



Course Outline (Higher Education)

Institute:	Institute of Innovation, Science & Sustainability
Course Title:	SUBSURFACE ENVIRONMENTAL ENGINEERING
Course ID:	ENGIN3502
Credit Points:	15.00
Prerequisite(s):	(ENCOR2100 or ENGIN2304)
Co-requisite(s):	Nil
Exclusion(s):	(ENMIN3050 and ENMIN5023)
ASCED:	030303

Description of the Course:

This course 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 course 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 course but gained a final mark of 45 per cent or above and submitted all major assessment tasks.

Program Level:

Level of course in Program	AQF Level of Program					
	5	6	7	8	9	10
Introductory	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Intermediate	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Advanced	<input type="checkbox"/>	<input type="checkbox"/>	✓	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Learning Outcomes:

On successful completion of the course 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

Course 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

Values:

- V1.** Recognise how the needs for occupational health and can be achieved by ventilation and pollutant control
- V2.** Recognise the distinction between the safe place and the safe person philosophy
- V3.** Recognise the need to minimise risk exposure

Graduate Attributes

The Federation University Federation graduate attributes (GA) are entrenched in the [Higher Education Graduate Attributes Policy](#) (LT1228). FedUni graduates develop these graduate attributes through their engagement in explicit learning and teaching and assessment tasks that are embedded in all FedUni programs. Graduate attribute attainment typically follows an incremental development process mapped through program

progression. **One or more graduate attributes must be evident in the specified learning outcomes and assessment for each FedUni course, and all attributes must be directly assessed in each program**

Graduate attribute and descriptor		Development and acquisition of GAs in the course	
		Learning Outcomes (KSA)	Assessment task (AT#)
GA 1 Thinkers	Our graduates are curious, reflective and critical. Able to analyse the world in a way that generates valued insights, they are change makers seeking and creating new solutions.	K1 - K3, S1 - S4, A1 - A2	A1-4
GA 2 Innovators	Our graduates have ideas and are able to realise their dreams. They think and act creatively to achieve and inspire positive change.	S1 - S4, A1 - A2	A2-3
GA 3 Citizens	Our graduates engage in socially and culturally appropriate ways to advance individual, community and global well-being. They are socially and environmentally aware, acting ethically, equitably and compassionately.	K1 - K3, S1 - S4, A1 - A2	A1-2
GA 4 Communicators	Our graduates create, exchange, impart and convey information, ideas, and concepts effectively. They are respectful, inclusive and empathetic towards their audience, and express thoughts, feelings and information in ways that help others to understand.	K1 - K3, S1 - S4, A1 - A2	A1-4
GA 5 Leaders	Our graduates display and promote positive behaviours, and aspire to make a difference. They act with integrity, are receptive to alternatives and foster sustainable and resilient practices.	K1 - K3, S1 - S4, A1 - A2	A2

Learning Task and Assessment:

Learning Outcomes Assessed	Learning 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%
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 course materials	Examination	40 - 50%

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](#)