



Unit Outline (Higher Education)

Institute / School:	Institute of Innovation, Science & Sustainability
Unit Title:	SUBSURFACE ENVIRONMENTAL ENGINEERING
Unit ID:	ENGIN3502
Credit Points:	15.00
Prerequisite(s):	(ENGIN2304 for undergraduate Students only)
Co-requisite(s):	Nil
Exclusion(s):	(ENMIN3050 and ENMIN5023)
ASCED:	030303

Description of the Unit:

This unit enables participants to apply a body of knowledge in the area of mine ventilation and equips them with highly developed skills for research and enquiry. Students enrolled in this unit will be able to apply the body of knowledge to a range of contexts within the mining industry enabling them to undertake professional or highly skilled work within the mining industry and allow them to undertake further study.

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.** Apply theory to solve mine ventilation problems
- K2.** Evaluate ventilation systems used in underground operations
- K3.** Evaluate the operation and application of the equipment used in mine ventilation and advanced appreciation of the systems engineering involved with interacting machines and systems

Skills:

- S1.** Evaluate, consolidate and synthesise knowledge to identify and provide solutions to complex mine ventilation problems
- S2.** Assess complex ideas in mine ventilation
- S3.** Select appropriate tools to solve problems in mine ventilation
- S4.** Apply theoretical concepts to solve real mine problems

Application of knowledge and skills:

- A1.** Apply knowledge and skills to make high level, independent judgements relating to underground mining in a range of ethical or management functions in varied specialised contexts
- A2.** Develop, plan, implement and evaluate short, medium and long term ventilation plans and schedules for an underground mine

Unit Content:

Mine Ventilation, Heat and Humidity, Mine Gases, Mine Dusts, Radiation in Mines, Mine Fires and Explosions

Topics may include:

- Theory of Mine ventilation
- Mine Ventilation pollutants and their control by ventilation and alternative techniques
- The principles of mine ventilation planning, Computer aided mine ventilation planning
- Exposure and maximum permissible dose, Principles of protection
- Emergency procedure and disaster management
- Optimisation of mine ventilation systems

Learning Task and Assessment:

Learning Outcomes Assessed	Assessment Tasks	Assessment Type	Weighting
K1-3, S1-4, A1-2	Laboratory based experiments and mine ventilation survey	Reports	10 - 15%
K1-3, S1-4, A1-2	Mine ventilation planning project	Report and Ventsim files	20 - 30%

Learning Outcomes Assessed	Assessment Tasks	Assessment Type	Weighting
K1-3, S1-4, A1-2	Numerical and conceptual tasks	Submitted assignments	20 - 30%
K1-3, S1-4, A1-2	Examination of some or all of the unit materials	Examination	40 - 50%

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](#)