



Course Outline (Higher Education)

Institute:	Institute of Innovation, Science & Sustainability
Course Title:	UNDERGROUND PRODUCTION SYSTEMS
Course ID:	ENGIN3501
Credit Points:	15.00
Prerequisite(s):	(ENGIN2502 or ENMIN2040)
Co-requisite(s):	Nil
Exclusion(s):	(ENMIN3020)
ASCED:	030303

Description of the Course:

Within the mining industry underground production is a major part of the industry. This course 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 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 checked="" 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.** 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

Course 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

Values:

- V1.** Recognise the need for good engineering practice in underground mining operations
- V2.** Develop lifelong learning skills by critical analysis of complex mining problems

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.	K1-6, S1-5, A1-2	AT1-3
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.	S1-5, A1-2	AT1-3
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.	K1-6, S1-5, A1-2	AT2
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.	K1-6, S1-5, A1-2	AT1-3
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.	K1-6, S1-5, A1-2	AT2

Learning Task and Assessment:

Learning Outcomes Assessed	Learning 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 course content	Examination	40 - 60%

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](#)