Introduction
This unit introduces students to the way in which mineral deposits are extracted with surface mining methods. Students are exposed to the equipment and methods of development of various surface mining options as well as the economic, practical, social, safety and environmental issues and choices associated with surface mining.

Goal
This unit provides an introduction to the study of mining engineering for surface mining operations.

Broad Learning outcomes
On completion of MINE 3161 Surface Mining you should be able to:
1. Understand methods of surface mining (in particular open pit, strip mining) and their development
2. Determine appropriate equipment (in size, type and quantity) to apply to a range of excavation scenarios
3. Understand some basic mine planning concepts including cut-off grades, pit optimisation, and scheduling
4. Understand methods of blasting and how blasts are designed
5. Understand the environmental impacts and legislation associated with surface mining, including acid rock drainage and rehabilitation
6. Efficiently express technical information verbally and orally

Unit-specific prerequisites
Not applicable

Advised Prior Study
- CIVL2121 Engineering Geology and Geomechanics

Technical Requirements
Not applicable

Software Requirements
Microsoft Office (specifically Excel and Word) or similar. Other specialist software used during this unit will be provided on UWA computers as required.
Contact details

<table>
<thead>
<tr>
<th>Unit web site: WebCT (<a href="http://webct6.uwa.edu.au/webct/entryPageIns.dowebct">http://webct6.uwa.edu.au/webct/entryPageIns.dowebct</a>)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Name of Unit coordinator:</strong> Dr Richard Durham</td>
</tr>
<tr>
<td>e-mail: <a href="mailto:durham@mining.uwa.edu.au">durham@mining.uwa.edu.au</a></td>
</tr>
<tr>
<td>Phone: 6488 3087</td>
</tr>
<tr>
<td>Consultation hours: Email ahead to fix a time</td>
</tr>
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</table>

**Other Teaching Staff**

<table>
<thead>
<tr>
<th>Name:</th>
<th>Various guest lecturers</th>
</tr>
</thead>
<tbody>
<tr>
<td>e-mail:</td>
<td>Contactable via Richard Durham</td>
</tr>
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</table>

Unit structure summary

**Lectures**

Mondays 2-5 ENCM: 2.45

**Practical and/or laboratory sessions**

Not Applicable

**Tutorials**

Tuesdays 3-5 ENCM: 2.45

Some tutorials might be in the computer lab ENCM:207. You will be advised well in advance.

**Workshops**

Not applicable

**Other**

Not applicable
## Unit schedule

<table>
<thead>
<tr>
<th>Mon</th>
<th>Lecture at 2pm for &lt;3 hrs</th>
<th>Tue</th>
<th>Tutorial at 3pm for &lt;2 hrs</th>
</tr>
</thead>
<tbody>
<tr>
<td>28-Feb</td>
<td>Introduction</td>
<td>1-Mar</td>
<td>Nothing</td>
</tr>
<tr>
<td>7-Mar</td>
<td>Report writing Hand out and discuss assignment 1.</td>
<td>8-Mar</td>
<td>Equipment</td>
</tr>
<tr>
<td>14-Mar</td>
<td>Selecting and Sizing Trucks</td>
<td>15-Mar</td>
<td>Tutorial</td>
</tr>
<tr>
<td></td>
<td>Equipment / Productivity / Estimation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>21-Mar</td>
<td>Costing</td>
<td>22-Mar</td>
<td>Tutorial</td>
</tr>
<tr>
<td>28-Mar</td>
<td>Blasting 1 (George) - Overview</td>
<td>29-Mar</td>
<td>Tutorial</td>
</tr>
<tr>
<td>4-Apr</td>
<td>Blasting 2 (Vishwa 1 properties and loading systems)</td>
<td>5-Apr</td>
<td>Tutorial</td>
</tr>
<tr>
<td>11-Apr</td>
<td>Blasting 3 (Vishwa 2 - Geometry and design)</td>
<td>12-Apr</td>
<td>Tutorial</td>
</tr>
<tr>
<td>18-Apr</td>
<td>Assignment 1 student presentations</td>
<td>19-Apr</td>
<td>Assignment 1 student</td>
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<tr>
<td></td>
<td>presentations</td>
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<td>presentations</td>
</tr>
<tr>
<td>25-Apr</td>
<td>STUDY BREAK</td>
<td>26-Apr</td>
<td>STUDY BREAK</td>
</tr>
<tr>
<td>2-May</td>
<td>Blasting 4 (Vishwa 3 - Timing and sequencing)</td>
<td>3-May</td>
<td>Tutorial</td>
</tr>
<tr>
<td>9-May</td>
<td>Blasting 5 (Vishwa 4 - flyrock, noise, vibration)</td>
<td>10-May</td>
<td>Tutorial</td>
</tr>
<tr>
<td>16-May</td>
<td>Mine Planning</td>
<td>17-May</td>
<td>Tutorial</td>
</tr>
<tr>
<td>23-May</td>
<td>Pit Optimisation/Scheduling</td>
<td>24-May</td>
<td>Tutorial</td>
</tr>
<tr>
<td>30-May</td>
<td>Summary</td>
<td>31-May</td>
<td>Nothing</td>
</tr>
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</table>

Note: Dates subject to change
References, resources and reading materials

**Recommended/required text(s)**
Not applicable

**Additional/suggested/alternative text(s)**
- On WebCT
  - Scott McEwing (SRK) lecture notes
  - SME Mining Engineering Handbook (Hartman, 1992)
  - Caterpillar handbook
  - JORC
  - Surface mines survey
- Hardcopy texts
  - Introduction to Mining Engineering (Hartman and Mutmansky, 2002)
  - Open Pit Mine Planning & Design (Hustrulid & Kuchta, 1995)

**Journals**
Not applicable

**Closed reserve**
Not applicable

**Databases**
Not applicable

**Web sites**
Not applicable

**Unit web site**
Webct
### Assessment

<table>
<thead>
<tr>
<th>Component</th>
<th>Weight</th>
<th>Important Dates</th>
<th>Relates to Outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surface Mine Presentation and Report Assignment</td>
<td>15%</td>
<td>Due: 18th April 2011</td>
<td>1,6</td>
</tr>
<tr>
<td>2nd Assignment (blasting)</td>
<td>15%</td>
<td>Due: 16th May 2011</td>
<td>1,2,3,6</td>
</tr>
<tr>
<td>Exam</td>
<td>70%</td>
<td>See exam timetable</td>
<td>1,2,3, 4,5,6</td>
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Note: Dates subject to change

### Details of Assessment

**Practical/tutorial exercises/activities**
See above

**Assessment**
See above

**Final Exam**
See above

### Plagiarism

All forms of cheating, plagiarism and copying are condemned by the University as unacceptable behaviour. The Faculty’s policy is to ensure that no student profits from such behaviour. Generally a failure will be recorded for the subject in which the cheating has occurred. Serious cases shall be referred to the University’s Board of Discipline. All students should note that cases of copying are automatically reported to the Dean and documentary evidence along with associated correspondence is placed on the student’s permanent record.

### Appeals against academic assessment


### Charter of student rights


### Guild student centre contact details


### Supplementary Information

The university policy on special consideration states that applications for consideration, deferral of tests or exams or extensions of time for assignments on medical, personal or other grounds must be lodged with the faculty office no later than three working days after the due date for the assessment in question. This rule will apply to all students, except in exceptional circumstances.