

MINE8440

Mining Industry Research Project 1

Term 1, 2023



Course Overview

Staff Contact Details

Convenors

Name	Email	Availability	Location	Phone
Seher Ata	s.ata@unsw.edu.au		Room 159C, Old Main Building	+61478492 034

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

The MINE8440 course is a core requirement for postgraduate Masters level students to demonstrate a substantial research project or scholarship. The research course is also available for Graduate Diploma level students, and is essential for these students who are intending to articulate to the Masters level.

This course is intended to develop the capability and requisite skills of an engineer to build a foundation of knowledge related to a particular problem in mining engineering. The research should link closely with industry partners or applied research that will be of benefit to industry. This research foundation provides a basis on which to design a solution that is robust and safe, cost effective and appropriate to the end-user.

It is essential that this foundation reflects not only established thinking and practices but equally important, it should account for divergent and newly developing views as well as any limitations or weaknesses that underpin current understanding. The quality of the engineering solution is therefore a function of the quality and timing to complete this investigation; an investigation that forms part of a process known as research.

The research scope of MINE8440 is to significantly extend any previous industry research that has been undertaken by the student and/or others including one or more of the following categories: site or laboratory testing; related numerical modelling; comprehensive cost-benefit or geostatistical analysis; extension of constitutive theory.

On completion of this course, a student should be capable of preparing:

- a research proposal that accounts for the current understanding of issues pertinent to a defined topic; objectives of the proposal research project and the tasks, activities and resources necessary to achieve that objective
- a critical review of literature encompassing a critique of the current state of knowledge as well as information on other related issues; and
- a research thesis including new, original data and analysis and detailed interpretation and recommendations for implementation and further research to address any limitations and uncertainty that is identified

With permission from the School, and consistent with Program rules, this course can be extended as MINE8445 and/or MINE8690 with significantly more comprehensive research and thesis.

Note: Permission to enrol in this course requires written evidence of industry support and/or agreement of an academic supervisor in the School. Industry support is essential for research projects that are to be extended for Masters programs that require MINE8455 and/or MINE8690, and is highly recommended for Graduate Diploma programs. Industry support is to include in-kind contributions from industry staff, access to relevant site data and/or samples and/or resources to support applied research. Industry agreement to publish results of the research is required, or an agreement to publish aggregated results that do not identify specific mine sites or confidential information. Alternatively, academic supervisors offer research projects as part of applied research programs.

Course Aims

The course aims to develop the capability and requisite skills of an engineer to build a foundation of knowledge related to a particular industry-related problem. This foundation provides a basis on which to design a solution that is robust and safe, cost effective and research outcomes that are appropriate to the end-user.

Course Learning Outcomes

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

Learning Outcome	EA Stage 1 Competencies
1. Define the major issues and benefits associated with a research topic.	PE1.3, PE3.2
2. Conduct library search relevant to the research topic and obtain reference sources from various relevant sources.	PE1.3, PE1.4, PE2.3, PE3.2
3. Produce a literature review encompassing a critique of the current state of knowledge related to the topic and other related information.	PE1.4, PE1.3, PE2.3, PE3.2
4. Develop a project management plan that outlines objectives, definition of tasks, activities and resources needed to achieve that objective, a schedule of activities and significant milestones, and a risk assessment with appropriate management and control measures.	PE2.4, PE2.1
5. Prepare a technical report that is consistent with the requirements and standards of the School of Mining Engineering and relevant professional societies.	PE3.2, PE3.1, PE3.3, PE3.4

This course will contribute to the development of the following Graduate Attributes:

1. appropriate technical knowledge.
2. having advanced problem solving, analysis and synthesis skills with the ability to tolerate ambiguity.
3. awareness of opportunities to add value through engineering and the need for continuous improvement.
4. being able to work and communicate effectively across discipline boundaries.

Teaching Strategies

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

Additional Course Information

Assumed Knowledge

This course assumes that a student has fundamental knowledge in mining engineering and technical disciplines related to the industry research project.

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

Assignment Requirements

Who

- **All assessment items must be submitted to the Course Convenor.** It must not be submitted directly to the student's individual Project Supervisor.

When

- If not otherwise stated, **the default deadline for submission of an assignment is 9:00 am on Monday in the nominated week.** If Monday coincides with a Public Holiday, then the due date is the next business day in the nominated week.
- Prior to submission, students should read the School Policy on *Assignment Submissions* which can be viewed at: < www.mining.unsw.edu.au/information-about/our-school/policies-procedures-guidelines >.
- In particular, the student should make sure they have read and understood the:
 - Declaration of Academic Integrity;
 - Assignment Submission requirements detailed in the *University Policies* section of the Course Outline; and
 - School Policy on *Assignment Submission* available on the School's website (the web address is given in the Course Outline). In particular, note the requirement that only PDF documents should be uploaded and the required file naming convention.

Where

- Submissions must be made electronically through Turnitin in the LTMS unless otherwise stated. Students are strongly encouraged to submit their report through Turnitin (plagiarism detection software) before the due date to see how their assignment is composed with regards to cited works and original content. This will allow students to self-assess and ensure their assignment meets the School standards before final submission. An originality report with a score higher than 20% may be cause for concern about the originality of content and will be reviewed by the Student's Project Supervisor for potential plagiarism. For further details see the section on University Policies for details on assignment submissions, late submissions, and special consideration.

What

- The submission must be:
 - a single document in PDF format; and
 - prepared in the form of a formal report that includes a list of reference sources cited in the report, prepared in accordance with the report writing standards of the School as contained in the **MEA Report Writing Guide for Mining Engineers**. A copy can be obtained from the UNSW Bookshop or downloaded from the School webpage.
- Each submission must have appended:
 - to the front, a signed copy of the Student Declaration Form and Coversheet; and
 - to the end, a completed self-assessed copy of the Assessment Criteria.

Copies of both documents are available for download from LTMS.

- It is **strongly recommended** when preparing the major assignment; students use the **Report Template** available from LTMS. Note: as this template already incorporates the required Student Declaration Form, a student does not need to separately append a signed copy of the coversheet to their assignment.

How

- The submitted document must be consistent with the following file naming convention: < FamilyNameInitials_CourseCode_AssignmentNumber.pdf >.
- A typical complaint filename would take the following form < SmithPD_MINE8440_A01.pdf > which elements correspond to:
 - The family name of the student: Smith
 - Initial(s) of student: PD
 - Course Code: MINE8440
 - Assignment number: A01...as defined in the Course Outline for the assessment task
 - File format: PDF document

Assignment Process

It is the responsibility of the student to identify a suitable project to be undertaken as the core component of this course. Students should contact the Course Convenor in the first instance for advice, who will then direct the student to a potential supervisor within the School.

This course consists of four assessment items: research proposal, progress report, Minor Thesis, and overall research progress and meetings. Assessment items will be graded:

- **Research proposal:** Assessment will be completed by the student's Project Supervisor.
- Progress report: Assessment will be made by the student's Project Supervisor.
- **Minor Thesis:** Assessment will be carried out by two academics in the School. The student's Project Supervisor may be an examiner.
- Overall research progress and meetings. Assessment will be undertaken by the student's Project Supervisor

In general, it is strongly recommended that students should arrange to consult with their Project Supervisor on a regular basis to discuss project progress, options future direction and, issues that may potentially impact performance and/or project completion.

Assignment Attachment

Each assignment submitted for assessment must be attached with:

- an official School Coversheet at the front of the assignment; and
- the requisite Assessment Criteria form at the end of the assignment with the self-assessment completed by the student.

If either or both of these are not attached, then the assignment will be deemed non-compliant with the

assessment requirements. A non-compliant submission may not be marked and zero marks may be awarded for that assessment item. In any case, a minimum of 5% of the total marks will be forfeited for that assignment.

Report Writing Guide

The School has a report writing guide (RWG) available. A copy of this is available on the course Moodle site.

Assessment task	Weight	Due Date	Course Learning Outcomes Assessed
1. Overall research progress	10%	28/02/2023	4
2. Project proposal	15%	6/05/2023	1
3. Minor Thesis	60%	01/05/2023	2, 3, 4, 5
4. Revised Thesis	15%	27/05/2023	5

Assessment 1: Overall research progress

Start date: 14/02/2023

Assessment length: approx 1500 words

Due date: 28/02/2023

The overall assessment is based on the student's Project Supervisor interactions with the student at their regular meetings and other modes of oral and written communication.

By the end of the research project the student should be able to demonstrate:

- Understanding of the project and supporting literature.
- Ability to perform research-oriented tasks including conducting experiments, analysing results, and synthesizing research findings.
- Ability to undertake research independently.
- Research findings in written and verbal forms.
- Project management skills.

Assessment 2: Project proposal

Start date: 15/02/2023

Assessment length: 10000 words

Due date: 6/05/2023

A short summary of the proposed research topic and work plan

This assignment is submitted through Turnitin and students can see Turnitin similarity reports.

Assessment criteria

Assessment criteria will be provided in the course Moodle.

Assessment 3: Minor Thesis

Start date: 13/02/2023

Assessment length: max 10000 words

Due date: 01/05/2023

A series of arguments combined with the description and discussion of research undertaken.

Assessment criteria

Assessment criteria will be provided in the course Moodle.

Assessment 4: Revised Thesis

Start date: 15/05/2023

Due date: 27/05/2023

Students revise their thesis based on comments/feedback from the reviewers

Attendance Requirements

This is a project-based course. No attendance is required.

Course Schedule

An example of the course schedule will be provided in the course Moodle. The milestones given in the schedule are in place to help you progress through your research project. Please note that this is just an example. Students will need to create their timeline and work schedule in accordance with their project.

[View class timetable](#)

Timetable

Date	Type	Content
O-Week: 6 February - 10 February		
Week 1: 13 February - 17 February	Project	Course Introduction Microsoft Teams, Wednesday, 16 Feb, 2.30-3.30 pm AEST
Week 2: 20 February - 24 February	Project	Research proposal preparation
Week 3: 27 February - 3 March	Assessment	Research proposal submission
Week 4: 6 March - 10 March	Project	Data collection analysis & review of findings with your supervisor
Week 5: 13 March - 17 March	Project	Data collection analysis & review of findings with your supervisor
Week 6: 20 March - 24 March	Project	Data collection analysis & review of findings with your supervisor
Week 7: 27 March - 31 March	Project	Data collection analysis & review of findings with your supervisor
Week 8: 3 April - 7 April	Project	Data collection analysis & review of findings with your supervisor
Week 9: 10 April - 14 April	Project	Data collection analysis & review of findings with your supervisor

Week 10: 17 April - 21 April	Project	Review final draft with your supervisor
Stuvac: 22 April - 27 April	Assessment	Submit Minor Thesis for assessment

Resources

Prescribed Resources

1. 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).
2. Guide to Authors. (Australasian Institute of Mining and Metallurgy: Melbourne) (Available for download from the AusIMM website).
3. The Complete Idiot's Guide to Project Management. G Campbell and S Baker (Alpha: New York) or its equivalent.
4. Style Manual for Authors, Editors and Printers, 2002. 6th edition (John Wiley & Sons)
5. The Research Project – How to Write It, 2000. R Berry, 4th edition (Routledge: London)
6. How to Write a Better Thesis, 2002. D Evans and P Gruba (Melbourne University Press: Melbourne)

Recommended Resources

- UNSW Mining and Petroleum subject guide (including a link to ACARP and how to find the reports in the catalogue).
<http://subjectguides.library.unsw.edu.au/content.php?pid=7632&sid=52212>
- UNSW Library services for Postgraduate students.
<http://library.unsw.edu.au/servicesfor/PGandH.html>
- EndNote, software package available to UNSW students.
- New postgraduate course students are strongly advised to visit the above website, and complete the ELISE and ELISE Plus tutorials. These will help develop skills in finding, using and evaluating scholarly information.

The University and the Faculty provide a wide range of support services for students, including:

- UNSW Learning Centre (<http://www.lc.unsw.edu.au>)
- Counselling support - <http://www.counselling.unsw.edu.au>
- Library training and support services - <http://www.library.unsw.edu.au/>
- OnePetro – (<http://www.onepetro.org>)

Online Resources

Selected readings as well as other supporting material (e.g. course outline and lecture notes) will be made available on LMS.

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 (eg. 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.

Remember, UNSW librarians are usually happy to help you locate articles or make suggestions

regarding possible material to help you in your academic work. You can also access basic online help at <http://www.library.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 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.microsoftcrmportals.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	