



## UNSW Course Outline

# MINE3430 Mining Systems - 2024

Published on the 28 Jan 2024

## General Course Information

**Course Code :** MINE3430

**Year :** 2024

**Term :** Term 1

**Teaching Period :** T1

**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 :** Undergraduate

**Units of Credit :** 6

### Useful Links

[Handbook Class Timetable](#)

## Course Details & Outcomes

### Course Description

This course presents a systems approach to the principles, design and application of the major surface and underground mining methods together with the associated equipment, services and infrastructure.

## Course Aims

The aim of this course is to provide students with the capability to select, evaluate, plan and design the appropriate mining methods, together with its associated equipment, services and infrastructure, for a given deposit.

## Course Learning Outcomes

Course Learning Outcomes
CLO1 : Describe and illustrate major mining methods and their related equipment, supporting infrastructure, key performance drivers, and constraints
CLO2 : Identify, assess and select mining methods appropriate to specific types of deposits
CLO3 : Appraise proposed mining systems with respect to productivity, safety, efficiency, risks, revenue, cost and sustainability
CLO4 : Describe the major technical trends and innovative opportunities in mining methods and equipment

Course Learning Outcomes	Assessment Item
CLO1 : Describe and illustrate major mining methods and their related equipment, supporting infrastructure, key performance drivers, and constraints	<ul style="list-style-type: none"><li>• In-class Activities</li><li>• Quiz</li><li>• Mid Term Exam</li><li>• Final Examination</li></ul>
CLO2 : Identify, assess and select mining methods appropriate to specific types of deposits	<ul style="list-style-type: none"><li>• In-class Activities</li><li>• Quiz</li><li>• Mid Term Exam</li><li>• Final Examination</li></ul>
CLO3 : Appraise proposed mining systems with respect to productivity, safety, efficiency, risks, revenue, cost and sustainability	<ul style="list-style-type: none"><li>• In-class Activities</li><li>• Quiz</li><li>• Mid Term Exam</li><li>• Final Examination</li></ul>
CLO4 : Describe the major technical trends and innovative opportunities in mining methods and equipment	<ul style="list-style-type: none"><li>• Mid Term Exam</li><li>• Final Examination</li></ul>

## Learning and Teaching Technologies

Moodle - Learning Management System

## Additional Course Information

This course assumes that students have a good understanding of mining terms and descriptions, have been exposed to surface and underground mining methods and are familiar

with mining development, operations and production.

# Assessments

## Assessment Structure

Assessment Item	Weight	Relevant Dates
In-class Activities Assessment Format: Individual	10%	Due Date: Week 2: 19 February - 25 February, Week 3: 26 February - 03 March, Week 4: 04 March - 10 March, Week 5: 11 March - 17 March, Week 7: 25 March - 31 March, Week 8: 01 April - 07 April, Week 9: 08 April - 14 April, Week 10: 15 April - 21 April
Quiz Assessment Format: Individual	5%	Due Date: Week 3: 26 February - 03 March
Mid Term Exam Assessment Format: Individual	40%	Due Date: Week 7: 25 March - 31 March
Final Examination Assessment Format: Individual	45%	

## Assessment Details

### In-class Activities

#### Assessment Overview

10 in-class tutorials each worth 1 mark:

- Activity 1 – Dragline Selection & Productivity
- Activity 2 – Open Pit Mining – Bench and Pit Slope Geometry
- Activity 3 – Truck & Shovel Selection
- Activity 4 – Truck Fleet Dispatch and TALPAC
- Activity 5 – Systems Engineering
- Activity 6 – Shaft vs Decline
- Activity 7 – Longwall Mining
- Activity 8 – UG Metal Mining Method Selection & Stopping
- Activity 9 – Room & Pillar
- Activity 10 – Caving Methods

Feedback will be given after completion of the task.

#### Course Learning Outcomes

- CLO1 : Describe and illustrate major mining methods and their related equipment, supporting infrastructure, key performance drivers, and constraints
- CLO2 : Identify, assess and select mining methods appropriate to specific types of deposits
- CLO3 : Appraise proposed mining systems with respect to productivity, safety, efficiency,

risks, revenue, cost and sustainability

## Quiz

### Assessment Overview

In-class quiz.

Marking and feedback will be given after completion of the task.

### Course Learning Outcomes

- CL01 : Describe and illustrate major mining methods and their related equipment, supporting infrastructure, key performance drivers, and constraints
- CL02 : Identify, assess and select mining methods appropriate to specific types of deposits
- CL03 : Appraise proposed mining systems with respect to productivity, safety, efficiency, risks, revenue, cost and sustainability

## Mid Term Exam

### Assessment Overview

Mid Term Exam in Week 7 covering Surface Mining Methods.

Marking and feedback will be given after completion of the task.

### Course Learning Outcomes

- CL01 : Describe and illustrate major mining methods and their related equipment, supporting infrastructure, key performance drivers, and constraints
- CL02 : Identify, assess and select mining methods appropriate to specific types of deposits
- CL03 : Appraise proposed mining systems with respect to productivity, safety, efficiency, risks, revenue, cost and sustainability
- CL04 : Describe the major technical trends and innovative opportunities in mining methods and equipment

## Final Examination

### Assessment Overview

Final Exam covering underground mining methods

### Course Learning Outcomes

- CL01 : Describe and illustrate major mining methods and their related equipment, supporting infrastructure, key performance drivers, and constraints
- CL02 : Identify, assess and select mining methods appropriate to specific types of deposits
- CL03 : Appraise proposed mining systems with respect to productivity, safety, efficiency, risks, revenue, cost and sustainability
- CL04 : Describe the major technical trends and innovative opportunities in mining methods

and equipment

## General Assessment Information

### Grading Basis

Standard

### Requirements to pass course

Course completion requires submission of all the 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.

## Course Schedule

### Attendance Requirements

Please note that lecture recordings are not available for this course. Students are strongly encouraged to attend all classes and contact the Course Authority to make alternative arrangements for classes missed.

## Course Resources

### Prescribed Resources

- Darling, P (ed.), 2011. Mining Engineers Handbook, 3rd edition, SME, Littleton, USA.

## Staff Details

Position	Name	Email	Location	Phone	Availability	Equitable Learning Services Contact	Primary Contact
Convenor	Simit Raval					No	Yes
	Chengguo Zhang					No	No
	Guangyao Si					No	No

## 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](https://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](https://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.

### **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: [www.covid19studyonline.unsw.edu.au](http://www.covid19studyonline.unsw.edu.au)

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)

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](#)