UNSW Course Outline

MINE8120 Hazard Identification, Risk and Safety Management in Mining - 2024

Published on the 24 May 2024

General Course Information

Course Code : MINE8120
Year : 2024
Term : Term 2
Teaching Period : T2C
Is a multi-term course? : No
Faculty : Faculty of Engineering
Academic Unit : School of Minerals & Energy Resources Engineering
Delivery Mode : In Person
Delivery Format : Standard
Delivery Location : Kensington
Campus : Sydney
Study Level : Postgraduate
Units of Credit : 6

Useful Links

Handbook Class Timetable

Course Details & Outcomes

Course Description

Welcome to MINE8120 Hazard Identification, Risk and Safety Management in Mining. This

course looks at the principles of risk management and risk management concepts (such as losses, hazards, risks, controls/barriers, and risk analysis and assessment techniques) primarily in mining. Risk management systems and the integration of these systems into other management processes also form a major component of this course, which makes effective use of relevant case study material.

Course Aims

The aim of this course is to provide students with an appreciation of the broad range of risks faced by a mining operation, for which a dynamic range of risk management strategies are required from feasibility, planning and design, through to normal operations. These include economic risks, geological risks, environmental risks, external factors and influences, and of course health and safety risks. The module will introduce students to the processes of hazard identification, risk assessment, and a number of risk management strategies available. In the context of mining hazards and safety related risks, the course will also review a number of generic mine safety factors and how these manifest themselves in different mining systems and methods of mining.

Course Learning Outcomes

Course Learning Outcomes
CLO1 : Demonstrate a broad awareness of the wide range of risks that affect and are involved in the mining industry, and how these risks are managed.
CLO2 : Assess the major risk assessment techniques available and in use in the industry, and conduct a simple risk assessment process.
CLO3 : Identify the core risks associated with major mining methods.
CLO4 : Recognise the generic mine safety factors and hazards that exist or have potential to exist in mining operations, and demonstrate an awareness of how these are or can be dealt with.

Course Learning Outcomes	Assessment Item
CLO1 : Demonstrate a broad awareness of the wide range of risks that affect and are involved in the mining industry, and how these risks are managed.	• Risk Assessment scoping • Mining risks in developing countries
CLO2 : Assess the major risk assessment techniques available and in use in the industry, and conduct a simple risk assessment process.	• Risk Assessment scoping • Mining risks in developing countries
CLO3 : Identify the core risks associated with major mining methods.	• Learning the lesson from the past • Risk Assessment scoping • Mining risks in developing countries
CLO4 : Recognise the generic mine safety factors and hazards that exist or have potential to exist in mining operations, and demonstrate an awareness of how these are or can be dealt with.	• Learning the lesson from the past • Mining risks in developing countries

Learning and Teaching Technologies

Moodle - Learning Management System

Assessments

Assessment Structure

Assessment Item	Weight	Relevant Dates
Risk Assessment scoping Assessment Format: Individual	20%	
Learning the lesson from the past Assessment Format: Individual	40%	
Mining risks in developing countries Assessment Format: Individual	40%	

Assessment Details

Risk Assessment scoping

Assessment Overview

Documentation of a risk assessment scope by defining various factors.

Marking will be against assessment criteria and formal feedback on the assessment task will be provided after the marking is finalised

Course Learning Outcomes

- CLO1 : Demonstrate a broad awareness of the wide range of risks that affect and are involved in the mining industry, and how these risks are managed.
- CLO2 : Assess the major risk assessment techniques available and in use in the industry, and conduct a simple risk assessment process.
- CLO3 : Identify the core risks associated with major mining methods.

Detailed Assessment Description

To be completed by each person: Documentation of a risk assessment scope by defining the:

• Background and Context

• Expected objective based on the expected deliverable

• System boundaries & potential hazards to be considered

• Risk Assessment Method – Select the right tool

• Risk Analysis Method – Select the right method

• The Team

• Time and Venue

• Results, Feedback and Taking Action

Learning the lesson from the past

Assessment Overview

Complete a report of investigation of a major mining incident.

Marking will be against assessment criteria and formal feedback on the assessment task will be provided after the marking is finalised

Course Learning Outcomes

- CLO3 : Identify the core risks associated with major mining methods.
- CLO4 : Recognise the generic mine safety factors and hazards that exist or have potential to exist in mining operations, and demonstrate an awareness of how these are or can be dealt with.

Detailed Assessment Description

Using one of the incidents below, in 2500 words or less (word count please), (roughly 10) plus diagrams, plans, photographs etc. 1. Describe the accident/incident 2. Describe the scenario/ events leading up to the incident 3. Describe the outcome or repercussions (after the accident) 4. How could the event have been avoided using risk assessment and other tools? Marks will be allocated based on your analysis of the above points.

You are allowed to select an incident from the list below: 1. Gretley 2. Northparkes airblast 3. Kinross or Vaals Reef (South Africa) 4. Sago mine West Virginia 2005 5. Chernobyl 6. Space shuttle Challenger 7. Coalbrook (SA) 8. Ensham mine flood 9. Crandall Canyon Utah 10. Pike River, NZ 11. Fukoshima 12. Samarco, Brazil

Mining risks in developing countries

Assessment Overview

Complete a report of risks of mining in developing countries.

Marking will be against assessment criteria and formal feedback on the assessment task will be provided after the marking is finalised

Course Learning Outcomes

- CLO1 : Demonstrate a broad awareness of the wide range of risks that affect and are involved in the mining industry, and how these risks are managed.
- CLO2 : Assess the major risk assessment techniques available and in use in the industry, and conduct a simple risk assessment process.
- CLO3 : Identify the core risks associated with major mining methods.
- CLO4 : Recognise the generic mine safety factors and hazards that exist or have potential to exist in mining operations, and demonstrate an awareness of how these are or can be dealt with.

Detailed Assessment Description

The maximum length of the report is 2500 words or less (word count please), (roughly 15 pages) plus diagrams, plans, photographs etc.

You have been asked by your corporate office, specifically the business development group, to provide a report for them on the potential risks in investing in or continuing to invest in a particular country. Mining is considered an important or potentially important component of the country's economy.

The report should be clear and concise. You may wish to use the themes provided in Moodle as a guide (but don't be constrained by these headings). Although the web will be a necessary source of information, please be innovative in collecting your data.

General Assessment Information

Further information about course assessments will be provided on Moodle.

Grading Basis

Standard

Course Schedule

Attendance Requirements

Students are strongly encouraged to attend all classes and review lecture recordings.

General Schedule Information

Please refer to the course Moodle page for the course schedule.

Course Resources

Recommended Resources

Please refer to Moodle course resources section

Staff Details

Position	Name	Email	Location	Phone	Availability	Equitable Learning Services Contact	Primary Contact
Convenor	Chengguo Zhang		Room 159E, OMB	93854035	by email/ Teams	No	Yes

Other Useful Information

Academic Information

I. Special consideration and supplementary assessment

If you have experienced an illness or misadventure beyond your control that will interfere with your assessment performance, you are eligible to apply for Special Consideration prior to, or within 3 working days of, submitting an assessment or sitting an exam.

Please note that UNSW has a Fit to Sit rule, which means that if you sit an exam, you are declaring yourself fit enough to do so and cannot later apply for Special Consideration.

For details of applying for Special Consideration and conditions for the award of supplementary assessment, please see the information on UNSW's Special Consideration page.

II. Administrative matters and links

All students are expected to read and be familiar with UNSW guidelines and polices. In particular, students should be familiar with the following:

- Attendance
- UNSW Email Address
- Special Consideration
- Exams
- Approved Calculators
- Academic Honesty and Plagiarism
- Equitable Learning Services

III. Equity and diversity

Those students who have a disability that requires some adjustment in their teaching or learning environment are encouraged to discuss their study needs with the course convener prior to, or at the commencement of, their course, or with the Equity Officer (Disability) in the Equitable Learning Services. Issues to be discussed may include access to materials, signers or note-takers, the provision of services and additional exam and assessment arrangements. Early notification is essential to enable any necessary adjustments to be made.

IV. Professional Outcomes and Program Design

Students are able to review the relevant professional outcomes and program designs for their streams by going to the following link: https://www.unsw.edu.au/engineering/student-life/student-resources/program-design.

Note: This course outline sets out the description of classes at the date the Course Outline is published. The nature of classes may change during the Term after the Course Outline is published. Moodle or your primary learning management system (LMS) should be consulted for the up-to-date class descriptions. If there is any inconsistency in the description of activities between the University timetable and the Course Outline/Moodle/LMS, the description in the Course Outline/Moodle/LMS applies.

Academic Honesty and Plagarism

UNSW has an ongoing commitment to fostering a culture of learning informed by academic integrity. All UNSW students have a responsibility to adhere to this principle of academic integrity. Plagiarism undermines academic integrity and is not tolerated at UNSW. *Plagiarism at UNSW is defined as using the words or ideas of others and passing them off as your own.*

Plagiarism is a type of intellectual theft. It can take many forms, from deliberate cheating to accidentally copying from a source without acknowledgement. UNSW has produced a website with a wealth of resources to support students to understand and avoid plagiarism, visit: student.unsw.edu.au/plagiarism. The Learning Centre assists students with understanding academic integrity and how not to plagiarise. They also hold workshops and can help students one-on-one.

You are also reminded that careful time management is an important part of study and one of the identified causes of plagiarism is poor time management. Students should allow sufficient

time for research, drafting and the proper referencing of sources in preparing all assessment tasks.

Repeated plagiarism (even in first year), plagiarism after first year, or serious instances, may also be investigated under the Student Misconduct Procedures. The penalties under the procedures can include a reduction in marks, failing a course or for the most serious matters (like plagiarism in an honours thesis or contract cheating) even suspension from the university. The Student Misconduct Procedures are available here:

www.gs.unsw.edu.au/policy/documents/studentmisconductprocedures.pdf

Submission of Assessment Tasks

Work submitted late without an approved extension by the course coordinator or delegated authority is subject to a late penalty of five percent (5%) of the maximum mark possible for that assessment item, per calendar day.

The late penalty is applied per calendar day (including weekends and public holidays) that the assessment is overdue. There is no pro-rata of the late penalty for submissions made part way through a day. This is for all assessments where a penalty applies.

Work submitted after five days (120 hours) will not be accepted and a mark of zero will be awarded for that assessment item.

For some assessment items, a late penalty may not be appropriate. These will be clearly indicated in the course outline, and such assessments will receive a mark of zero if not completed by the specified date. Examples include:

- Weekly online tests or laboratory work worth a small proportion of the subject mark;
- Exams, peer feedback and team evaluation surveys;
- Online quizzes where answers are released to students on completion;
- Professional assessment tasks, where the intention is to create an authentic assessment that has an absolute submission date; and,
- Pass/Fail assessment tasks.

Faculty-specific Information

Engineering Student Support Services – The Nucleus - enrolment, progression checks, clash requests, course issues or program-related queries

Engineering Industrial Training – Industrial training questions

UNSW Study Abroad – study abroad student enquiries (for inbound students)

UNSW Exchange – student exchange enquiries (for inbound students)

UNSW Future Students – potential student enquiries e.g. admissions, fees, programs, credit transfer

Phone

(+61 2) 9385 8500 – Nucleus Student Hub

(+61 2) 9385 7661 – Engineering Industrial Training

(+61 2) 9385 3179 – UNSW Study Abroad and UNSW Exchange (for inbound students)

School-specific Information

Course completion

Course completion requires submission of all assessment items. Failure to submit all assessment items may result in the award of an Unsatisfactory Failure (UF) grade for the Course unless special consideration has been submitted and approved.

Submission of Assessment Tasks

We encourage you to retain a copy of every assignment submitted for your own record, either in hardcopy or electronic form. All assessments must have an assessment cover sheet attached (if required).

Student Resources

The School has student resources section, containing useful advice and information to ensure you're able to focus on your studies.

Computing Resources and Internet Access Requirements

UNSW Minerals and Energy Resources Engineering provides blended learning using the online Moodle LMS (Learning Management System). Also see - Transitioning to Online

Learning: www.covid19studyonline.unsw.edu.au

Note that some specialist engineering software is not available for Mac computers.

- Mining Engineering Students: OMB G48
- Petroleum Engineering Students: TETB LG34 & LG35

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

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

School Contact Information

School of Minerals and Energy Resources Engineering
Old Main Building, Level 1, 159 (K15)
UNSW SYDNEY NSW 2052 AUSTRALIA

For current students, all enquiries and assistance relating to enrolment, class registration, progression checks and other administrative matters, please see The Nucleus: Student Hub.

Web & Important Links:
School of Minerals and Energy Resources
The Nucleus Student Hub
Moodle
UNSW Handbook
UNSW Timetable
Student Wellbeing
Urgent Mental Health & Support
Equitable Learning Services