-term events beyond your control (exceptional circumstances) affect your assessment performance. More details on special consideration can be found at: www.student.unsw.edu.au/special-consideration

We ask that you please contact the Course Convenor immediately once you have completed the special consideration application, no later than one week from submission.

Student Support

The University and the Faculty provide a wide range of support services for students, including:

- Library training and support services - www.library.unsw.edu.au
- Academic Skills Support - https://www.student.unsw.edu.au/skills
- Psychology and Wellness - www.counselling.unsw.edu.au

Equitable Learning Services aims to provide all students with a free and confidential service that provides practical support to ensure that your health condition doesn't adversely affect your studies. https://student.unsw.edu.au/els

Academic Honesty and Plagiarism

Your lecturer and the University will expect your submitted assignments are truly your own work. UNSW has very clear guidelines on what plagiarism is and how to avoid it. Plagiarism is using the words or ideas of others and presenting them as your own. Plagiarism is a type of intellectual theft. It can take many forms, from deliberate cheating to accidentally copying from a source without acknowledgement. The University has adopted an educative approach to plagiarism and has developed a range of resources to support students. All the details on plagiarism, including some useful resources, can be found at www.student.unsw.edu.au/plagiarism.

All MERE students are required to complete a student declaration for academic integrity which is outlined in the assignment cover sheets. By signing this declaration, you agree that your work is your own original work.

If you need some additional support with your academic skills, please contact the Academic Skills Support or view some of the resources on their website: https://www.student.unsw.edu.au/skills. The Academic Skills Team can provide resources, support and assistance to help you improve your academic skills. Some students use the Centre services because they are finding their assignments a challenge, others because they want to improve an already successful academic performance.

Academic Information

Course Results

For details on UNSW assessment policy, please visit: www.student.unsw.edu.au/assessment

In some instances your final course result may be withheld and not released on the UNSW planned date. This is indicated by a course grade result of either:

- LE – indicates you have not completed one or more items of assessment; or
- WD – indicates there is an issue with one or more assignment; or
- WC – which indicates you have applied for Special Consideration due to illness or misadventure and the course results have not been finalised.

In either event it would be your responsibility to contact the Course Convener as soon as practicable but no later than five (5) days after release of the course result. If you don't contact the convener on time, you may be required to re-submit an assignment or re-sit the final exam and may result in you failing the course. You would also have a NC (course not completed) mark on your transcript and would need to re-enroll in the course.

Studying a course in the School of Minerals and Energy Resources Engineering at UNSW

Student Resources

This engineering student resources section collates useful advice and information to ensure you're able to focus on your studies.

Computing Resources and Internet Access Requirements

UNSW Minerals and Energy Resources Engineering provides blended learning using the on-line Moodle LMS (Learning Management System). Also see - Transitioning to Online Learning: www.covid19studyonline.unsw.edu.au

It is essential that you have access to a PC or notebook computer. Mobile devices such as smart phones and tablets may compliment learning, but access to a PC or notebook computer is also required. Note that some specialist engineering software is not available for Mac computers.

- Mining Engineering Students: OMB G48
- Petroleum Engineering Students: TETB LG34 & LG 35

It is recommended that you have regular internet access to participate in forum discussion and group work. To run Moodle most effectively, you should have:

- broadband connection (256 kbit/sec or faster)

- ability to view streaming video (high or low definition UNSW TV options)

More information about system requirements is available at www.student.unsw.edu.au/moodle-system-requirements

Accessing Course Materials Through Moodle

Course outlines, support materials are uploaded to Moodle, the university standard Learning Management System (**LMS**). In addition, on-line assignment submissions are made using the assignment dropbox facility provided in Moodle. All enrolled students are automatically included in Moodle for each course. To access these documents and other course resources, please visit: www.moodle.telt.unsw.edu.au

This course outline sets out description of classes at the date the Course Outline is published. The nature of classes may change during the Term after the Course Outline is published. Moodle should be consulted for the up to date class descriptions. If there is any inconsistency in the description of activities between the University timetable and the Course Outline (as updated in Moodle), the description in the Course Outline/Moodle applies.

How We Contact You

At times, the School or your course convenors may need to contact you about your course or your enrolment. Your course convenors will use the email function within Moodle or we will contact you on your @student.unsw.edu.au email address.

We understand that you may have an existing email account and would prefer for your UNSW emails to be redirected to your preferred account. Please see instructions on how to redirect your UNSW emails: "How can I forward my emails to another account?"

How You Can Contact Us

We are always ready to assist you with your inquiries. To ensure your question is directed to the correct person, please use the email address below for:

- Enrolment or other admin questions regarding your program: https://unswinsight.microsoftcrmportals.com/web-forms/
- Course inquiries should be directed to the Course Convenor

Image Credit

Synergies in Sound 2016

CRICOS

CRICOS Provider Code: 00098G

Acknowledgement of Country

We acknowledge the Bedegal people who are the traditional custodians of the lands on which UNSW Kensington campus is located.

Appendix: Engineers Australia (EA) Professional Engineer Competency Standard

Program Intended Learning Outcomes	
Knowledge and skill base	
PE1.1 Comprehensive, theory based understanding of the underpinning natural and physical sciences and the engineering fundamentals applicable to the engineering discipline	✓
PE1.2 Conceptual understanding of the mathematics, numerical analysis, statistics, and computer and information sciences which underpin the engineering discipline	
PE1.3 In-depth understanding of specialist bodies of knowledge within the engineering discipline	
PE1.4 Discernment of knowledge development and research directions within the engineering discipline	✓
PE1.5 Knowledge of engineering design practice and contextual factors impacting the engineering discipline	✓
PE1.6 Understanding of the scope, principles, norms, accountabilities and bounds of sustainable engineering practice in the specific discipline	✓
Engineering application ability	
PE2.1 Application of established engineering methods to complex engineering problem solving	✓
PE2.2 Fluent application of engineering techniques, tools and resources	
PE2.3 Application of systematic engineering synthesis and design processes	✓
PE2.4 Application of systematic approaches to the conduct and management of engineering projects	✓
Professional and personal attributes	
PE3.1 Ethical conduct and professional accountability	✓
PE3.2 Effective oral and written communication in professional and lay domains	✓
PE3.3 Creative, innovative and pro-active demeanour	✓
PE3.4 Professional use and management of information	
PE3.5 Orderly management of self, and professional conduct	✓
PE3.6 Effective team membership and team leadership	✓