



Unit Outline (Higher Education)

Institute / School:	Institute of Innovation, Science & Sustainability
Unit Title:	SURFACE MINING OPERATIONS AND EQUIPMENT
Unit ID:	ENGIN3503
Credit Points:	15.00
Prerequisite(s):	(ENGIN2502 for undergraduate Students only)
Co-requisite(s):	Nil
Exclusion(s):	(ENMIN3070 and ENMIN5018)
ASCED:	030303

Description of the Unit:

This unit introduces students to different surface mining systems (e.g. open pit mining and strip mining), surface mining operation processes (e.g. drilling, blasting, loading, hauling and land reclamation), equipment and their selection and matching, and surface mining design, plan and optimisation.

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	■	■	■	■	■	■
Intermediate	■	■	■	■	■	■

Level of Unit in Course	AQF Level of Course					
	5	6	7	8	9	10
Advanced	■	■	✓	■	■	■

Learning Outcomes:

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

Knowledge:

- K1.** Understand in specific terms what surface mine development is
- K2.** Identify the various mining systems used in surface operations
- K3.** Describe the operation and application of the equipment used in surface mining
- K4.** Understand land reclamation and land management and why this is an important consideration in the mining industry

Skills:

- S1.** Select appropriate systems for the various types of mineral deposits in varying conditions
- S2.** Select the number required and the size of appropriate equipment
- S3.** Design a surface mining operation to meet given conditions

Application of knowledge and skills:

- A1.** Analyse surface mining systems and operations
- A2.** Select equipment used in surface mining operations
- A3.** Design surface mining operations, e.g. drilling, blasting, loading, hauling (including haul road), and land reclamation

Unit Content:

Topics may include:

- Surface Mining Systems: Open pit mining, Strip mining, and Miscellaneous surface mining systems
- Surface Mining Equipment: Cyclic methods - shovels, hydraulic excavators, wheeled loaders, trucks, draglines, scrapers, etc. Continuous methods - bucket wheel excavators, continuous surface miners
- Basic estimating and costing
- Surface mining design, plan and optimisation

Learning Task and Assessment:

Learning Outcomes Assessed	Assessment Tasks	Assessment Type	Weighting
K1-4, S1-4, A1-3	Tutorial problems	Solutions of selected problems	20 - 30%
K1-4, S1-4, A1-3	Practical exercises	Report	20 - 30%
K1-4, S1-4, A1-3	Examination of some or all of the unit materials	Test(s)	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](#)