



Course Outline (Higher Education)

Institute: Institute of Innovation, Science & Sustainability

Course Title: ORE RESERVE ESTIMATION

Course ID: ENGIN5507

Credit Points: 15.00

Prerequisite(s): Nil

Co-requisite(s): Nil

Exclusion(s): (ENMIN5017)

ASCED: 030303

Description of the Course:

This course qualifies participants to apply an advanced body of knowledge in the area of ore reserve estimation 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 as a mining engineer 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	<input type="checkbox"/>	<input type="checkbox"/>				
Intermediate	<input type="checkbox"/>	<input type="checkbox"/>				
Advanced	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Learning Outcomes:

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

Knowledge:

- K1.** Identify and evaluate the targets for mineral exploration.
- K2.** Evaluate and apply the principles and applications of geophysical and geochemical exploration techniques.
- K3.** Identify and critically investigate appropriate ways to sample various types of mineral deposits.
- K4.** Apply and select the methods of estimating the tonnage and grade of any mineral deposit.
- K5.** Select and justify the appropriate methods to enable mining projects to be evaluated.

Skills:

- S1.** Review, analyse, consolidate and synthesise knowledge and identify and provide solutions to complex ore reserve estimation problems.
- S2.** Assess information to generate and assess ore bodies using classical and geostatistical methods.
- S3.** Apply technical and creative skills using appropriate statistical and geostatistical tools.
- S4.** Apply communication skills to transfer complex knowledge and ideas to a variety of disciplines within a mining project.

Application of knowledge and skills:

- A1.** Apply knowledge and skills to make high level, independent judgements relating to ore reserve estimation and ore body evaluation in a range of technical or management functions in varied specialised contexts.
- A2.** Plan, implement and evaluate short, medium and long term ore body resources and reserves.
- A3.** Act responsibly and have accountability for personal outputs and all aspects of the work or function of others within the JORC and Valmin codes.

Course Content:

Topics may include:

- Identification of target minerals for exploration.
- Exploration techniques.
- Sampling of mineral deposits.
- Methods of estimating and quantifying tonnage and grade.
- Grade control and reconciliation of mine production.
- Reporting of mineral resources and reserves.

- Financial evaluation of mining projects.

Values:

- V1.** Recognise the significance of the legal and ethical requirements for reporting statements of mineral resources and reserves.
- V2.** Recognise the critical importance of sampling techniques in a mining project.
- V3.** Appreciate the necessity of team work in carrying out an ore reserve/resource evaluation.

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 - K5, S1 - S4, A1 - A3	A1 - A3
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 - A3	A2 - 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 - K5, S1 - S4, A1 - A3	A2 - A3
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 - K5, S1 - S4, A1 - A3	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 - K5, S1 - S4, A1 - A3	A2 - A3

Learning Task and Assessment:

Learning Outcomes Assessed	Learning Tasks	Assessment Type	Weighting
K1-K5, S1-S4, A1-A3	Numerical and conceptual tasks.	Written assignments	50-70%
K1-K5, S1-S4, A1-A3	Research based design project.	Written report and associated calculations	30-50%

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](#)