Unit Outline (Higher Education)

Institute / School:	Institute of Innovation, Science & Sustainability
Unit Title:	Ore Reserve Estimation
Unit ID:	ENGRG9402
Credit Points:	15.00
Prerequisite(s):	(ENGRG4402)
Co-requisite(s):	Nil
Exclusion(s):	(SCENV3120)
ASCED:	030303

Description of the Unit:

This unit 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 unit 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

Placement Component: No

Supplementary Assessment: Yes

Where supplementary assessment is available a student must have failed overall in the Unit but gained a final mark of 45 per cent or above, has completed all major assessment tasks (including all sub-components where a task has multiple parts) as specified in the Unit Description and is not eligible for any other form of supplementary assessment.

Course Level:

Level of Unit in Course	AQF Level of Course					
	5	**6**	**7**	**8**	**9**	**10**
Introductory						

Level of Unit in Course	AQF Level of Course					
	5	**6**	**7**	**8**	**9**	**10**
Intermediate	☐	☐	☐	☐	☐	☐
Advanced	☐	☐	☐	☐	✔	☐

Learning Outcomes:

On successful completion of the unit 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 responsibility and have accountability for personal outputs and all aspects of the work or function of others within the JORC and Valmin codes.

Unit Content:

Topics may include:
1.
Identification of target minerals for exploration.

2.
Exploration techniques.

3.
Sampling of mineral deposits.

4.
Methods of estimating and quantifying tonnage and grade.

5.
Grade control and reconciliation of mine production.

6.
Reporting of mineral resources and reserves.

7.
Financial evaluation of mining projects.

Learning Task and Assessment:

Learning Outcomes Assessed	Assessment Tasks	Assessment Type	Weighting
K1, K2, K3, K4, K5, S1, S2, S3, S4, A1, A2, A3	Numerical and conceptual tasks.	Written assignments	50-70%
K1, K2, K3, K4, K5, S1, S2, S3, S4, A1, A2, A3	Research based design project.	Written report and associated calculations	30-50%

Adopted Reference Style:

IEEE

Refer to the library website for more information

Fed Cite - referencing tool