MINE4250

Hardrock Mine Design and Feasibility Project

Term 1, 2022

Course Details

Units of Credit 6

Summary of the Course

Development of a pre-feasibility study for a metalliferous mining project. Activities include: assessment of reserves, method selection, layout and optimisation of surface and underground operations, geotechnical design, ventilation design, project risk assessment, mine scheduling, equipment selection, cost estimation, economics/finance and sustainability. Use of mine design and optimisation software packages.

This course covers the following topics:

Learning Outcome	EA Stage 1 Competencies
and advanced written and oral communication skills	PE3.4, PE3.5, PE3.6

Teaching Strategies

1. Project-based learning: This course utilises project-based learning methods. Students will be given comprehensive group projects to work on. Students are required to work in groups, share the projectworkload, and have weekly meetings and discussions.
2. Question/Answer sessions: Project work will be supported with weekly Q/A sessions. All students are to attend these sessions.
3. Group work: Groups will be established by instructions from the course convenor. Each project will have a number of topics of emphasis. Each member of the group can elect to work on a topic of the project but all members must report their work to the group on weekly basis. A peer review will have to be submitted by each team, indicating the proportion of each individual group member's contribution to the project. Some marks will be taken from the underperforming students to others. If a student makes no contribution to the project, he/she will receive zero for that project.
4. Effective Communication:One of the most effective means of learning is to effectively communicate what has been learned. Part of the assessment in this course will be determined by how effectively the results are communicated. The process of writing reports, brainstorming within a group, peer assessment, preparation and presentation of report, requires clarity of thinking, defending and revising a design and analysing the risks inherent in a project.

Assessment

Assessment task	Weight	Due Date	Course Learning Outcomes Assessed
1. Progress Interview 1	10%	08/03/2022 01:00 PM	1, 2, 3
2. Progress Interview 2	15%	05/04/2022 01:00 PM	1, 2, 3
3. Final Presentation	25%	25/04/2022 10:00 AM	1, 2, 3
4. Final Hard Rock Mine Design Report	50%	06/05/2022 05:00 PM	1, 2, 3

Assessment 1: Progress Interview 1

Start date: 15/02/2022 01:00 PM
Submission notes: No submission is required, Teams meeting is required
Due date: 08/03/2022 01:00 PM

This is a group interview. All the group members must be present and answer the questions relevant to the project task. The project task is mine optimisation. Students must provide demonstration of their final decision on pit optimisation by using Whittle Software. This interview may take 30 min. Each student should be capable of demonstrating Whittle Softweare. No additional documentation is required. This assessment can be done through Teams or face to face depending on the situation.

Assessment criteria

Able to demonstrate the use of Whittle Software

Providing a sufficient number of scenarios for decision making

GJET†053 onitional documentation is required. This

Start date: 15/02/2022 01:00 PM
Submission notes: No submission is required, Teams meeting is required
Due date: 05/04/2022 01:00 PM

This is a group interview. All the group members must be present and answer the questions relevant to the project task. The project task is mine design. Students must provide a demonstration of their final open pit and underground mine design decisions by using Vulcan Software. This interview may take 30

Submission notes: Report submission is required (no page or word limit)

March		on the design and layout of open pit & underground design and layout
Week 6: 21 March - 25 March	Project	Contiue Work on the design and layout of open pit & underground design and layout
Week 7: 28 March - 1 April	Project	Equipment selection for both open pit and underground mine (Fleet size, capacity, type, etc.). Ventsim simulation, ground support design, etc. Finalising the design and layout of open pit & underground design and Layout.
	Workshop	Industry Workshop - Cadia Mine Engineers to review on mine designs
Week 8: 4 April - 8 April	Assessment	Progress Interview 2
Week 9: 11 April - 15 April	Project	Cost estimation and economic evaluation Sustainable development Capital and operating costs, production costs, sensitivity analysis, NPV, etc. Risk analysis, environmental and social impacts, mine closure, etc.
Week 10: 18 April - 22 April	Project	Finalise the project work
	Presentation	Dry Run

Submission of Assessment Tasks

The School has developed a guideline to help you when submitting a course assignment.

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

Academic Information

Course Results

For details on UNSW assessment policy, please visit: www.student.unsw.edu.au/assessment

We acknowledge the Bedegal people who are the traditional custodians of the lands on which UNSW Kensington campus is located.

Appendix: Engineers Australia (EA) Professional Engineer Competency Standard

Program Intended Learning Outcomes	