Unit Outline (Higher Education)

Institute / School: Institute of Innovation, Science & Sustainability

Unit Title: UNDERGROUND PRODUCTION SYSTEMS

Unit ID: ENGIN3501

Credit Points: 15.00

Prerequisite(s): (ENGIN2502 for undergraduate Students only)

Co-requisite(s): Nil

Exclusion(s): (ENMIN3020)

ASCED: 030303

Description of the Unit:

Within the mining industry underground production is a major part of the industry. This unit allows participants to develop their knowledge of underground mining and will equip them with skills to be able to analyse how underground mining fits into the economy and develop solutions to the challenges of extracting material underground.

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

Work Experience:

No work experience: Student is not undertaking work experience in industry.

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						

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

Learning Outcomes:

On successful completion of the unit the students are expected to be able to:

Knowledge:

K1. Recognise the significance of the mining industry in the economy
K2. Select the parameters used in determining which production system should be used
K3. Recognize the effect of dilution on profitability and the relationship between dilution and recovery
K4. Understand mine hoisting and transport systems in shafts declines and underground tunnels
K5. Interpret various loading/transport systems in underground stoping and development
K6. Identify the resources required for each method including: capital and operating costs, personnel and equipment, development requirements

Skills:

S1. Investigate the best mining system for an ore deposit
S2. Evaluate problems related to profit and ore dilution
S3. Select appropriate tools to generate simple plans and sections of mine development
S4. Evaluate if a given mineral deposit is likely to be profitable
S5. Select equipment for underground hoisting and transport systems

Application of knowledge and skills:

A1. Synthesize knowledge and develop solutions to underground mining in a range of technical or management functions in varied specialised contexts
A2. Develop short, medium and long term plans and schedules for an underground mine

Unit Content:

Topics may include:

- Mining and the economy
- Setting up a new mine
- Social, political and environmental issues
- Selecting an underground production system
- Dilution and recovery

- Mining methods
- Hoisting and transport
- Loading and hauling
- Mining methods resource requirements
- Mass moment of inertia
- Kinetics of a rigid body

Learning Task and Assessment:

Learning Outcomes Assessed	Assessment Tasks	Assessment Type	Weighting
K1-6, S1-5, A1-2	A conceptual design assignment that will encompass numerical modelling techniques	Report	20 - 30%
K1-6, S1-5, A1-2	A detailed design and site analysis	Report	20 - 30%
K1-6, S1-5, A1-2	Examination of some or all of the unit content.	Examination	40 - 60%

Alignment to the Minimum Co-Operative Standards (MiCS)

The Minimum Co-Operative Standards (MiCS) are an integral part of the Co-Operative University Model. Seven criteria inform the MiCS alignment at a Course level. Although Units must undertake MiCS mapping, there is NO expectation that Units will meet all seven criteria. The criteria are as follows:

1. Co-design with industry and students
2. Co-develop with industry and students
3. Co-deliver with industry
4. FedTASK alignment
5. Workplace learning and career preparation
6. Authentic assessment
7. Industry-link/Industry facing experience

MiCS Course level reporting highlights how each Course embraces the principles and practices associated with the Co-Operative Model. Evidence of Course alignment with the MiCS, can be captured in the Course Modification Form.

MICS Mapping has been undertaken for this Unit No

Date:

Adopted Reference Style:

Other (IEEE: Refer to the library website for more information)

Refer to the library website for more information

Fed Cite - referencing tool