

MINE9100

Mining Design Practice

Term 2, 2023



Course Overview

Staff Contact Details

Convenors

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Lecturers

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School Contact Information

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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](#)

Course Details

Units of Credit 6

Summary of the Course

Design practice is a final year course intended to enable students to integrate material learnt in several sub-disciplines of mining engineering. The objective is to develop the students' self-directed learning, design, teamwork and managerial skills. The course involves undertaking and completing a series of design tasks in mining engineering stream. Each design task in the series may be independent of each other, or may be a sequence of related sub-tasks as part of a larger goal.

Course Aims

The aim of this course is to:

- Test students' design proficiency, through a sequence of design challenges. There is scope for students to demonstrate superior skills,
- Ensure students have attained sufficient fundamental design knowledge, and thus that all graduating students have high level of proficiency in mining engineering. Students should expect that this course will reinforce their existing knowledge and increase their confidence in design,
- Expose students to individual responsibility and self-directed learning. Students are individually responsible for their level of proficiency.

Course Learning Outcomes

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

Learning Outcome	EA Stage 1 Competencies
1. Gain in-depth knowledge of relevant discipline and its interdisciplinary content.	PE1.3
2. Apply technical knowledge to produce discipline-specific designs in mining engineering	PE2.3, PE2.1
3. Demonstrate an ability to work in teams and learn from peers and mentors	PE3.5, PE3.6, PE2.4
4. Effectively explain design decisions, displaying communication, negotiation, and advocacy skills	PE1.5, PE3.2, PE3.5
5. Develop the capacity for analytical and critical thinking and its application in discipline-specific creative problem solving	PE2.2, PE1.4
6. Identify, document, and improve issues related to mining engineering knowledge base	PE1.6, PE3.1, PE3.4

The expected learning outcomes for this course are to gain practical knowledge on how to manage

projects, work independently and within a team, the development of communication skills and to apply contemporary sustainable planning theory in a practical situation. This course is designed to address the learning outcomes below and the corresponding Engineers Australia (EA) Stage 1 Competency Standards for Professional Engineers as shown above.

Teaching Strategies

The main strategy of this practice course is to provide students with opportunity for self-directed learning, practicing their problem identification and solving skills, both individually and as a part of a group. Students working in project teams will make decisions in regards to a broad range of topics, specific to mining and common for the engineering discipline as a whole, e.g. engineering ethics, sociopolitical, environmental and economic issues. Another strategy is to encourage students to develop and practice communication and collaborative skills.

The philosophy of this course is to promote engagement and understanding of the learning outcomes by challenging students to solve applied and practical real world problems. Therefore, the course is structured with a large proportion of self-directed work supported by workshops and assessments intended to promote a deep understanding of the learning outcomes. In addition, guest lectures will help to expose students to relevant specialist knowledge and also refresh students understanding of core design, communication and project management skills.

Assessment

To the extent appropriate at university, assessments will reflect the kinds of deliverables expected at the professional level in such industries as environmental engineering consulting and government public works. The final mark for each student will be determined by a combination of individual and group contributions. Groups will be responsible for assigning roles and individual tasks within the team.

Each group member will be assessed individually on the above roles and will also be required to submit his/her own assessment of the other individual contributions within the group. On the basis of these peer evaluations the mark for each group member will be adjusted into an individual contribution to determine the final mark. There will be no written examination or quiz in this subject. An outline of the course assessment is set out below. Detail of each assessment including the submission date, marks assigned and the general criteria by which marks are assigned will be found in Moodle and in the table in the assessment overview section of this document. The course coordinator reserves the right to adjust the final scores by scaling if agreed with the Head of School.

There will be NO formal examination. The final marks for the course will be determined based on the scores from each of the 4 assessment tasks. Each group task will include a peer evaluation component that transforms the group mark into a final individual mark.

Assessment task	Weight	Due Date	Course Learning Outcomes Assessed
1. Annotated Bibliography / Literature Rivew	20%	19/06/2023 12:00 AM	4, 5, 6
2. Project Proposal	15%	30/06/2023 12:00 AM	2, 3, 4, 5, 6
3. Design Presentation	20%	26/07/2023 12:00 AM	4, 5
4. Final Report	45%	07/08/2023 12:00 AM	2, 3, 4, 5, 6

Assessment 1: Annotated Bibliography / Literature Rivew

Start date: 31/05/2023 12:00 AM

Assessment length: maximum 10 pages

Due date: 19/06/2023 12:00 AM

This is an individual assessment. First, students will be provided with the general contextual description of the project (e.g. open cut mine, location, deposit information, state and stage of the development etc). Students are required to produce a bibliography review up to 10 pages long, demonstrating in-depth understanding of the topic and ability to research and synthesise information. Students will be marked on presentation, clarity, organisation and depth of research and demonstration of critical analysis of source content.

This assignment is submitted through Turnitin and students do not see Turnitin similarity reports.

Assessment criteria

This is an individual assessment. Students are expected to display evidence of in-depth understanding

Assessment 2: Project Proposal

Start date: 14/06/2023 12:00 AM

Assessment length: maximum 5 pages

Due date: 30/06/2023 12:00 AM

This is the major submission per team, however containing individual work per task or major project element performed by individual students explaining details of the design and demonstrating their decisions.

Assessment 3: Design Presentation

Start date: 28/06/2023 12:00 AM

Due date: 26/07/2023 12:00 AM

Deadline for absolute fail: students must be present on the due date

Upon the completion of the design, each group prepares a presentation slides made of individual contributions. Each student will be given up to 15 minutes to present an individual part of the design. Students are expected to display a knowledge of their topic and communicate their findings clearly. Feedback on presentations will be given at the end of the presentation by an invited guest expert / academic staff.

This is not a Turnitin assignment

Assessment criteria

This is a group assessment; peer evaluation will be used to determine an individual mark. Each student will be marked on both content and presentation technique. Students are expected to display a knowledge of their topic and communicate their findings clearly.

Assessment 4: Final Report

Start date: 28/06/2023 12:00 AM

Assessment length: maximum 100 pages

Due date: 07/08/2023 12:00 AM

Deadline for absolute fail: 11/08/2023

This is a group assessment; peer evaluation will be used to determine an individual mark. Students will be expected to display and communicate in-depth knowledge of their project issues and solutions. Evidence of analytical thinking and problem solving as well as organisation and presentation of the report will be assessed.

This assignment is submitted through Turnitin and students do not see Turnitin similarity reports.

Assessment criteria

This is a group assessment; peer evaluation will be used to determine an individual mark. Students will be expected to display and communicate in-depth knowledge of their project issues and solutions. Evidence of analytical thinking and problem solving as well as organisation and presentation of the report will be assessed.

Attendance Requirements

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

Course Schedule

[View class timetable](#)

Timetable

Date	Type	Content
Week 4: 19 June - 23 June	Assessment	Annotated Bibliography / Literature Review
Week 5: 26 June - 30 June	Assessment	Project Proposal
Week 9: 24 July - 28 July	Assessment	Design Presentation
Stuvac: 7 August - 11 August	Assessment	Final Report

Resources

Recommended Resources

- *SME mining engineering handbook* / edited by Peter Darling, 2011. Society for Mining, Metallurgy, and Exploration (U.S.) ISBN 978-0-87335-264-2.
- *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).
- Hustrulid, W and Kuchta, M., 2006. *Open Pit Mine Planning & Design*, Balkema, Rotterdam.
- Hargraves, A and Martin, C., 1993. *Australasian Coal Mining Practice Monograph 12, 2nd Edition*, The AusIMM: Melbourne.
- Hartman, H.L. 2002. *Introductory Mining Engineering*, 2nd edition. Wiley, New York.
- Woehler, R, H (ed), 1986. *Bulk Handling in Open Pit Mines and Quarries*, Trans Tech Publications, Berlin.
- Rudenno, V. 2004. *The Mining Valuation Handbook*, 2nd edition, Wrightbooks, Milton, QLD. ISBN: 0731400755.
- Noakes, M and Lanz, T, 1993. *Cost Estimation Handbook for the Australian Mining Industry*, Monograph No: 20/ Australasian Institute of Mining and Metallurgy.
- AusIMM Large Open pit Conference Series.
- *International Journal of Surface Mining and Reclamation*, Balkema-Rotterdam.

Course Evaluation and Development

At the end of the 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.

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

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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.

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	✓