Unit Outline (Higher Education)

Institute / School: Institute of Innovation, Science & Sustainability

Unit Title: Rock Mechanics Application

Unit ID: ENGPG9403

Credit Points: 15.00

Prerequisite(s): Nil

Co-requisite(s): Nil

Exclusion(s): (ENGIN2503)

ASCED: 030909

Description of the Unit:

This unit introduces elasticity, rock mechanics and their applications in rock structure designs, rock support designs and ground control in surface and underground mines.

Grade Scheme: Graded (HD, D, C, P, MF, F, XF)

Work Experience:

No work experience

Placement Component: No

Supplementary Assessment: Yes

Where supplementary assessment is available a student must have failed overall in the Unit but gained a final mark of 45 per cent or above, has completed all major assessment tasks (including all sub-components where a task has multiple parts) as specified in the Unit Description and is not eligible for any other form of supplementary assessment.

Course Level:

Level of Unit in Course	AQF Level of Course					
	5	6	7	8	9	10
Introductory						
Intermediate			✔			
Advanced						

Learning Outcomes:

Knowledge:

K1. Understand the principles involved in theory of elasticity

K2. Interpret rockmass classification depending on its structural quality, in-situ stress field and groundwater regime

K3. Analyse stress re-distributions due to the excavation processes

Skills:

S1. Investigate rock stress and strain analysis in mining

S2. Investigate ground control analysis, select appropriate support systems; and refine the design processes

S3. Apply knowledge in rock mechanics for rock structure designs in surface and underground mines

Application of knowledge and skills:

A1. Analyse rock stress in mining environment

A2. Analyse rock/ground deformation in mining environment

A3. Design rock structures used in mining, observing safety and economic requirements

Unit Content:

Topics may include:

1. Overview of Theory of Elasticity

2. Rock as a structure

3. Strength & Deformation of rock

4. In-situ stresses

5. Methods of Excavation Analysis

6. Stresses around excavations

7. Stability evaluation of rock structures

8. Evaluation of support requirements

Learning Task and Assessment:

Learning Outcomes Assessed	Assessment Tasks	Assessment Type	Weighting
K1, K2, K3, S1, S3, A1, A2, A3	Numerical and conceptual tasks	Written assignments	10-30%
K2, K3, S1, S2, S3, A1, A3	Research based design project	Written report and associated calculations/Presentation	30-50%
K1, K2, K3, S1, S2, S3, A1, A2, A3	Any or all material covered in the unit will be examinable	Final Test(s)/Presentation	30-50%

Adopted Reference Style:

IEEE ()

Refer to the library website for more information

Fed Cite - referencing tool