School of Minerals & Energy Resources Engineering // UNSW Engineering

MINE4710

Mine Management

Term Two // 2021

Course Overview

Staff Contact Details

Convenors

Name	Email	Availability	Location	Phone
Carlito Tabelin	c.tabelin@unsw.edu.au	Monday (16:00 - 17:00)	School of Minerals and Energy Resources Engineering, Old Main Building, 159C	(0) 2 9385 7946

School Contact Information

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

Engineering Student Services
E: mere.teaching@unsw.edu.au
W: www.engineering.unsw.edu.au/minerals-energy-resources

Course Details

Credit Points 6

Summary of the Course

The course provides an appreciation of management principles and practices vital to a mine manager's successful running of a mining business.
The course consists of three equally weighted modules:

1. Fundamentals of management including mine management
2. Mining law, safety and risk management
3. Tactical management, encompassing project management and operations management.

At the end of this course, the students will be able to demonstrate an understanding of:

A. Demonstrate a sound working knowledge of the principles involved in mine management and to apply them in likely employment situations.

B. Demonstrate a sound working knowledge of:

- Latest concepts in mining (OHS) law
- Refreshment in fundamentals of risk management
- Adoption of risk management tools
- Risk management in specific mining-related processes
- Mining and other disasters and the application of risk- man techniques
- Mitigation and response
- Emergency preparedness in the mining industry

Course Aims

This course aims to equip the student with an appreciation of management principles and practices vital to a mine manager's successful running of a mining enterprise. In addition, there will be a number of topics of special focus relating to risk and safety, economic development, optimum resource utilisation, environment and community.

Course Learning Outcomes

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

Learning Outcome	EA Stage 1 Competencies
1. Recognise that mine management is a holistic process	PE1.1, PE2.4, PE3.1
2. Identify the key stakeholders in a mining project and their respective needs	PE1.6, PE3.1
3. Demonstrate an awareness of management theory and processes	PE1.5, PE2.3, PE2.2
4. Recognise the factors that motivate people?s behaviour in the	PE2.1, PE3.1

Learning Outcome	EA Stage 1 Competencies
mine working environment	
5. Apply the principal performance measures used in mine management	PE1.1, PE2.1, PE3.4, PE1.2
6. Demonstrate an awareness of mining law (safety, mining leases etc)	PE2.4, PE3.1
7. Recognise and appraise the factors contributing to safety & risk management issues in specific mining-related processes	PE1.5, PE1.6, PE2.3
8. Investigate the causes and consequences of mining-related serious incidents and propose risk management strategies	PE1.5, PE2.1, PE3.1
9. Demonstrate an awareness of contractor management (v owner-operated) issues	PE1.6, PE2.4
10. Demonstrate team skills	PE3.2, PE3.3, PE3.5, PE3.6
11. Demonstrate advanced written and oral communication skills	PE3.2, PE3.4

Teaching Strategies

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

1. Lectures and tutorials: 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 Tasks

Assessment task	Weight	Due Date	Student Learning Outcomes Assessed
Disaster Case Study	20%	16/07/2021 05:00 PM	1, 4, 6, 7, 8, 10, 11
Industrial Relations Script and Role-play	20%	12/08/2021 05:00 PM	2, 4, 10, 11
Quiz 1	20%	01/07/2021 12:00 PM	1, 2, 3, 4, 5, 6, 7, 8, 9
Online Discussion Board	20%	Every 2-3 weeks	3, 5, 7, 8, 10, 11
Quiz 2	20%	18/08/2021 05:00 PM	1, 2, 3, 4, 5, 6, 7, 8, 9

Assessment Details

Assessment 1: Disaster Case Study

Start date: 02/06/2021 09:00 AM

Details:

Despite the application of advanced risk management methodologies, industrial accidents continue to occur. 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.

Assessment 2: Industrial Relations Script and Role-play

Start date: 30/06/2021 09:00 AM

Details:

A group of 4-5 students will choose an industrial dispute associated with mining in Australia from the list provided by the course convenor. Each group will develop a script and 30-minute role play will be presented in class.

Assessment 3: Quiz 1

Details: This quiz will cover topics from Week 1 to 5.

Assessment 4: Online Discussion Board

Details:

The online discussion board is an important avenue for students to share their reflections, questions and

inner thoughts about the various topics discussed during the week. They will also have the opportunity to comment on their classmates' ideas and points of view. The goal of this activity is to encourage the sharing of ideas, develop critical thinking, flexibility and open-mindedness as well as enhance the students' skills in negotiation and time management, all of which are crucial skills of an effective manager.

Assessment 5: Quiz 2

Details: This quiz will cover topics from Week 7 to 10.

Attendance Requirements

Students are strongly encouraged to attend all classes and review lecture recordings.

Course Schedule

View class timetable

Timetable

Date	Type	Content
O Week: 25 May - 28 May		
Week 1: 31 May - 4 June	Lecture	Introduction to the Course | Face-to-face (Dr Carlito Tabelin)
	Lecture	NSW Mine Safety Law | Face-to-face (Dr Carlito Tabelin)
Week 2: 7 June - 11 June	Lecture	Perspectives on Leadership – Contract Management | Face-to-face (Joe Clayton)
	Lecture	Fundamentals of Mineral Economics/ Strategic Mineral Management 1 | Online (pre-recorded) (Steve Gemell)
Week 3: 14 June - 18 June	Lecture	Fundamentals of Mineral Economics/ Strategic Mineral Management 2 | Online (pre-recorded) (Steve Gemell)
	Lecture	Project Management | Face-to-face (Dr Carlito Tabelin)
Week 4: 21 June - 25 June	Lecture	Resource Management: Critical Metals | Online (Live) (Dr Richard Alorro)
	Lecture	Practical Risk Management in Mining | Face-to-face (Prof Ismet Canbulat)
Week 5: 28 June - 2 July	Lecture	Mining Turnaround Case Study – Lihir Gold Mine | Face-to-face (Joe Clayton)
	Assessment	Quiz 1 | On campus
Week 6: 5 July - 9 July		Flexibility week
Week 7: 12 July - 16 July	Assessment	Disaster Case Study (Presentations) | Face-to-face
	Lecture	Management Mine Accidents and Disasters - A Reflection on Management Issues | Face-to-face (Dr Carlito Tabelin)
Week 8: 19 July - 23 July	Lecture	Operations Management | Online (pre-recorded) (Prof Peter Knights)
	Lecture	Systems Engineering | Face-to-face (Dr Chengguo Zhang)
Week 9: 26 July - 30 July	Lecture	*29 July (10:00-12:00 and 13:00-15:00; OMB G51): Contract, mining operation and asset management | Face-to-face (Ben Hosseini) (4 hours)
Week 10: 2 August - 6	Lecture	Operations Management-Fleet Maintenance

August		Systems | Online (pre-recorded) (Prof Peter Knights)
	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. Please note, a competency hurdle of 50% is applied to the final assessment.

Late Submission of an Assignment

Full marks for an assignment are only possible when an assignment is received by the due date.

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.

Late submission will not be accepted and will be considered as no submission.

Special Consideration

You can apply for special consideration through The Nucleus Student Hub when illness or other circumstances interfere with your assessment performance. Sickness, misadventure or other circumstances beyond your control may:

- Prevent you from completing a course requirement
- Keep you from attending an assessable activity
- Stop you submitting assessable work for a course
- Significantly affect your performance in assessable work, be it a formal end-of-semester examination, a class test, a laboratory test, a seminar presentation or any other form of assessment

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.

More details on special consideration can be found at: www.student.unsw.edu.au/special-consideration

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

- UNSW Learning Centre - www.lc.unsw.edu.au
- Counselling support - 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 Mining Engineering 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 writing skills, please contact the Learning Centre or view some of the resources on their website: www.lc.unsw.edu.au. The Learning Centre is designed to help you improve your academic writing and communication 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

Report writing guide

The School has a Report Writing Guide (RWG) available. A copy of this is available on the course Moodle site.

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

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

UNSW SYDNEY

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	✓

School of Minerals and Energy Resources Engineering

Assessment Cover Sheet

Course Convenor: _____

Course Code: _____ Course Title: _____

Assignment: _____

Due Date: _____

Student Name: _____ Student ID: _____

ACADEMIC REQUIREMENTS

Before submitting this assignment, the student is advised to review:

- the assessment requirements contained in the briefing document for the assignment;
- the various matters related to assessment in the relevant Course Outline; and
- the *Plagiarism and Academic Integrity* website at < http:/www.lc.unsw.edu.au/plagiarism/pintro.html > to ensure they are familiar with the requirements to provide appropriate acknowledgement of source materials.

If after reviewing this material there is any doubt about assessment requirements, then in the first instance the student should consult with the Course Convenor and then if necessary with the Director – Undergraduate Studies.

While students are generally encouraged to work with other students to enhance learning, all assignments submitted for assessment must be their entire own work and duly acknowledge the use of other person's work or material. The student may be required to explain any or all parts of the assignment to the Course Convenor or other authorised persons. *Plagiarism* is using the work of others in whole or part without appropriate acknowledgement within the assignment in the required form. *Collusion* is where another person(s) assists in the preparation of a student's assignment without the consent or knowledge of the Course Convenor.

Plagiarism and *Collusion* are considered as Academic Misconduct and will be dealt with according to University Policy.

STUDENT DECLARATION OF ACADEMIC INTEGRITY

I declare that:

- This assessment item is entirely my own original work, except where I have acknowledged use of source material [such as books, journal articles, other published material, the Internet, and the work of other student/s or any other person/s].
- This assessment item has not been submitted for assessment for academic credit in this, or any other course, at UNSW or elsewhere.

I understand that:

- The assessor of this assessment item may, for the purpose of assessing this item, reproduce this assessment item and provide a copy to another member of the University.
- The assessor may communicate a copy of this assessment item to a plagiarism checking service (which may then retain a copy of the assessment item on its database for the purpose of future plagiarism checking).

Student Signature: Date:

Students are advised to retain a copy of this assessment for their records and submission should be made in accordance to the assessment details available on the course Moodle site.