



## UNSW Course Outline

# MINE8115 Mine Processes, Systems and Analysis - 2024

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## General Course Information

**Course Code :** MINE8115

**Year :** 2024

**Term :** Term 3

**Teaching Period :** T3

**Is a multi-term course? :** No

**Faculty :** Faculty of Engineering

**Academic Unit :** School of Minerals & Energy Resources Engineering

**Delivery Mode :** In Person

**Delivery Format :** Standard

**Delivery Location :** Kensington

**Campus :** Sydney

**Study Level :** Postgraduate

**Units of Credit :** 6

### Useful Links

[Handbook Class Timetable](#)

## Course Details & Outcomes

### Course Description

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 aims to provide an introduction to the generic concepts of process management and systems engineering. In particular, the students will learn to develop models for how these techniques can be applied to different mining systems for evaluation of their performance; and examine elements of typical mining operations as a system of complex and interrelated processes and systems.

# Course Learning Outcomes

Course Learning Outcomes
CL01 : Demonstrate a working knowledge of all major generic mining methods.
CL02 : Describe, apply and analyse a mining method/operation in terms of an array of inter-related processes and systems.
CL03 : 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.
CL04 : Determine appropriate management strategies for each major component of a generic mining system.

Course Learning Outcomes	Assessment Item
CL01 : Demonstrate a working knowledge of all major generic mining methods.	<ul style="list-style-type: none"> <li>• Individual Presentation; plus online forum discussion</li> <li>• Syndicated Group Presentation plus online forum discussion</li> <li>• Major Assignment</li> </ul>
CL02 : Describe, apply and analyse a mining method/operation in terms of an array of inter-related processes and systems.	<ul style="list-style-type: none"> <li>• Group Project Presentation – Longwall Coal or Hard Rock; plus online forum discussion</li> <li>• Individual Presentation; plus online forum discussion</li> <li>• Syndicated Group Presentation plus online forum discussion</li> <li>• Major Assignment</li> </ul>
CL03 : 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.	<ul style="list-style-type: none"> <li>• Group Project Presentation – Longwall Coal or Hard Rock; plus online forum discussion</li> <li>• Individual Presentation; plus online forum discussion</li> <li>• Syndicated Group Presentation plus online forum discussion</li> <li>• Major Assignment</li> </ul>
CL04 : Determine appropriate management strategies for each major component of a generic mining system.	<ul style="list-style-type: none"> <li>• Group Project Presentation – Longwall Coal or Hard Rock; plus online forum discussion</li> <li>• Syndicated Group Presentation plus online forum discussion</li> <li>• Major Assignment</li> </ul>

## Learning and Teaching Technologies

Moodle - Learning Management System

# Assessments

## Assessment Structure

Assessment Item	Weight	Relevant Dates
Individual Presentation; plus online forum discussion Assessment Format: Individual	15%	Start Date: Not Applicable Due Date: Not Applicable
Group Project Presentation – Longwall Coal or Hard Rock; plus online forum discussion Assessment Format: Group	15%	
Syndicated Group Presentation plus online forum discussion Assessment Format: Group	20%	
Major Assignment Assessment Format: Individual	50%	

## Assessment Details

### Individual Presentation; plus online forum discussion

#### Assessment Overview

Students will discuss and analyse the key drivers for a mining method.

Marking will be against assessment criteria and formal feedback on the assessment task will be provided after the marking is finalised

#### Course Learning Outcomes

- CL01 : Demonstrate a working knowledge of all major generic mining methods.
- CL02 : Describe, apply and analyse a mining method/operation in terms of an array of inter-related processes and systems.
- CL03 : 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.

#### Detailed Assessment Description

This assessment has both group and individual components. Detailed assessment description will be found on Moodle.

#### Generative AI Permission Level

##### **No Assistance**

This assessment is designed for you to complete without the use of any generative AI. You are not permitted to use any generative AI tools, software or service to search for or generate

information or answers.

For more information on Generative AI and permitted use please see [here](#).

## **Group Project Presentation – Longwall Coal or Hard Rock; plus online forum discussion**

### **Assessment Overview**

This assessment involves the next level of detail based on the chosen mining methods, mapping the sub-system into process, and conducting quantitative analysis etc.

Submission will be marked against assessment criteria and formal feedback on the assessment task will be provided after the marking is finalised

### **Course Learning Outcomes**

- CL02 : Describe, apply and analyse a mining method/operation in terms of an array of inter-related processes and systems.
- CL03 : 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.
- CL04 : Determine appropriate management strategies for each major component of a generic mining system.

### **Detailed Assessment Description**

Detailed assessment description will be found on Moodle

### **Generative AI Permission Level**

#### **No Assistance**

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## **Syndicated Group Presentation plus online forum discussion**

### **Assessment Overview**

Students are to complete and submit Group Project and Online Forum Discussion (more specific information will be given closer to the date of the assessment)

Marking will be against assessment criteria and feedback on the assessment task will be provided after the marking is finalised.

### Course Learning Outcomes

- CL01 : Demonstrate a working knowledge of all major generic mining methods.
- CL02 : Describe, apply and analyse a mining method/operation in terms of an array of inter-related processes and systems.
- CL03 : 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.
- CL04 : Determine appropriate management strategies for each major component of a generic mining system.

### Detailed Assessment Description

Detailed assessment description will be found on Moodle.

### Generative AI Permission Level

#### **No Assistance**

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## **Major Assignment**

### Assessment Overview

Each student is to select a mining operation scenario (real or hypothetical) that involves a relatively “mainstream” mining system and conduct the analysis.

Submission will be marked against assessment criteria and formal feedback on the assessment task will be provided after the marking is finalised

### Course Learning Outcomes

- CL01 : Demonstrate a working knowledge of all major generic mining methods.
- CL02 : Describe, apply and analyse a mining method/operation in terms of an array of inter-related processes and systems.
- CL03 : 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.
- CL04 : Determine appropriate management strategies for each major component of a generic mining system.

### Detailed Assessment Description

Detailed assessment description will be found on Moodle.

## Generative AI Permission Level

### No Assistance

This assessment is designed for you to complete without the use of any generative AI. You are not permitted to use any generative AI tools, software or service to search for or generate information or answers.

For more information on Generative AI and permitted use please see [here](#).

## General Assessment Information

### Grading Basis

Standard

## Course Schedule

### Attendance Requirements

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

### General Schedule Information

The 5 day course program will be found on Moodle.

## Course Resources

### Recommended Resources

SME Mining Engineering Handbook (3rd edition) [www.smenet.org](http://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

## Staff Details

Position	Name	Email	Location	Phone	Availability	Equitable Learning Services Contact	Primary Contact
	Chengguo Zhang					No	Yes

# Other Useful Information

## Academic Information

### I. Special consideration and supplementary assessment

If you have experienced an illness or misadventure beyond your control that will interfere with your assessment performance, you are eligible to apply for Special Consideration prior to, or within 3 working days of, submitting an assessment or sitting an exam.

Please note that UNSW has a Fit to Sit rule, which means that if you sit an exam, you are declaring yourself fit enough to do so and cannot later apply for Special Consideration.

For details of applying for Special Consideration and conditions for the award of supplementary assessment, please see the information on UNSW's [Special Consideration page](#).

### II. Administrative matters and links

All students are expected to read and be familiar with UNSW guidelines and policies. In particular, students should be familiar with the following:

- [Attendance](#)
- [UNSW Email Address](#)
- [Special Consideration](#)
- [Exams](#)
- [Approved Calculators](#)
- [Academic Honesty and Plagiarism](#)
- [Equitable Learning Services](#)

### III. Equity and diversity

Those students who have a disability that requires some adjustment in their teaching or learning environment are encouraged to discuss their study needs with the course convener prior to, or at the commencement of, their course, or with the Equity Officer (Disability) in the Equitable Learning Services. Issues to be discussed may include access to materials, signers or note-takers, the provision of services and additional exam and assessment arrangements. Early notification is essential to enable any necessary adjustments to be made.

### IV. Professional Outcomes and Program Design

Students are able to review the relevant professional outcomes and program designs for their streams by going to the following link: <https://www.unsw.edu.au/engineering/student-life/student-resources/program-design>.

*Note: This course outline sets out the 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 or your primary learning management system (LMS) 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/Moodle/LMS, the description in the Course Outline/Moodle/LMS applies.*

## **Academic Honesty and Plagiarism**

UNSW has an ongoing commitment to fostering a culture of learning informed by academic integrity. All UNSW students have a responsibility to adhere to this principle of academic integrity. Plagiarism undermines academic integrity and is not tolerated at UNSW. *Plagiarism at UNSW is defined as using the words or ideas of others and passing them off 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. UNSW has produced a website with a wealth of resources to support students to understand and avoid plagiarism, visit: [student.unsw.edu.au/plagiarism](http://student.unsw.edu.au/plagiarism). The Learning Centre assists students with understanding academic integrity and how not to plagiarise. They also hold workshops and can help students one-on-one.

You are also reminded that careful time management is an important part of study and one of the identified causes of plagiarism is poor time management. Students should allow sufficient time for research, drafting and the proper referencing of sources in preparing all assessment tasks.

Repeated plagiarism (even in first year), plagiarism after first year, or serious instances, may also be investigated under the Student Misconduct Procedures. The penalties under the procedures can include a reduction in marks, failing a course or for the most serious matters (like plagiarism in an honours thesis or contract cheating) even suspension from the university. The Student Misconduct Procedures are available here:

[www.gs.unsw.edu.au/policy/documents/studentmisconductprocedures.pdf](http://www.gs.unsw.edu.au/policy/documents/studentmisconductprocedures.pdf)

## Submission of Assessment Tasks

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, per calendar day.

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 clearly 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;
- Exams, peer feedback and team evaluation surveys;
- Online quizzes where answers are released to students on completion;
- Professional assessment tasks, where the intention is to create an authentic assessment that has an absolute submission date; and,
- Pass/Fail assessment tasks.

## Faculty-specific Information

[Engineering Student Support Services](#) – The Nucleus - enrolment, progression checks, clash requests, course issues or program-related queries

[Engineering Industrial Training](#) – Industrial training questions

[UNSW Study Abroad](#) – study abroad student enquiries (for inbound students)

[UNSW Exchange](#) – student exchange enquiries (for inbound students)

[UNSW Future Students](#) – potential student enquiries e.g. admissions, fees, programs, credit transfer

## Phone

(+61 2) 9385 8500 – Nucleus Student Hub

(+61 2) 9385 7661 – Engineering Industrial Training

(+61 2) 9385 3179 – UNSW Study Abroad and UNSW Exchange (for inbound students)

## School-specific Information

### 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.

### Submission of Assessment Tasks

We encourage you to retain a copy of every assignment submitted for your own record, either in hardcopy or electronic form. All assessments must have an assessment cover sheet attached (if required).

### Student Resources

The School has [student resources](#) section, containing 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 online Moodle LMS (Learning Management System). Also see - Transitioning to Online Learning: <https://www.student.unsw.edu.au/transitioning-online-learning>

Note that some specialist engineering software is not available for Mac computers.

- Mining Engineering Students: OMB G48
- Petroleum Engineering Students: TETB LG34 & LG35

For more information about system requirements is available at [www.student.unsw.edu.au/moodle-system-requirements](http://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](http://www.moodle.telt.unsw.edu.au)

## 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](#)