MERE2810

Mineral Resource Geology & Geophysics

Term 2, 2023
## Course Overview

## Staff Contact Details

### Convenors

<table>
<thead>
<tr>
<th>Name</th>
<th>Email</th>
<th>Availability</th>
<th>Location</th>
<th>Phone</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hamed Lamei Ramandi</td>
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<td>Room 156, 1st Floor, Old Main Building, UNSW Sydney, NSW 2052, Australia</td>
<td>+61 (2) 9065 7310</td>
</tr>
</tbody>
</table>

## 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](#)
Course Details

Units of Credit 6

Summary of the Course

The course provides a general understanding of economic geology together with useful working knowledge of the formation of different ore deposits - to assist in the downstream development of appropriate mine planning and design decisions and conduct an economic evaluation of the ability to successfully mine such deposits.

The course teaches a range of geological data collection and major exploration techniques used in the Australian and international minerals industries for discovering and characterising major orebodies and mineral deposits. The potential application of such techniques, as well as their limitations, are discussed to inform the usefulness and appropriate application of such techniques in the industry.

Furthermore, the course introduces the essential integration paths between geology and mining engineering – both in terms of the information collected and how it is applied, as well as the interaction of the professional staff involved.

Course Aims

The course introduces students to the fundamental concepts and processes relating to some ore deposits' genesis and geological and geophysical characteristics. The course also presents students with techniques for exploration and geological and geophysical data collection in mineral resources engineering. The course is specialised and designed for those who will deal with mine geology. It will also be useful for those who are majoring in other areas such as mineral resources exploration and geotechnical engineering.

Course Learning Outcomes

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

<table>
<thead>
<tr>
<th>Learning Outcome</th>
<th>EA Stage 1 Competencies</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Describe the major ore deposit types and their characteristics.</td>
<td>PE1.1, PE1.3</td>
</tr>
<tr>
<td>2. Analyse and interpret mineralogical and lithological data.</td>
<td>PE1.3, PE2.1, PE2.2, PE3.1, PE3.4</td>
</tr>
<tr>
<td>3. Outline and review the major exploration techniques and their applications/limitations.</td>
<td>PE1.1, PE1.3, PE1.4, PE3.2</td>
</tr>
<tr>
<td>4. Examine and classify the various geological parameters and their role and importance in the mine planning and operations processes.</td>
<td>PE1.1, PE1.3, PE1.4, PE2.1, PE3.1, PE3.4</td>
</tr>
<tr>
<td>5. Apply geological data collection techniques to develop a geological model.</td>
<td>PE1.1, PE1.2, PE1.3, PE1.4, PE1.5, PE2.1, PE2.2, PE2.3, PE3.1, PE3.2, PE3.4, PE3.5, PE3.6</td>
</tr>
</tbody>
</table>
Teaching Strategies

The contents of this course will be delivered in three modules:

- Ore Deposits Module (1)
- Exploration Techniques Module (2)
- Mine Geology Module (3)

The course includes:

- Lectures
- Workshops
- Software applications
- Self-directed activities

Activity-based Learning and Workshops: This course utilises activity-based learning methods. Each module combines the presentation of new content with learning activities designed to engage students with the new material in a realistic context. The activities are provided in the course handouts and will also be available via the course website.

Lectures: Learning is supported by lectures designed to provide a framework for knowledge construction. Relevant learning activities support each new topic introduced. Lectures are not the primary means of delivering content, as a wide range of resources will be provided to students to use throughout the course.

Laboratory sessions: These practicals are an extension of the learning activity format. Students will have an opportunity to use laboratory equipment, demonstrate their mastery of the tools and techniques they have learned in the course, and communicate their results effectively. Besides, students will learn appropriate software packages.
## Assessment

<table>
<thead>
<tr>
<th>Assessment task</th>
<th>Weight</th>
<th>Due Date</th>
<th>Course Learning Outcomes Assessed</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Final Exam</td>
<td>35%</td>
<td>Not Applicable</td>
<td>1, 2, 3, 4, 5</td>
</tr>
<tr>
<td>2. Topic Quizzes</td>
<td>15%</td>
<td>Not Applicable</td>
<td>1, 2, 3, 4</td>
</tr>
<tr>
<td>3. Individual Report</td>
<td>20%</td>
<td>16/07/2023 11:59 PM</td>
<td>1, 2, 3</td>
</tr>
<tr>
<td>4. Group Work</td>
<td>30%</td>
<td>30/07/2023 12:00 AM</td>
<td>1, 2, 4, 5</td>
</tr>
</tbody>
</table>

### Assessment 1: Final Exam

Students are tested on the whole course content.

### Assessment 2: Topic Quizzes

Individual multiple-choice quizzes covering each of the modules for the course. The quizzes will start from week one. There will be no quizzes in the flexibility week and final teaching week.

### Assessment 3: Individual Report

**Due date:** 16/07/2023 11:59 PM

A report on a major mining deposit, including its genesis processes, geological features, and exploration techniques.

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

### Assessment 4: Group Work (Group)

**Due date:** 30/07/2023 12:00 AM

Field visit and produce a geological model. A presentation will be delivered by the students.

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

*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/](https://unswinsight.microsoftcrmportals.com/web-forms/)
- Course inquiries should be directed to the Course Convenor

**Image Credit**

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**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.
## 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 | ✔ |