



# Course Outline (Higher Education)

<b>Institute:</b>	Institute of Innovation, Science & Sustainability
<b>Course Title:</b>	MINERAL PROCESSING II
<b>Course ID:</b>	SCMET3200
<b>Credit Points:</b>	15.00
<b>Prerequisite(s):</b>	(SCMET3100)
<b>Co-requisite(s):</b>	Nil
<b>Exclusion(s):</b>	Nil
<b>ASCED:</b>	030305

**Description of the Course:**

Mineral processing is a major and vital part of the mining industry. This course allows participants to develop knowledge of the principles and practices applied in mineral processing and will equip participants with skills to be able to analyse how mineral processing fits into the economy of the industry and develop solutions to the challenges of extracting valuable minerals or metals.

**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 apply:

**Knowledge:**

- K1.** Recognise the significance of mineral processing in the mining industry and economy
- K2.** Identify critical operating parameters of beneficiation equipment, and understand systems for monitoring and controlling them
- K3.** Recognise different types of dewatering processes, identify the essential differences between them and their importance in the design of mineral processing plants
- K4.** Recognise the principles of magnetic and electrostatic beneficiation and identify the correct sequence of dry and wet magnetic and electrostatic separation in mineral sands processing
- K5.** Understand the principles of froth flotation chemistry, appreciate the role and chemical structure of typical reagents and their importance in the design of flotation processes
- K6.** Appreciate the importance of maintenance and adjustment of the mineral processing plant beneficiation equipment including magnetic, electrostatic, and froth flotation equipment

**Skills:**

- S1.** Evaluate problems involving parameters commonly found in mineral processing applications
- S2.** Evaluate graphical presentation of technical data commonly generated in mineral processing applications
- S3.** Assess, and present evidence of problem-solving and calculations in a clear, logical, and concise way
- S4.** Select equipment typically used in minerals processing, compare and contrast laboratory-scale units
- S5.** Evaluate the performance of laboratory-scale mineral processing units with respect to industrial standards

**Application of knowledge and skills:**

- A1.** Synthesize knowledge of mineral sample characteristics to design concentration process flowsheets in a range of technical functions
- A2.** Solve real mineral processing problems through symbolic, numeric, and experimental analysis

**Course Content:**

Topics may include:

- Ore sorting
- Magnetic separation
- Electrostatic separation
- Flotation process, reagents and equipment
- Concentrating processes flow-sheets
- De-watering processes, equipment and flow-sheets
- Tailing disposal

**Values:**

- V1.** Develop lifelong learning skills by critically analysing complex mineral processing systems
- V2.** Understand the role, and economic limitations, of optimising grade and recovery in the beneficiation processes within a whole plant consideration

- V3.** Appreciate the importance of mineralogy on design and environmental implications of separation processes
- V4.** Recognise the role of science, engineering, and good operating practice in overall efficiency, safety, and reliability within mineral processing systems

### 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, S1-3, 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.	K1-2, 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	AT1-2
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.	K1-6, 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	AT1-2

### Learning Task and Assessment:

Learning Outcomes Assessed	Learning Tasks	Assessment Type	Weighting
K2-5, S1-5, A1-2	Tutorial problems	Assignment	20% - 40%
K1-5, S1-5, A1-2	Laboratory practicals	Reports on practical exercises	20% - 40%
K1-6, S1-5, A1-2	Examination(s) and/or test(s)	Engagement in all learning activities including attendance and participation in classes, exercises, recommended and supplementary reading and other activities as suggested.	40% - 60%

### Adopted Reference Style:

Australian Harvard

Refer to the [library website](#) for more information

Fed Cite - [referencing tool](#)