Faculty of Engineering

School of Minerals and Energy Resources Engineering

Postgraduate Course Outline

MINE8780

Environmental Management for the Mining Industry

Dr Simit Raval

CONTENTS

1   INFORMATION ABOUT THE COURSE

Course Code:	MINE8780	Term:	T1, 2021	Level:	PG	Units/Credits	6 UOC
Course Name:	**Environmental Management for the Mining Industry**						

Course Convenor:	*Dr Simit Raval*		
Contact Details	School of Minerals and Energy Resources Engineering Old Main Building (K15), Room 159 J	EMAIL:	simit@unsw.edu.au
		Phone:	+61 2 9385 5005
Contact times	By appointment		

1.1   Course Description

This course provides a comprehensive and practical understanding of the impacts both positive and negative that mining may have on society and the environment. On completion of this course, students should be able to identify, analyse and apply state-of-the-art techniques in environmental management of mine sites as well as identify the major issues and management strategies associated with social/community impacts of mining in Australia and internationally.

The course is offered as a distance course over 7 weeks. There is no face to face classes at the campus. It is recommended that approximately 150 hours is required for satisfactory performance in this course, depending on background and experience. It is the students' responsibility to manage and plan workloads as much as possible to enable a minimum of 8 hours per week, plus time for assessments. Some weeks may require 20 to 50 hours.

1.2   Course Completion

Course completion requires submission of all assessment items; failure to submit all assessment items will result in the award of an Unsatisfactory Failure (UF) grade for the Course.

1.3   Assumed Knowledge

This course assumes that students have knowledge of basic mining and geological terms and descriptions and have had some previous exposure to mining operations.

2   AIMS, LEARNING OUTCOMES AND GRADUATE ATTRIBUTES

2.1   Course Aims

This course aims to provide a comprehensive and practical understanding of the impacts both positive and negative that mining may have on society and the environment.

2.2   Learning Outcomes

At the conclusion of this course, students should be able to:
1. Demonstrate knowledge of the legal, political and ethical context of mining in Australia and overseas;
2. Describe the principles of sustainable development and apply them in the context of mining practices;

3. Identify leading practice in environmental management of mine sites and evaluate their implementation; and
4. Discuss the major issues associated with social/community impacts of mining and engage in development of management strategies.

2.3 Graduate Attributes

This course will contribute to the development of the following Graduate Attributes:
1. Scholars capable of independent and collaborative enquiry, rigorous in their analysis, critique and reflection, and able to innovate by applying their knowledge and skills to the solution of novel as well as routine problems;
2. Entrepreneurial leaders capable of initiating and embracing innovation and change, as well as engaging and enabling others to contribute to change;
3. Professionals capable of ethical, self- directed practice and independent lifelong learning;
4. Global citizens who are culturally adept and capable of respecting diversity and acting in a socially just and responsible way

3 REFERENCE RESOURCES

3.1 Reference Materials

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

The lecture note may be viewed and downloaded from the UNSW-Moodle http://moodle.telt.unsw.edu.au/.

3.2 Other Resources

Leading Practice Handbooks for sustainable mining available at

https://www.industry.gov.au/data-and-publications/leading-practice-handbooks-for-sustainable-mining

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

- Academic Skills - https://student.unsw.edu.au/skills
- Counselling support - https://student.unsw.edu.au/counselling
- Library training and support services - http://www.library.unsw.edu.au/

3.3 Online Resources

There are numerous articles / information sources on mining engineering on the web. Many of them are sound, but many are either very lightweight or contain errors. Be very careful in your choice of web sources. 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/

3.4   Report Writing Guide

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

4   COURSE CONTENT AND LEARNING ACTIVITIES

4.1   Course content

1. Sustainable development in the mining industry
   - Australian case study
   - International perspective
2. Corporate responsibility
   - The International Council on Mining and Metals (ICMM)
   - Industry-level initiatives
3. Leading Practice Environmental Management
   - Mineral exploration
   - Mine Planning
   - Environmental Monitoring and sampling
   - Mine wastes
   - Water including ARD
   - Mineral processing waste including tailings disposal, mercury and cyanide issues
   - Air, noise and vibration
   - Mine rehabilitation/Biodiversity offsets
   - Mine closure and completion
4. Legislative context
   - Environmental Impact assessment (EIA)
   - Environmental legislation
5. Communities and mining
   - Social impact
   - Small scale mining
6. EMPs and other reporting Environmental Management Systems (EMS)
   - Environmental Risk Management (ERM)
   - Workforce training and awareness.

4.2 Learning Activities Summary

UNSW Wk	Activity	Content
1	• Reading • Watching videos • Going through presentations • "Common Room" discussion • Reading weekly Newsletter	• Course introduction/expectations • What is Sustainable development? • International perspectives • Legislative context • EIA; EMS • Risk management (ERM)
2	• Reading • Watching videos • Going through presentations • "Common Room" discussion • Reading weekly Newsletter • Quiz 1 • Blog 1 • Assignment 3 released	• Corporate responsibilities & initiatives • Workforce training & awareness • Codes of practice; EMPs and other reporting; auditing; • Leading Practice Environmental Management (LPEM) – an introduction; • Environmental protection during exploration • Managing air quality, noise, vibration, lighting etc. • Quarrying • Uranium mining
3	• Reading • Watching videos • Going through presentations • "Common Room" discussion • Reading weekly Newsletter • Quiz 2 • Assignment 3 released	• Managing wastes • Tailings storage • Managing water quality, includes AMD • Environmental Monitoring and sampling
4	• Reading • Watching videos • Going through presentations • "Common Room" discussion • Reading weekly Newsletter • Quiz 3 • Submit Blog 1	• Managing hazardous substances, includes cyanide • Mine planning & choice of mining method to avoid environmental impact • Environmental issues in Artisanal and Small-scale Mining (ASM)
5	• Reading • Watching videos • Going through presentations • "Common Room" discussion • Reading weekly Newsletter • Quiz 4 • Submit EMP preliminary	• Biodiversity offsetting • Mine closure • Derelict mines
6	• Reading • Watching videos • Going through presentations • "Common Room" discussion • Reading weekly Newsletter • Quiz 5 • Submit Blog 2	• Social and community impact • Principles • Australian experience • International experience
7	• Going through presentations • Submit Blog reflection • Course reflection	• Mining in a global environment • Off-earth mining: environmental considerations • Complete the assessment and provide course feedback

5   COURSE ASSESSMENT

5.1   Assessment Summary

Assessment task	Due date / week	Weight	Assessment	Learning outcomes assessed
A01. Forum	Every week	**18%** (6 x 3%)	**Discussion Forum** To be submitted on-line each week from week 1 to week 6	1, 2, 3, 4
A02. Quiz	Week 2, 3, 4, 5 & 6	**25%** (5 x 5%)	**Quizzes** On-line quiz to test understanding of the material presented to date	1, 2, 3, 4
A03. Blog	Week 4 & 6	**20%** (2 x 10%)	**SEAM Blog** 2 blog entries (approximately 500 words each)	1, 2, 3, 4
	Week 7	**6%** (2 x 3%)	**SEAM Blog** 2 blog reflections (approximately 1 paragraph)	1, 2, 3, 4
A04. EMP	Week 5 (Preliminary) & Week 8 (Final)	**31%** (6% Prelim + 25% final)	**Environmental Management Plan** A critique on a selected EMP (Max 800 words)	1, 2, 3, 4

Assignments related details/submission-box will be available online through Moodle. Access to the Moodle site is via the Moodle icon on the MyUNSW homepage.

6   ASSESSMENT CRITERIA

The assessment criteria provide a framework for you to assess your own work before formally submitting major assignments to your course convenor. Your course convenor will be using this framework to assess your work and as a way to assess whether you have met the listed learning outcomes and the graduate attributes for your program. We ask that you don't use the assessment criteria guidelines as a checklist, but as a tool to assess the quality of your work. Your course convenor will also be looking at the quality, creativity and the presentation of your written assignment as they review the framework. Rubrics, wherever applicable, will be provided at the time of the assignment release.

7   STUDYING A PG COURSE IN UNSW MINERALS AND ENERGY RESOURCES ENGINEERING

7.1   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 these instructions on how to redirect your UNSW emails: https://www.it.unsw.edu.au/students/email/index.html

7.2   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: these should be directed to the Course Convenor.

7.3   Computing Resources and Internet Access Requirements

UNSW Minerals and Energy Resources Engineering provides blended learning using the on-line Moodle LMS (Learning Management System).

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 G48/49
Petroleum Engineering Students: TETB

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

7.4   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

7.5   Assignment Submissions

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 a assessment cover sheet attached.

7.6   Late Submission of an Assignment

Full marks for an assignment are only possible when an assignment is received by the due date.

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 following section.

7.7   Special Consideration

You can apply for special consideration through UNSW Student Central when illness or other circumstances interfere with your assessment performance. Sickness, misadventure or other circumstances beyond your control may:

- Prevent you from completing a course requirement,
- Keep you from attending an assessable activity,
- Stop you submitting assessable work for a course,
- Significantly affect your performance in assessable work, be it a formal end-of-semester examination, a class test, a laboratory test, a seminar presentation or any other form of assessment.

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.

More details on special consideration can be found at: www.student.unsw.edu.au/special-consideration

7.8   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:

- WD – which usually indicates you have not completed one or more items of assessment or 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.

7.9   Students Needing Additional Support

The Student Equity and Disabilities Unit (SEADU) aims to provide all students with support and professional advice when circumstances may prevent students from achieving a successful university education. Take a look at their webpage: www.studentequity.unsw.edu.au/

7.10   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 Mining Engineering 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 writing skills, please contact the Learning Centre or view some of the resources on their website: www.lc.unsw.edu.au/. The Learning Centre is designed to help you improve your academic writing and communication 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.

7.11 Continual Course Improvement

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.

School of Minerals and Energy Resources Engineering
Assessment Cover Sheet

Course Convenor: _____

Course Code: _____   Course Title: _____

Assignment: _____

Due Date: _____

Student Name: _____   Student ID: _____

ACADEMIC REQUIREMENTS

Before submitting this assignment, the student is advised to review:

- the assessment requirements contained in the briefing document for the assignment;
- the various matters related to assessment in the relevant Course Outline; and
- the *Plagiarism and Academic Integrity* website at < http://www.lc.unsw.edu.au/plagiarism/pintro.html > to ensure they are familiar with the requirements to provide appropriate acknowledgement of source materials.

If after reviewing this material there is any doubt about assessment requirements, then in the first instance the student should consult with the Course Convenor and then if necessary with the Director – Postgraduate Studies.

While students are generally encouraged to work with other students to enhance learning, all assignments submitted for assessment must be their entire own work and duly acknowledge the use of other person's work or material. The student may be required to explain any or all parts of the assignment to the Course Convenor or other authorised persons. *Plagiarism* is using the work of others in whole or part without appropriate acknowledgement within the assignment in the required form. *Collusion* is where another person(s) assists in the preparation of a student's assignment without the consent or knowledge of the Course Convenor.

Plagiarism and *Collusion* are considered as Academic Misconduct and will be dealt with according to University Policy.

STUDENT DECLARATION OF ACADEMIC INTEGRITY

I declare that:

- This assessment item is entirely my own original work, except where I have acknowledged use of source material [such as books, journal articles, other published material, the Internet, and the work of other student/s or any other person/s].
- This assessment item has not been submitted for assessment for academic credit in this, or any other course, at UNSW or elsewhere.

I understand that:

- The assessor of this assessment item may, for the purpose of assessing this item, reproduce this assessment item and provide a copy to another member of the University.
- The assessor may communicate a copy of this assessment item to a plagiarism checking service (which may then retain a copy of the assessment item on its database for the purpose of future plagiarism checking).

Student Signature: _____   Date:

Students are advised to retain a copy of this assessment for their records and submission should be made in accordance to the assessment details available on the course Moodle site.