MINE3910
Socio-Environmental Aspects of Mining
Session One, 2016

Dr. Smit Raval
E: simit@unsw.edu.au
1. INFORMATION ABOUT THE COURSE

<table>
<thead>
<tr>
<th>Course Code:</th>
<th>MINE3910</th>
<th>Semester:</th>
<th>S1, 2016</th>
<th>Level:</th>
<th>UG</th>
<th>Units/Credits:</th>
<th>6 UOC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Course Name:</td>
<td>Socio Environmental Aspects of Mining</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Course Convenor: **Dr. Simit Raval**

Contact Details
- School of Mining Engineering
- Old Main Building, Rm 163
- EMAIL: simit@unsw.edu.au
- Phone: +61 2 9385 5005

Contact times
- Contact times are scheduled for:
  - Monday 4:00pm – 6:00pm, Ainsworth Building 102 (K-J 17)
  - Tuesday 2:00pm – 4:00pm, Ainsworth Building 202 (K-J 17)

1.1. Course Description

This course provides the future Mining Engineer with a comprehensive and practical understanding of the socio-environmental impacts, both positive and negative, that mining may have on society.

On completion of the course, the student should be capable of demonstrating an understanding of:

- Legal and political context of mining in Australia;
- Principles of Sustainable Development;
- Company-based initiatives in environmental management;
- State of the art techniques in environmental management of mine sites; and
- Major issues associated with social/community impacts of mining in Australia and internationally.

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. BE (Hons) Program Learning Outcomes

1. Understanding of the scope, principles, norms, accountabilities and bounds of sustainable engineering practice in the specific discipline.
2. Application of systematic approaches to the conduct and management of engineering projects.
3. Ethical conduct and professional accountability.
4. Effective oral and written communication in professional and lay domains.
5. Creative, innovative and pro-active demeanour.
6. Professional use and management of information.
7. Orderly management of self and professional conduct.
8. Effective team membership and team leadership.

2.4. Graduate Attributes

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

1. understanding of their discipline in its interdisciplinary context
2. rigorous in their analysis, critique, and reflection
3. able to apply their knowledge and skills to solving problems
4. ethical practitioners
5. capable of effective communication
6. information literate
7. digitally literate
8. capable of initiating as well as embracing change
9. collaborative team workers
10. capable of independent, self-directed practice
11. capable of lifelong learning
12. capable of operating within an agreed Code of Practice
13. capable of applying their discipline in local, national and international contexts
14. culturally aware and capable of respecting diversity and acting in socially just/responsible ways
15. capable of environmental responsibility
16. having HSEC consciousness
17. awareness of sustainability, multi-cultural and global issue.
3. REFERENCE RESOURCES

3.1. Reference Materials

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

3.2. Other Resources

- 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)

3.3. Online Resources

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

<table>
<thead>
<tr>
<th>Wk</th>
<th>Date</th>
<th>Activity</th>
<th>Hrs</th>
<th>Content</th>
<th>Presenter</th>
</tr>
</thead>
</table>
| 1  | 29/02| Lecture      | 2   | • Course introduction and expectations  
                                 • An Australian case study – group discussion | SR        |
|    | 01/03| Lecture      | 2   | Sustainable development in the mining industry (overview)               | SR        |
| 2  | 07/03| Lecture      | 2   | Corporate initiatives in sustainability (ICMM, Enduring value and industry based initiatives) | SR        |
|    | 08/03| Lecture + In class activity | 2   | • In Class Activity related to GRI and Sustainability reports (5%)  
                                • Introduction to leading practice environmental management (LPEM) | SR        |
| 3  | 14/03| Lecture      | 2   | • Mineral Exploration  
                                 • Mine water (including Acid Mine Drainage) | WT        |
|    | 15/03| Lecture      | 2   | • Mine wastes | WT | |
| 4  | 21/03| Lecture      | 2   | • Tailings disposal | WT |
|    | 22/03| In class activity | 2   | In Class Activity related to mine water (5%) | SR |

**MID SEM BREAK (28/03 – 03/04)**

**NON-TEACHING WEEK (04/04 – 10/04)**

| 5  | 11/04| Quiz & Lecture | 2   | • Quiz 1 – 15%  
                                • Environmental Monitoring and sampling | SR        |
|    | 12/04| Lecture       | 2   | • Air quality, Noise, Vibration  
                                • Cyanide in Mining | SR        |
| 6  | 18/04| Lecture       | 2   | • Environmental Impact Assessment (EIA)  
                                • Environmental Risk Management (ERM) | DC        |
|    | 19/04| Lecture       | 2   | • Uranium mining | WT |
| 7  | 25/04| Anzac day     | No class | | |
|    | 26/04| Lecture       | 2   | • Mine planning issues  
                                • Artisanal and small scale mining  
                                • Quarry industries | SR        |
| 8  | 02/05| Debate        | 2   | Group debate | SR |
|    | 03/05| Debate        | 2   | Group debate | SR |
| 9  | 09/05| Lecture       | 2   | • Mine rehabilitation  
                                • Biodiversity offsets | SR        |
|    | 10/05| In class activity | 2   | • In Class Activity related to mine rehabilitation (5%) | SR |
| 10 | 16/05| Lecture       | 2   | • Mine Closure   | SR |
|    | 17/05| Lecture       | 2   | • Legal framework  
                                • Communities and mining | SR        |
| 11 | 23/05| Lecture & In class activity | 2   | • Social impact  
                                • In Class Activity related to social aspects of mining (5%) | SR |
|    | 24/05| Quiz & Lecture | 2   | • Quiz 2 – 15%  
                                • Professionals Australia | SR        |
| 12 | 30/05| Seminars      | 2   | Seminars from the Major Group Assignment | SR |
|    | 31/05| Seminars & Review | 2   | Seminars from the Major Group Assignment – continued  
                                • Review of the course, Reflections | SR        |

**SR**: Simit Raval | **WT**: Wendy Timms | **DC**: Duncan Chalmers

Notes:
- The Course Week does not always align with the Semester Week.
- The above schedule is a guide only and the indicated dates and course content is subject to change without notice.
5. COURSE ASSESSMENT

5.1 Assessment Summary

<table>
<thead>
<tr>
<th>Assessment task</th>
<th>Due date</th>
<th>Release date</th>
<th>Weight (%)</th>
<th>Assessment</th>
<th>Learning outcomes assessed</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>• 8 March</td>
<td>22 March</td>
<td>20 (5% x 4)</td>
<td>In-class activities*</td>
<td>1, 2, 3, 4</td>
</tr>
<tr>
<td></td>
<td>• 10 May</td>
<td>23 May</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>11 April</td>
<td></td>
<td>15</td>
<td>Quiz 1</td>
<td>1, 2, 3</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>In-class quiz to test understanding of</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>the material presented to date</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>• 2 May</td>
<td>3 May</td>
<td>20</td>
<td>Debate</td>
<td>1, 2, 3, 4</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>In-class debate in groups on pre-allocated topics</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>24 May</td>
<td></td>
<td>15</td>
<td>Quiz 2</td>
<td>1, 2, 3, 4</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>In-class quiz to test understanding of</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>the material presented post quiz 1 to</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>30 May</td>
<td>31 May</td>
<td>10</td>
<td>Major Group Assignment Presentations</td>
<td>1, 2, 3, 4</td>
</tr>
<tr>
<td></td>
<td>3 May</td>
<td></td>
<td></td>
<td>(about 15 min/group)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>9:00am on 6 June</td>
<td></td>
<td>20</td>
<td>Major Group Assignment Final Report</td>
<td>1, 2, 3, 4</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(max 6000 words)</td>
<td></td>
</tr>
</tbody>
</table>

All the course materials and assignments will be available online through Moodle. Access to the Moodle site is via the Moodle icon on the MyUNSW homepage.

*Please bring notebook computer, tablet or smartphone with Wi-Fi connection for the In-class activities.

3.4. Assessment Requirements

- There is no provision to substitute the in-class activities assignments.
- 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).
- **Submissions must be made electronically** through Turnitin in the LTMS unless otherwise stated. Turnitin is a plagiarism checking service that will retain a copy of the assessment item on its database for the purpose of future plagiarism checking.
6. ASSESSMENT CRITERIA

The assessment criteria provide a framework for you to assess your own work before formally submitting major assignments to your facilitator. Your facilitator 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 facilitator 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.

6.1 In-class activities

Assessment criteria for each in-class activities will be explained at the start of the activity. Generally student would need to explore and analyse the given topics and individually provide a written response to the given query at the end of the activity for evaluation. Participation and submission in an activity attracts 1% mark. There is no substitute for this in-class activity. Students need to make sure their attendance in class to be able to secure the marks associated with this assessment.

6.2 Quizzes

In-class quizzes will test the understanding of the material presented till date. General format of both the quizzes will be a combination of multiple choice questions and short response questions required to be submitted in a pre-defined duration.

6.3 Debate

Debate will take place between two groups. There will be two aspects of the assessment, verbal (80 points) and written (20 points). Individual marks will be allocated based on peer ratings through SPARK.

6.4 Major group assignment

Each group will to prepare two pieces of assessment, a progress report in the form of a Seminar presentation weighing 10% and a final written report (6000 words) weighing 20%.
7. STUDYING A UG COURSE IN MINING ENGINEERING AT UNSW

7.1 How We Contact You

At times, the School or your lecturers may need to contact you about your course or your enrolment. Your lecturers will use the email function through 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: www.it.unsw.edu.au/students/zmail/redirect_external.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: mining@unsw.edu.au
- Course inquiries: these should be directed to the course convenor.

7.3 Computing Resources and Internet Access Requirements

UNSW Mining 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 smartphones 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.

You can access the School’s computer laboratory in-line with the School laboratory access guidelines and Class bookings.

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)
- Chrome browser or FireFox
- ability to view streaming video (high or low definition UNSW The Box 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 and support materials are uploaded on a Learning Management System (LMS) - Moodle. All enrolled students are automatically included on the Moodle for each course. To access these documents, 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. Please take a closer look at all these details on our website: www.engineering.unsw.edu.au/mining-engineering/assignment-submission-policy

We encourage you to retain a copy of every assignment submitted for assessment for your own record either in hardcopy or electronic form. On a rare occasion, assignments may be mislaid and we may contact you to re-submit your assignment.
7.6 Late Submission of an Assignment

Full marks for an assignment are only possible when an assignment is received by the due date. In fairness to those students who do meet the assignment due date and time, deductions will apply to submissions made after this time. Details on deductions that are automatically applied to late submissions are available on our webpage: http://www.engineering.unsw.edu.au/mining-engineering/late-submissions

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 as soon as possible: https://student.unsw.edu.au/special-consideration

7.7 Course Results

For details on UNSW assessment policy, please visit: https://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.

7.8 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: https://www.student.unsw.edu.au/special-consideration

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: http://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 https://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: http://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 Report Writing Guide for Mining Engineers


7.12 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.

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.