



UNSW Course Outline

MINE9910 Mine Ventilation - 2024

Published on the 26 Sep 2024

General Course Information

Course Code : MINE9910

Year : 2024

Term : Term 3

Teaching Period : T3

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

This course covers basic principles of coal and metalliferous mine ventilation and underground environmental control. The emphasis is on the practical aspects of mine ventilation to ensure that learning outcomes are immediately relevant to the industry. Course topics include those common to both types of mines, such as fan performance and circuit analysis using Ventsim,

occurrence and control of gases, dust and heat together with design and management of ventilation systems. Coal mine specific hazards such as spontaneous combustion, outbursts and management of seam gas emissions are also covered. It is preferred if practical course assignments be undertaken at operating mine sites however this is not a course prerequisite. The course is an online course, which is ideal for mining professionals to take at remote mine sites.

Course Aims

The main purpose of the course material is to provide a complete educational framework for the teaching of ventilation-related topics to graduates and suitable candidates from the industry. This has been undertaken with a focus on providing knowledge, calculation methods and work examples currently employed, and pertinent to, the modern underground mining industry. The aim is that, within the limited scope of this course, the contents are both academically suitable and immediately relevant to the industry.

Course Learning Outcomes

Course Learning Outcomes
CL01 : Improve the awareness of the significance of related topics in underground mining environments
CL02 : Develop the knowledge of underpinning scientific and engineering principles for mine ventilation
CL03 : Provide competency in fundamental calculations using laws and relationships provided and decision making ability in mine ventilation design and problem solving.
CL04 : Develop essential skills in designing and managing of ventilation systems in underground mines.

Course Learning Outcomes	Assessment Item
CL01 : Improve the awareness of the significance of related topics in underground mining environments	<ul style="list-style-type: none">• Assignment 1 Module questions• Assignment 2 Ventilation Survey• Assignment 3 Ventilation Circuit Requirements
CL02 : Develop the knowledge of underpinning scientific and engineering principles for mine ventilation	<ul style="list-style-type: none">• Assignment 1 Module questions• Assignment 2 Ventilation Survey• Assignment 3 Ventilation Circuit Requirements
CL03 : Provide competency in fundamental calculations using laws and relationships provided and decision making ability in mine ventilation design and problem solving.	<ul style="list-style-type: none">• Assignment 1 Module questions• Assignment 2 Ventilation Survey• Assignment 3 Ventilation Circuit Requirements
CL04 : Develop essential skills in designing and managing of ventilation systems in underground mines.	<ul style="list-style-type: none">• Assignment 1 Module questions• Assignment 2 Ventilation Survey• Assignment 3 Ventilation Circuit Requirements

Learning and Teaching Technologies

Moodle - Learning Management System

Learning and Teaching in this course

Lecture PPT, notes, and preprints.

Assessments

Assessment Structure

Assessment Item	Weight	Relevant Dates
Assignment 1 Module questions Assessment Format: Individual	33%	
Assignment 2 Ventilation Survey Assessment Format: Individual	33%	
Assignment 3 Ventilation Circuit Requirements Assessment Format: Individual	34%	

Assessment Details

Assignment 1 Module questions

Assessment Overview

This assignment requires students to complete 7 theoretical questions regarding the course. It examines students understanding of the fundamental knowledge of mine ventilation. Work will be marked against assessment criteria. Individual written feedback will be provided online and verbal class-wide feedback during the tutorials.

Course Learning Outcomes

- CL01 : Improve the awareness of the significance of related topics in underground mining environments
- CL02 : Develop the knowledge of underpinning scientific and engineering principles for mine ventilation
- CL03 : Provide competency in fundamental calculations using laws and relationships provided and decision making ability in mine ventilation design and problem solving.
- CL04 : Develop essential skills in designing and managing of ventilation systems in underground mines.

Generative AI Permission Level

Simple Editing Assistance

In completing this assessment, you are permitted to use standard editing and referencing functions in the software you use to complete your assessment. These functions are described below. You must not use any functions that generate or paraphrase passages of text or other media, whether based on your own work or not.

If your Convenor has concerns that your submission contains passages of AI-generated text or media, you may be asked to account for your work. If you are unable to satisfactorily demonstrate your understanding of your submission you may be referred to UNSW Conduct &

Integrity Office for investigation for academic misconduct and possible penalties.

For more information on Generative AI and permitted use please see [here](#).

Assignment 2 Ventilation Survey

Assessment Overview

This assignment is intended to assess students' ability to undertake, interpret, analyse and report a mine pressure quantity ventilation survey. Work will be marked against assessment criteria. Individual written feedback will be provided online and verbal class-wide feedback during the tutorials.

Course Learning Outcomes

- CL01 : Improve the awareness of the significance of related topics in underground mining environments
- CL02 : Develop the knowledge of underpinning scientific and engineering principles for mine ventilation
- CL03 : Provide competency in fundamental calculations using laws and relationships provided and decision making ability in mine ventilation design and problem solving.
- CL04 : Develop essential skills in designing and managing of ventilation systems in underground mines.

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Assignment 3 Ventilation Circuit Requirements

Assessment Overview

This assignment is intended to assess students' ability to determine fundamental ventilation circuit requirements. At this stage, the aim is to quantify basic circuit requirements from defined volumetric capacity without being concerned with detailed internal geometry. Work will be

marked against assessment criteria. Individual written feedback will be provided online and verbal class-wide feedback during the tutorials.

Course Learning Outcomes

- CL01 : Improve the awareness of the significance of related topics in underground mining environments
- CL02 : Develop the knowledge of underpinning scientific and engineering principles for mine ventilation
- CL03 : Provide competency in fundamental calculations using laws and relationships provided and decision making ability in mine ventilation design and problem solving.
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General Assessment Information

Please refer to course convenor and Moodle for more information.

Grading Basis

Standard

Course Schedule

Teaching Week/Module	Activity Type	Content
Week 1 : 9 September - 15 September	Lecture	<p>This is a block teaching course. All lectures will be delivered in one week from Monday to Friday.</p> <p>Day 1 Monday 14/10/2024: 9 am to 4 pm Course Introduction/Assessments; Fluid Flow, Friction And Shock Losses. Lecturer: Guangyao Si</p> <p>Day 2 Tuesday 15/10/2024: 9 am to 4 pm Introduction to fans. Lecturer: Duncan Chalmers</p> <p>Day 3 Wednesday 16/10/2024: 9 am to 4 pm Morning session: Industry guest lecture: ventilation case studies. Lecturer: Bharath Belle Afternoon session: Ventilation System Monitoring & Services, Vensim software training. Lecturer: Scott Rowland</p> <p>Day 4 Thursday 17/10/2024: 9 am to 4 pm Psychrometry, Heat Transfer and Sources of Heat. Lecturer: Duncan Chalmers</p> <p>Day 5 Friday 18/10/2024: 9 am to 12 pm Gas/Dust/DPM/Sponcom/Gas reservoirs/Coal mine hazards. Lecturer: Guangyao Si</p>

Attendance Requirements

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

Course Resources

Prescribed Resources

Subsurface Ventilation Engineering Book

By Malcom J. McPherson

Free download <https://www.srk.com/en/publications/subsurface-ventilation-engineering-book-published-paper>

Staff Details

Position	Name	Email	Location	Phone	Availability	Equitable Learning Services Contact	Primary Contact
	Guangyao Si					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 policies. 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 Plagiarism

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: <https://www.student.unsw.edu.au/transitioning-online-learning>

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
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](#)