

MINE1010

Mineral Resources Engineering

Term 1, 2023



Course Overview

Staff Contact Details

Convenors

Name	Email	Availability	Location	Phone
Ghislain Bournival	g.bournival@unsw.edu.au	Tutorials and lectures: Tuesday 11am – 2pm or by appointment	Old Main Building (K15), Rm 156	+61 2 9065 2036

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](#)

[Faculty Transitional Arrangements for COVID-19](#)

Course Details

Units of Credit 6

Summary of the Course

You woke up this morning and most likely looked at your mobile phone. Did you know that this device alone contains about 50 different elements? It must be charged like all of your electronic devices. But how is the electricity produced? Whether it is from renewable energy sources or not, they all rely on metals and minerals to operate or to be built. Wherever you look you see metals and minerals and as remote as it may seem, all these goods started in a pit. In this course you will develop an awareness for the importance of the mining industry in our lives. Together, we will explore how commodities are extracted from the ground and who are involved at various stages of the mining operation. The topics covered in this course are geology, mining, mineral processing, safety, the impact of mining on the environment, and economics. We will also discuss employability in the mining industry, which employs people of various backgrounds (e.g. geologists, mining engineers, civil engineers, mechanical engineers, environmental engineers, process & chemical engineers, lawyers, finance, etc.) and offers competitive salaries. Why not come and learn about one of the pillars of the Australian economy and a potential employer?

Course Aims

This course aims to provide a basic introduction to mining and the Australian minerals industry. It is of relevance for students from a wide range of disciplines with an interest in the minerals industry, which employs skilled workers with different technical backgrounds. Students will learn the fundamentals of mining and are invited to think about the challenges and opportunities facing the mining industry.

Course Learning Outcomes

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

Learning Outcome	EA Stage 1 Competencies
1. Select a mining method and a separation process matching the geological characteristic of the deposit	PE1.3, PE1.5, PE2.1, PE3.2, PE3.6
2. Evaluate safety related hazards, their consequences, and appropriate control options	PE1.3, PE2.1, PE2.2, PE3.6
3. Identify opportunities for new technologies in the mining sector	PE1.4, PE1.6, PE3.2, PE3.6
4. Research sustainability practices and economic drivers for the mining industry	PE1.3, PE3.2

This course will contribute to the development of the following Mining Education Australia (MEA) Graduate Attributes:

1. Appropriate technical knowledge
2. Having advanced problem solving, analysis and synthesis skills with the ability to tolerate ambiguity
3. Ability for engineering design and creativity

4. Being able to think and work individually and in teams
5. Listening, influencing, motivating and communication skills
6. Basic business and management skills
7. Awareness of opportunities to add value through engineering and the need for continuous improvement
8. Being able to work and communicate effectively across discipline boundaries
9. Having HSEC consciousness
10. Awareness of sustainability, multi-cultural and global issues
11. Being active life-long learners.

Teaching Strategies

Learning & Teaching Management System (LTMS):

The Learning & Teaching Management System (LTMS) used with this course is TELT Moodle which can be accessed by clicking the Moodle icon on the home page of MyUNSW.

For up to date information on lectures and workshops, see the Calendar section in LTMS and the School Noticeboard.

Support material for this course including, copies of lecture notes, recommended readings, assignments and results for assignments etc whenever available can be found in LTMS.

All correspondence should be undertaken using the email facility within LTMS.

Changes in the lecture schedule, seminars, workshops and assignment dates will be posted on the Calendar in LTMS.

It is important that students regularly check LTMS for changes in calendar events and for email messages. It is strongly recommended that students use the mail redirection facility to forward LTMS emails to their usual email address.

Assessments will take the form of a combination of individual assignments, individual presentations, plus group presentations and a final exam. There is an optional field trip included in the course, with a related individual assignment. For those who do not attend the field trip, there is an alternative major assignment. There is a cost associated with the field trip and places are limited, so priority will be given to students enrolled in the Mining Engineering Program.

Additional Course Information

For this course, it is assumed that you are able to write reports. That is, you are familiar with the structure of a technical report, its contents, and how to present information. Note that a report writing guide is provided in the course materials.

Assessments will take the form of a combination of individual assignments and team assessment tasks with no final exam.

Assessment

The School has a report writing guide (RWG) available for all students taking mining engineering courses. View this website to download a copy of the guide:

https://www.engineering.unsw.edu.au/minerals-energy-resources/sites/mine/files/publications/MEA_ReportWritingGuide_eBook_2018ed.pdf

The RWG is also available through the Moodle website of this course.

Assessment task	Weight	Due Date	Course Learning Outcomes Assessed
1. Readiness Assurance Test / Quiz	28%	Not Applicable	1, 2, 3, 4
2. ASX preliminary report + final report	22%	Not Applicable	4
3. Application Exercises	50%	Not Applicable	1, 2, 3, 4

Assessment 1: Readiness Assurance Test / Quiz

(in-person) Answer multiple choice questions on the week's topic first individually (marked out of 1 - individual mark) and then as a team (marked out of 2 - team mark) on the week's topic and answer others questions. Your mark is the sum of your individual mark and your team mark. Feedback is provided in class.

(online) Create questions on the week's topic. Then proceed to answer the questions from the other students and leave your peers constructive feedback. This exercise is individual. Feedback via LMS.

Assessment 2: ASX preliminary report + final report

Each team will prepare one report based on a mining financial portfolio. Details of the assessment criteria are available in the description of the task. Briefly, students select shares of mining companies from the Australian Securities Exchange (ASX). They track the shares over the course of the term and discuss the changes in the valuation of their mining companies. The final mark is determined from a report submitted at the end of the term. A team mark is assigned and individual marks are scaled from a portion of the team mark based on the contribution of each team member. In addition to the report, students enrolled in the face-to-face course may present their investment strategy, portfolio and portfolio performance in a short class presentation.

Feedback via LMS.

Assessment 3: Application Exercises

Assessment criteria for each in-class activities (either face-to-face or in a virtual classroom) will be explained at the start of the activity and is described with the task in the task description. Generally students will need to explore and analyse given topics and, in a team, provide a written response to the given query at the end of the activity for evaluation. A team mark will be rewarded from the submitted

work. Students will evaluate the contribution of their team and an individual mark is calculated based on the team mark and their individual contribution.

There is no substitute for these in-class activities. Students need to make sure they attend class to be able to secure the marks associated with this assessment. Application exercises will be assessed based on a report (R), which for the face-to-face delivery of the course may include a discussion (D) or a presentation (P).

Feedback provided via learning management system (LMS)

Attendance Requirements

A number of assessment tasks are conducted in class (whether in-person or in a virtual classroom). It means that you have to be present to contribute to the team work.

Course Schedule

Note that the exact proportion of lecture/tutorial will change from week to week to suit the materials covered in class and the activities to complete in class.

Resources

Prescribed Resources

Support materials for this course including, whenever available, copies of lecture notes, recommended readings, etc., and can be found on Moodle.

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

Videos are often provided to students as a web stream within the Moodle learning management system. Videos are not available for download by students, unless approved by the Course Convenor and either the Undergraduate or Postgraduate Coursework Director. Special consideration can be provided for students to access videos off-line (e.g. working remotely). Please contact the Course Convenor for more information. Note that UNSW reserves the right to deliver videos as a web stream rather than off-line, and cannot provide videos that are copyright from other providers.

Recommended Resources

The following texts are relevant for many of the courses you will study throughout your mining engineering degree. However, it should be noted that there is *no formal textbook for this course*.

- Dunbar, W.S., 2016. How mining works, Society for Mining, Metallurgy & Exploration (SME), 215 p.

Textbooks relevant to the topic being reviewed are also suggested in the course Moodle site and made available online or as a hardcopy through the library.

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.microsoftcrmpartals.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	✓