Course Outline (Higher Education)

Institute:	Institute of Innovation, Science & Sustainability
Course Title:	PRODUCTION DRILLING AND BLASTING
Course ID:	ENGIN5514
Credit Points:	15.00
Prerequisite(s):	Nil
Co-requisite(s):	Nil
Exclusion(s):	(ENMIN5110)
ASCED:	030303

Description of the Course:

This course qualifies participants to apply an advanced body of knowledge in the area of drilling and blasting in mining 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						
Intermediate						
Advanced				✔		

Learning Outcomes:

Knowledge:

K1. Understand and outline drilling and blasting in mines.

K2. Select appropriate explosives, initiation systems, and fragmentation optimisation techniques

K3. Analyse the environmental effect of blasting.

Skills:

S1. Appraise, consolidate and synthesise knowledge and identify and provide solutions to complex drilling and blasting problems.

S2. Evaluate the environmental impact of drilling and blasting.

S3. Design drilling and blasting for both underground and surface mines.

S4. Assess and optimise rock fragmentation in both surface and underground blasting settings.

Application of knowledge and skills:

A1. Plan, implement and evaluate short, medium and long term plans and schedules for drilling and blasting in surface and underground mines.

A2. Evaluate and optimise production drilling and blasting in a mining operation.

Course Content:

This course reinforces present knowledge in production drilling and blasting, and examines up-to-date production drilling and blasting methods. Content includes production drilling methods and equipment, bits and drilling accessories, explosive types, explosive properties and characteristics, principles of blasting, initiation systems, small- scale methods of drilling and blasting, large-scale methods and mass blasting, crater blasting systems, controlled blasting techniques, vibrations and air blast, secondary breaking, case studies and costs.

Topics may include:

- Production drilling and blasting for surface and underground operations.
- Optimising fragmentation.
- Analysis and optimisation of drilling and blasting in mining what is optimal in terms of energy partitioning from explosives.
- New explosive and initiation systems.
- Environmental effects of blasting, minimising the impacts of blasting.
- Case studies and costs.

Values:

V1. Appreciate the significance of drilling and blasting to subsequential mining operation processes.

V2. Appreciate the environmental effects of blasting.

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 - A4
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	A1 - A3
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 - A4
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 - A3
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	A1 - A4

Learning Task and Assessment:

Learning Outcomes Assessed	Learning Tasks	Assessment Type	Weighting
K1-3, S1-4	Numerical and conceptual tasks	Written assignments	40-50%
K1-3, S1-4	Numerical tasks	Invigilated test	10-30%
K1-3, S1-4, A1-2	Design project	Design project report	20-50%

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](#)