

**School / Faculty:** Faculty of Science and Technology

**Course Title:** UNDERGROUND MINE PLANNING AND INFRASTRUCTURE

**Course ID:** ENGIN3505

**Credit Points:** 15.00

**Prerequisite(s):** ENGIN3501

**Co-requisite(s):** Nil

**Exclusion(s):** Nil

**ASCED Code:** 030303

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

**Program Level:**

AQF Level of Program						
	5	6	7	8	9	10
<b>Level</b>						
Introductory	■	■	■	■	■	■
Intermediate	■	■	■	✓	■	■
Advanced	■	■	■	■	■	■

**Learning Outcomes:**

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

**Knowledge:**

- K1.** Describe in detail the principles and various practices of mine development
- K2.** Explain in detail what shaft sinking, tunnelling, raising and winzing is
- K3.** Describe mechanical rock cutting systems
- K4.** Explain and critically evaluate the different mine development techniques available for difficult ground

**Skills:**

- S1.** Analyse, consolidate and synthesise knowledge and identify and provide solutions to complex underground mining problems
- S2.** Generate and evaluate complex ideas in mine development
- S3.** Select appropriate tools to solve problems in underground mine development
- S4.** Use theoretical concepts from underground mine development in the formulation of solutions and problems

# Course Outline (Higher Education)

ENGIN3505 UNDERGROUND MINE PLANNING AND INFRASTRUCTURE

## Application of knowledge and skills:

- A1.** Plan, implement and evaluate short, medium and long term plans and schedules for a underground mine
- 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:

- Mine planning
- Shafts versus declines
- Conventional tunnelling
- Jumbo methods
- Road headers
- Full face tunnel boring
- Raising methods
- Sinking and winzing
- Ground support
- Underground layouts
- Case studies and costs

## Values and Graduate Attributes:

### Values:

- V1.** Plan and design development requirements for a mine

### 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.

# Course Outline (Higher Education)

ENGIN3505 UNDERGROUND MINE PLANNING AND INFRASTRUCTURE

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
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.	Medium
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.	Medium

## Learning Task and Assessment:

Learning Outcomes Assessed	Assessment Task	Assessment Type	Weighting
K1-4, S1-4, A1-2	Numerical and conceptual tasks	Submitted assignments	20 - 30%
K1-4, S1-4, A1-2	Design project	Report	20 - 30%
K1-4, S1-4, A1-2	Examination of some or all of the course materials	Examination	40 - 60%

## Adopted Reference Style:

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