Faculty of Engineering

School of Minerals and Energy Resources Engineering

Postgraduate Course Outline

MINE8820

Mineral Processing

A/Prof Seher Ata

CONTENTS

1. INFORMATION ABOUT THE COURSE

Course Code:	MINE8820	Term:	T2, 2021	

2 AIMS, LEARNING OUTCOMES AND GRADUATE ATTRIBUTES

2.1 Course Aims

This course aims to equip the student with knowledge of mineral processing unit operations normally associated with the production of metal ores and coal preparation. Knowledge of hydrometallurgy unit operations normally associated with the production of major metals (i.e copper and gold) is also provided.

2.2 Learning Outcomes

At the conclusion of this course, students should be able to:

1. Describe the work that metallurgists and mineral process engineers do.
2. Describe the major issues in mineral and metallurgical processing
3. Explain the implications of mineralogical characteristics for mineral processing requirements.
4. Define common mineral processing and metallurgical terms.
5. Interpret technical reports.
6. Conduct basic mass balance calculations involved in several unit operations from mineral processing to hydrometallurgy.
7. Describe commonly used mineral and metallurgical processes used in Australia in the following industries:
    - Base metals processing (copper)
    - Precious metals processing (CIP process for gold recovery)
    - Coal processing

2.3 Graduate Attributes

This course will contribute to the development of the following Graduate Attributes:

1. appropriate technical knowledge.
2. having advanced problem solving, analysis and synthesis skills with the ability to tolerate ambiguity.
3. awareness of opportunities to add value through engineering and the need for continuous improvement.
4. being able to work and communicate effectively across discipline boundaries.

3 REFERENCE RESOURCES

3.1 Reference Materials

1.1. Wills BA and Napier-Munn TJ, 2006. Mineral Processing Technology, Butterworth-Heinemann, Oxford. -

6. Sutherland KL and Wark IW. 1955. Principles of Flotation, Australasian Institute of Mining and Metallurgy, 489 pages.
7. Publications from Suppliers and Original Equipment Manufacturers.
8. Gupta A and Yan DS, 2006. Mineral Processing Design and Operations, An Introduction, Amsterdam: Elsevier.
9. Rhodes M, 1998. Introduction to Particle Technology, Wiley, West Sussex.
10. Ritcey GM, 2006. Solvent Extraction – Principles and Applications to Process Metallurgy, (2nd ed.). Ottawa, Canada: Gordon M. Habashi, F., Handbook of Extractive Metallurgy, Vol 1-4, Wiley-VCH, Germany.
11. Weiss NL, 1985. SME Mineral Processing Handbook, SME American Institute of Mining, metallurgy, and Petroleum Engineers, New York.

3.2 Other Resources (if applicable)

- UNSW Mining and Petroleum subject guide (including a link to ACARP and how to find the reports in the catalogue) . http://subjectguides.library.unsw.edu.au/content.php?pid=7632&sid=52212
- UNSW Library services for Postgraduate students. http://library.unsw.edu.au/servicesfor/PGandH.html
- Report Writing Guide for Mining Engineers, 2011. P Hagan & P Mort (Mining Education Australia (MEA) ISBN 978 0 7334 3032 9.
- Guide to Authors, 2008. (Australasian Institute of Mining and Metallurgy; Melbourne).
- Style Manual for authors, editors and printers. 6th edition, (John Wiley & Sons).
- EndNote, software package available to UNSW students.
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Remember, UNSW librarians are usually happy to help you locate articles or make suggestions regarding possible material to help you in your academic work. You can also access basic online help at http://www.library.unsw.edu.au/

3.4 Report Writing Guide

The School has a report writing guide (RWG) available. A copy of this is available on the course moodle site.

5 COURSE ASSESSMENT

5.1 Assessment Summary

The assessment will be based on the three components as outlined in the below table.

All assessments are due 12 noon Sydney time on Monday of the week, unless otherwise indicated in the table below

Assessment task	Due date	Release

- School Policy on ssignmeSubmissio available on the School's website (the web address is given in the Course Outline). In particular note the requirement that only PDF documents should be uploaded and the required file naming convention.

Where

- Submissions must be made electronically through Turnitin in the LTMS unless otherwise stated. Students are strongly encouraged to submit their report through the Turnitin (plagiarism detection software) before due date to see how their assignment is composed with regards to cited works and original content. This will allow students to self-assess and ensure their assignment meets the School standards before final submission. An originality report with a score higher than 20% may be cause f

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Location (water, transportion, energy)	excellent justification of the selected location. Water, energy and transportation requirement are all considered	justification of the selected location is sound. Water, energy and transportation requirement are considered	justification of the selected location is reasonable. Water, energy and transportation requirement are partly considered	limited justification of the selected location. Water, energy and transportation requirement are not fully considered	poor justification of the selected location. Water, energy and transportation requirement are poorly considered	no justification of the selected location. Water, energy and transportation requirement are not considered
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Marketing & commodity uses	provided an excelle					

6.2 Lab Practical Sessions

	Location (water, transportion, energy)	excellent justification of the selected location. Water, energy and transportation requirement are all considered	justification of the selected location is sound . Water, energy and transportation requirement are considered	justification of the selected location is reasonable . Water, energy and transportation requirement are partly considered	limited justification of the selected location. Water, energy and transportation requirement are not fully considered	poor justification of the selected location. Water, energy and transportation requirement are poorly considered	no justification of the selected location. Water, energy and transportation requirement are not considered
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e	Marketing & commodity uses	provided an excellent and comprehensive overview of the commodity uses marketing of the commodity is fully considered	provided a good overview of the commodity uses marketing of the commodity is considered	provided a reasonable overview of the commodity uses marketing of the commodity is partially considered	provided a limited overview of the commodity uses marketing of the commodity is poorly considered	provided limited or confusing overview of the commodity uses	

7 STUDYING A PG COURSE IN UNSW MINERALS AND ENERGY RESOURCES ENGINEERING

7.1 How We Contact You

At times, the School or your course convenors may need to contact you about your course or your enrolment. Your course convenors will use the email function within Moodle or we will contact you on your @student.unsw.edu.au email address.

We understand that you may have an existing email account and would prefer for your UNSW emails to be redirected to your preferred account. Please see these instructions on how to redirect your UNSW emails: https://www.it.unsw.edu.au/students/email/index.html

7.2 How You Can Contact Us

We are always ready to assist you with your inquiries. To ensure your question is directed to the correct person, please use the email address below for:

Enrolment or other admin questions regarding your program:
https://unswinsight.microsoftcrmportals.com/web-forms/

Course inquiries: these should be directed to the Course Convenor.

7.3 Computing Resources and Internet Access Requirements

UNSW Minerals and Energy Resources Engineering provides blended learning using the on-line Moodle LMS (Learning Management System).

It is essential that you have access to a PC or notebook computer. Mobile devices such as smart phones and tablets may compliment learning, but access to a PC or notebook computer is also required. Note that some specialist engineering software is not available for Mac computers.

Mining Engineering Students: OMB G48/49
Petroleum Engineering Students: TETB

It is recommended that you have regular internet access to participate in forum discussion and group work. To run Moodle most effectively, you should have:

- broadband connection (256 kbit/sec or faster)
- ability to view streaming video (high or low definition UNSW TV options)

More information about system requirements is available at www.student.unsw.edu.au/moodle-system-requirements

7.4 Accessing Course Materials Through Moodle

Course outlines, support materials are uploaded to Moodle, the university standard Learning Management System (**LMS**). In addition, on-line assignment submissions are made using the assignment dropbox facility provided in Moodle. All enrolled students are automatically included in Moodle for each

course. To access these documents and other course resources, please visit: www.moodle.telt.unsw.edu.au

7.5 Assignment Submissions

The School has developed a guideline to help you when submitting a course assignment.

We encourage you to retain a copy of every assignment submitted for assessment for your own record either in hardcopy or electronic form.

All assessments must have an assessment cover sheet attached.

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In some instances your final course result may be withheld and not released on the UNSW planned date. This is indicated by a course grade result of either:

- WD – which usually indicates you have not completed one or more items of assessment or there is an issue with one or more assignment; or
- WC – which indicates you have applied for Special Consideration due to illness or misadventure and the course results have not been finalised.

In either event it would be your responsibility to contact the Course Convener as soon as practicable but no later than five (5) days after release of the course result. If you don't contact the convener on time, you may be required to re-submit an assignment or re-sit the final exam and may result in you failing the course. You would also have a NC (course not completed) mark on your transcript and would need to re-enroll in the course.

7.9 Students Needing Additional Support

The Student Equity and Disabilities Unit (SEADU) aims to provide all students with support and professional advice when circumstances may prevent students from achieving a successful university education. Take a look at their webpage: www.studentequity.unsw.edu.au/

7.10 Academic Honesty and Plagiarism

8 SCHOOL ASSESSMENT COVER SHEET

Course Convenor: _____
Course Code: _____ Course Title: _____
Assignment: _____
Due Date: _____
Student Name: _____ Student ID: _____

ACADEMIC REQUIREMENTS

Before submitting this assignment, the student is advised to review:

- the assessment requirements contained in the briefing document for the assignment;
- the various matters related to assessment in the relevant Course Outline; and
- the Plagiarism and Academic Integrity website at < http:/www.lc.unsw.edu.au/plagiarism/pintro.html >