

School / Faculty: Faculty of Science and Technology

Course Title: ADVANCED ROCK BREAKAGE

Course ID: ENGIN5502

Credit Points: 15.00

Prerequisite(s): Nil

Co-requisite(s): Nil

Exclusion(s): ENMIN7040 ADVANCED ROCK BREAKAGE

ASCED Code: 030303

Grading Scheme: Graded (HD, D, C, etc.)

Program Level:

AQF Level of Program						
	5	6	7	8	9	10
Level						
Introductory	■	■	■	■	■	■
Intermediate	■	■	■	■	■	■
Advanced	■	■	■	■	✓	■

Learning Outcomes:

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

Knowledge:

- K1.** Analyse and implement strategies applied to drilling and blasting in mines.
- K2.** Critique alternative explosives and initiation systems.
- K3.** Appraise the environmental effects of blasting.
- K4.** Predict future trends in rock blasting.

Skills:

- S1.** Propose solutions to complex drilling and blasting problems.
- S2.** Evaluate complex ideas drilling and blasting.
- S3.** Apply appropriate tools to solve problems in drilling and blasting.

Application of knowledge and skills:

- A1.** Plan, implement and evaluate short, medium and long term plans and schedules for drilling and blasting in a surface mine and in underground mining.

Course Outline (Higher Education)

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- A2.** Act with responsibility and have accountability for personal outputs and all aspects of the work or function of others.

Course Content:

Topics may include:

- Excavation techniques and equipment.
- The need for various excavations in surface and underground construction and mining.
- Assessment of ground conditions for selection of equipment and safety.
- Selection of most suitable shape and size of excavation and excavation technique.
- Minimisation of accidents and various forms of disturbance and pollution during excavation.
- PCF technology.
- Mechanical rock breakage.
- Novel techniques of rock breakage.
- Case studies.

Values and Graduate Attributes:

Values:

- V1.** Predict the environmental implications in excavation of rock, soil, etc.

Graduate Attributes:

FedUni graduate attributes statement. To have graduates with knowledge, skills and competence that enable them to stand out as critical, creative and enquiring learners who are capable, flexible and work ready, and responsible, ethical and engaged citizens.

Attribute	Brief Description	Focus
Knowledge, skills and competence	Mining engineering is a fast-changing technological area which impacts on our every-day life. Students will develop an appreciation that learning is a life-long process.	High
Critical, creative and enquiring learners	Development of independent, critical and creative learners is an essential feature of engineering education. Assessments tasks are individualised, so students need to rely on their personal efforts to arrive at their conclusions.	High

Course Outline (Higher Education)

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Attribute	Brief Description	Focus
Capable, flexible and work ready	Mining engineering study requires a team work approach to execute tasks to achieve common objectives. Training for engagements is built in to the Mining program. A student will graduate with a new outlook as an engaging capable, flexible and work ready individual.	High
Responsible, ethical and engaged citizens	Through the Mining programme delivery, a student will value the engineering input for the advancement of humanity. Students are made aware that the engineer does not work or act in isolation, but is part of a wider community that includes many stakeholders, some of which may have no technical knowledge of what the engineer does. An awareness of community as a responsible, ethical and engaged citizen is important when finding a design solution.	High

Learning Task and Assessment:

Learning Outcomes Assessed	Assessment Task	Assessment Type	Weighting
K1-4, S1-3, A1-2	Numerical and conceptual tasks.	Submitted assignments	40-50%
K1-4, S1-3, A1-2	Design projects.	Report	50-60%

Adopted Reference Style:

Other (IEEE-Refer to the library website for more information)