Unit Outline

Unit: MINE4161 Mine Design

Semester: 2

2011

Campus: Crawley

Unit Coordinator: Prof. Richard Durham
Introduction
Mining design involves finding the optimal way in which to extract a given resource in an assumed set of market conditions. The quality of the design solution can impact on the value and risk of the project, and influence the potential attainment of social outcomes. Good design is essential to the future success of the mining industry, and the efficient management of the world’s resources.

Goal
This unit provides students with the skills that they need to solve simple and complex mine design problems, and communicate the results effectively.

Broad Learning outcomes
On completion of MINE 4161 Mine Design you should be able to:
1. Transform a practical mine design problems into an appropriate optimisation model
2. Apply tools and procedures to solve simple and complex mine design problems
3. Interpret results into a practical design solutions
4. Demonstrate effective communication skills

Unit-specific prerequisites
Not applicable

Advised Prior Study
- MINE3161 Surface Mining
- MINE3162 Underground Mining 1
- EART3351 Mineral Resources

Technical Requirements
It is assumed that each student has a laptop, and is able to bring this to each class.

Software Requirements
Students are expected to update the software image on their laptops so that mining software is current and can be used in class.
Contact details

<table>
<thead>
<tr>
<th>Unit coordinator:</th>
<th>Prof Richard Durham</th>
</tr>
</thead>
<tbody>
<tr>
<td>e-mail:</td>
<td><a href="mailto:durham@mining.uwa.edu.au">durham@mining.uwa.edu.au</a></td>
</tr>
<tr>
<td>Phone:</td>
<td>6488 3087</td>
</tr>
<tr>
<td>Consultation hours:</td>
<td>By Arrangement</td>
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</tbody>
</table>

Other Teaching Staff

<table>
<thead>
<tr>
<th>Dr Tarrant Elkington</th>
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<tr>
<td>e-mail:</td>
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Lecture times:

See below

Lab/prac/tute times:

See below

Unit structure summary

Lectures

See unit schedule below

Practical and/or laboratory sessions

See unit schedule below

Tutorials

See unit schedule below

Sessions

Tuesdays  9-12  BUSN:142 (Sir Rod Eddington Case Study Room, Business School)

Wednesdays  3-5  ENCM:G13 (Room G13, Civil & Mech Eng building)

Other

Not Applicable
## Unit schedule

<table>
<thead>
<tr>
<th>Week Ending</th>
<th>Tuesday</th>
<th>Wednesday</th>
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<tr>
<td>5/08</td>
<td>Introduction (TE/RD)</td>
<td>No class</td>
</tr>
<tr>
<td>12/08</td>
<td>Pit Design (RD)</td>
<td>No class</td>
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<tr>
<td>19/08</td>
<td>Pit Optimisation - Concepts (TE)</td>
<td>Evaluating pit design (RD)</td>
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<tr>
<td>26/08</td>
<td>Pit Optimisation - Whittle (TE)</td>
<td>Getting models into Whittle (TE)</td>
</tr>
<tr>
<td>2/09</td>
<td>Pushbacks - Concepts (TE)</td>
<td>Picking pushbacks in Whittle (TE)</td>
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<tr>
<td>9/09</td>
<td>Scheduling - Concepts (TE)</td>
<td>Scheduling in and out of Whittle (TE)</td>
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<tr>
<td>16/09</td>
<td>Complexities in the Value model (TE)</td>
<td>Grade/recovery complication (TE)</td>
</tr>
<tr>
<td>23/09</td>
<td>Design around Whittle shells (TE)</td>
<td>Mining contractor option (TE)</td>
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<tr>
<td>30/09</td>
<td>Study Break</td>
<td>Study Break</td>
</tr>
<tr>
<td>7/10</td>
<td>Waste dumps (MR)</td>
<td>Waste dump design (RD)</td>
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<tr>
<td>14/10</td>
<td>Cut-off grade optimisation (TE)</td>
<td>Cut-off grade optimisation in Whittle (TE)</td>
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<tr>
<td>21/10</td>
<td>Uncertainty and Mine Design (TE)</td>
<td>Where to drill analysis (TE)</td>
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<tr>
<td>28/10</td>
<td>Mining outside of Australia (MO)</td>
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<tr>
<td>4/11</td>
<td>Summary (TE/RD)</td>
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Note: Everything is liable to change!
References, resources and reading materials

Recommended/required text(s)
Not applicable

Additional/suggested/alternative text(s)
Selected readings (provided on WebCT when appropriate)

Journals
Not applicable

Closed reserve
Not applicable

Databases
Not applicable

Web sites
Not applicable

Unit web site
http://webct.uwa.edu.au/webct/entryPageIns.dowellct
Assessment

<table>
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<th>Component</th>
<th>Weight</th>
<th>Relates to Outcomes</th>
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<tr>
<td>Assignment</td>
<td>30%</td>
<td>1,2,3,4</td>
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<tr>
<td>Exam</td>
<td>70%</td>
<td>1,2,3,4</td>
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Note: Due dates to be advised

Details of Assessment

Practical/tutorial exercises/activities
See above

Assessment
The main in-semester assessment will involve solving a mine design problem, and communicating the solution in a written report.

Final Exam
Final exam will test the students on the content on the unit, with emphasis on their abilities to display their ability in each of the outcomes.

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
Full regulations governing appeals procedures are available in the University Handbook, available online at http://www.publishing.uwa.edu.au/handbooks/interfaculty/PFAAAA.html

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.