

MINE8115

Mine Processes, Systems and Analysis

Term 3, 2022



Course Overview

Staff Contact Details

Convenors

Name	Email	Availability	Location	Phone
Chengguo Zhang	chengguo.zhang@unsw.edu.a u	by Email/Teams	Room 159E, OMB	+61 2 9385 4035

School Contact Information

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Course Details

Units of Credit 6

Summary of the Course

The course provides an introduction to the generic concepts of process management and systems engineering, and develops models for how these techniques can be applied to different mining systems. Through case studies using a selection of mining methods, the elements of typical mining operations are examined as a system of complex and inter-related processes and systems. These are analysed to identify system dependencies, quantitative sensitivities, key drivers and management needs. On completion of this course students should be able to apply a systems approach in both the planning and ongoing management of a mining operation.

Course Aims

The course provides an introduction to the generic concepts of process management and systems engineering, and develops models for how these techniques can be applied to different mining systems.

Course Learning Outcomes

1. Demonstrate a working knowledge of all major generic mining methods.
2. Be conversant with the key principles of process and systems engineering, and be able to describe, apply and analyse a mining method/operation in the form of an array of inter-related processes and systems.
3. Identify dependencies and carry out quantitative sensitivity analyses within an overall mining system, and hence determine and quantify key drivers influencing performance of the overall mining system.
4. Determine appropriate management strategies for each major component of a generic mining system.

Teaching Strategies

Strategies and rationale in this course will ensure that learning outcomes develop UNSW graduate attributes.

Additional Course Information

The course is offered as a distance course over 7 weeks of learning modules plus assessments - the major assignment is due in 3 weeks after the completion of learning modules. There are no face-to-face classes at the campus.

Presentations and reading material are provided to provide students with technical information and examples of mining processes and systems.

Online discussions will be used to encourage students to articulate and defend positions, consider different points of view and evaluate evidence. Case studies will be used to provide practice in identifying potential problems and evaluating alternative course of actions.

Total student effort hours: Approx. 150

Note: The above indication of “student effort hours” is indicative only – It reflects the anticipated level of total student involvement with the course – either through accessing or participating in online materials and activities; private research; preparation of assignments. Individual students may find their level of involvement differs from this schedule.

Assessment

Assessment task	Weight	Due Date	Course Learning Outcomes Assessed
1. Individual Presentation; plus online forum discussion	15%	19/09/2022 10:00 AM	1, 2
2. Process Mapping (formative only)	N/A	19/09/2022 10:00 AM	2
3. Group Project Presentation – Longwall Coal or Hard Rock; plus online forum discussion	15%	26/09/2022 10:00 AM	1, 2, 3
4. Syndicated Group Presentation plus online forum discussion	20%	17/10/2022 10:00 AM	1, 2, 3
5. Major Assignment	50%	14/11/2022 10:00 AM	1, 2, 3, 4

Assessment 1: Individual Presentation; plus online forum discussion

Submission notes: Online forum discussion completion is due at 10am 26th Sep

Due date: 19/09/2022 10:00 AM

This work is to be carried out individually. Main learning outcomes: (a) demonstration of your knowledge of major mining methods; (b) ability to analyse critical mining performance factors; and (c) ability to work as a group and present findings in a professional and confident manner. More details will be provided in the assessment session via Moodle.

Assessment 2: Process Mapping (formative only)

Due date: 19/09/2022 10:00 AM

Select a discrete sub-system of a mining operation (eg ore haulage, survey control, face mapping, grade control, drill and blast etc). Conduct the process mapping for the selected sub-system. More details will be provided in the assignment description.

Assessment 3: Group Project Presentation – Longwall Coal or Hard Rock; plus online forum discussion

Submission notes: Online forum discussion completion is due at 10am 3 Oct.

Due date: 26/09/2022 10:00 AM

The assignment will cover the next level of details of a chosen scenario for analysis. More details will be provided in the assignment description.

Assessment 4: Syndicated Group Presentation plus online forum discussion

Submission notes: Online forum discussion will be due at 10am 24 Oct.

Due date: 17/10/2022 10:00 AM

Students must select a topic and group (min. 2; max. 4 students per group). Each group is to choose one of the provided mining scenarios for detailed analysis. More details will be provided in the assignment description.

Assessment 5: Major Assignment

Due date: 14/11/2022 10:00 AM

Each student is to select a mining operation scenario (real or hypothetical) that involves a relatively “mainstream” mining system to complete the final report.

Attendance Requirements

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

Course Schedule

This is a distance-course and the course schedule is provided via Moodle for the weekly activities.

[View class timetable](#)

Timetable

Date	Type	Content
Week 2: 19 September - 23 September	Assessment	Individual Presentation; plus online forum discussion: Online forum discussion completion is due at 10am 26th Sep
	Assessment	Process Mapping (formative only)
Week 3: 26 September - 30 September	Assessment	Group Project Presentation – Longwall Coal or Hard Rock; plus online forum discussion: Online forum discussion completion is due at 10am 3 Oct.
Week 6: 17 October - 21 October	Assessment	Syndicated Group Presentation plus online forum discussion: Online forum discussion will be due at 10am 24 Oct.
Week 10: 14 November - 18 November	Assessment	Major Assignment

Resources

Recommended Resources

Reference material:

- SME Mining Engineering Handbook (3rd edition) www.smenet.org
- AusIMM Monograph (12), 3rd edition (2009): Australasian Coal Mining Practice
- Atlas Copco Mining Methods Manual
- NASA Systems Engineering Handbook (NASA/SP-2016-6105 Rev 2)
- Various industry journals and conference proceedings

The lecture notes may be viewed and downloaded from the UNSW-Moodle site for this course. <http://moodle.telt.unsw.edu.au/>.

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 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 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 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

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.microsoftcrmporthals.com/web-forms/>
- Course inquiries should be directed to the Course Convenor

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Acknowledgement of Country

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