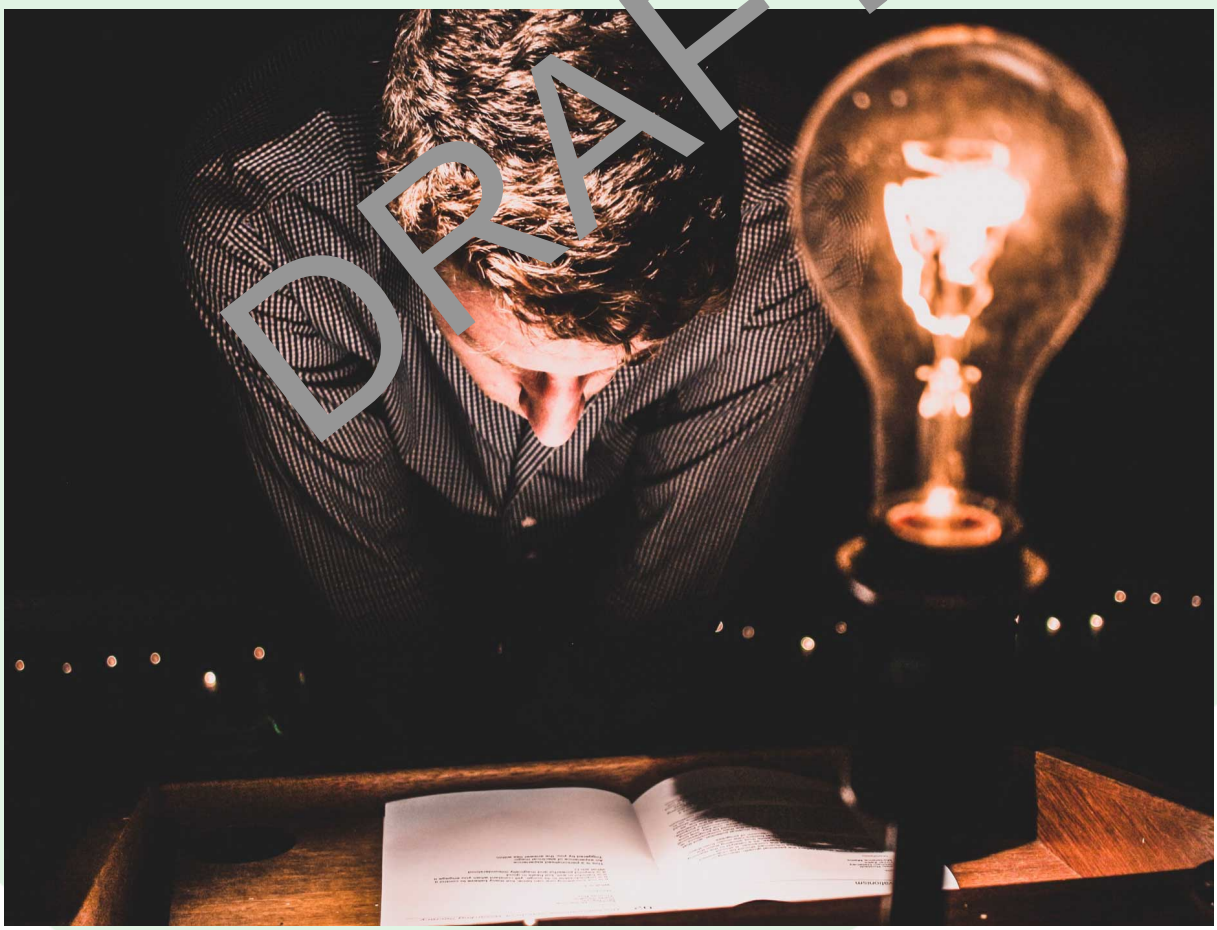
MINE3510

Mine Ventilation

Term 3, 2021



Course Overview

Staff Contact Details

Convenors

Name	Email	Availability	Location	Phone
Guangyao Si	g.si@unsw.edu.au		OMB 159B	0422645958

School Contact Information

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

Engineering Student Services
E: mere.teaching@unsw.edu.au
W: www.engineering.unsw.edu.au/minerals-energy-resources

Course Details

Units of Credit 6

Summary of the Course

This course develops the knowledge and skills in metalliferous and coal mine ventilation practice and environmental control. This course includes various aspects of subsurface ventilation engineering such as airflow and ventilation network analysis, fan selection, ventilation air contaminants, subsurface environment, mine hazards, and management plans. You will be equipped with the essential knowledge to design basic ventilation circles, characterise sources of air contaminants, and propose hazard management plans. You will develop the awareness of safety and business risks associated with mining operations and learn approaches to control the risks through effective ventilation strategies.

Course Aims

This course details the attributes, knowledge, and techniques that are required to provide a safe underground working environment through effective ventilation practice

Course Learning Outcomes

1. Describe and apply the principles of fluid flow and fan behaviour laws to ventilation systems.
2. Design a suitable mine ventilation system for various deposits.
3. Investigate environmental hazards found in mines and outline the ventilation control measures that detect, monitor, minimise and/or manage these hazards.
4. Demonstrate an awareness of the legislative requirements that may apply to the provision of ventilation in a mine.

Teaching Strategies

This course will be delivered mainly through formal lectures, active learning tutorials and practical lab sessions. Due to COVID impact, all courses will be delivered online via Microsoft Teams. Invitations with meeting links will be sent through to all students.

Assessment

Assessment task	Weight	Due Date	Course Learning Outcomes Assessed
1. Mid-Term Quiz	10%	14/10/2020 05:00 PM	1, 2, 3
2. Final Exam	40%	Not Applicable	1, 2, 3, 4
3. Laboratory experiment and Ventsim simulation Report	30%	29/10/2020 05:00 PM	1, 2, 3
4. Tutorials (to be submitted on the day in class)	20%	after each tutorial	1, 2, 3, 4

Assessment 1: Mid-Term Quiz

Start date: 14/10/2020 03:00 PM
Submission notes: scan hand-writing copy and upload to moodle
Due date: 14/10/2020 05:00 PM

Mid-term quiz to cover topics before Week 6.

Feedback provided via learning management system (LMS)

Assessment 2: Final Exam

Exam to cover the material is the course.

Feedback provided via learning management system (LMS)

Assessment 3: Laboratory experiment and Ventsim simulation Report

Due date: 29/10/2020 05:00 PM

Conduct ventilation network experiment and Ventsim simulation in lab and submit 15-20 page report.

Feedback provided via learning management system (LMS)

Lab work completed in small groups (3-4 students) undertaking multiple tasks to enable completion of assessment. Lab attendance required for assessment completion.

Assessment 4: Tutorials (to be submitted on the day in class)

Due date: after each tutorial

Students need to complete 4 tutorials and submit them on the day in class. Each one of the tutorial is weighted 5%.

Feedback provided via learning management system (LMS)

Attendance Requirements

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

Course Schedule

View class timetable

Timetable

Date	Type	Content
Week 1: 13 September - 17 September	Lecture	Course introduction/Airflow
	Lecture	Fan/Fan Laws
Week 2: 20 September - 24 September	Tutorial	Tutorial 1- Airflow and Fan
	Lecture	Ventilation Services and Network Analysis
Week 3: 27 September - 1 October	Lecture	Mine Gases/ Gas Monitoring
	Tutorial	Tutorial 2 Network
Week 4: 4 October - 8 October	Laboratory	Duct Resistance/Fan Characteristics
Week 5: 11 October - 15 October	Tut-Lab	Ventsim Training
	Tut-Lab	Tutorial 3 Gas / Mid-term quiz
Week 6: 18 October - 22 October	Tut-Lab	Flexible week-review Q&A
Week 7: 25 October - 29 October	Lecture	DPM/Dust
	Tutorial	Tutorial 4- DPM/Dust
Week 8: 1 November - 5 November	Lecture	Heat and Psychometric
	Tutorial	Tutorial 5-Heat management
Week 9: 8 November - 12 November	Lecture	Spontaneous combustion
	Lecture	Gas reservoir characteristics / Gas drainage
Week 10: 15 November - 19 November	Lecture	Coal mine practice
	Lecture	Metal mine practice

Resources

Prescribed Resources

Lecture notes, presentations, and reading material.

Recommended Resources

- Le Roux's Notes on Environmental Engineering.
- Subsurface Ventilation and Environmental Engineering, Malcolm J. McPherson, 1993

Course Evaluation and Development

At the end of each course, all students will have the opportunity to complete a course evaluation form. These anonymous surveys help us understand your views of the course, your lecturers and the course materials. We are continuously improving our courses based on student feedback, and your perspective is valuable.

Feedback is given via https://student.unsw.edu.au/myexperience and you will be notified when this is available for you to complete.

We also encourage all students to share any feedback they have any time during the course – if you have a concern, please contact us immediately.

Submission of Assessment Tasks

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.

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. Please note, a competency hurdle of 50% is applied to the final assessment.

Late Submission of an Assignment

Full marks for an assignment are only possible when an assignment is received by the due date.

We understand that at times you may not be able to submit an assignment on time, and the School will accommodate any fair and reasonable extension. We would recommend you review the UNSW Special Consideration guidelines – see section below.

Late submission will not be accepted and will be considered as no submission.

Special Consideration

You can apply for special consideration through The Nucleus Student Hub when illness or other circumstances interfere with your assessment performance. Sickness, misadventure or other circumstances beyond your control may:

- Prevent you from completing a course requirement
- Keep you from attending an assessable activity
- Stop you submitting assessable work for a course
- Significantly affect your performance in assessable work, be it a formal end-of-semester examination, a class test, a laboratory test, a seminar presentation or any other form of assessment

We ask that you please contact the Course Convenor immediately once you have completed the special consideration application, no later than one week from submission.

More details on special consideration can be found at: www.student.unsw.edu.au/special-consideration

Student Support

The University and the Faculty provide a wide range of support services for students, including:

- Library training and support services - www.library.unsw.edu.au

- UNSW Learning Centre - www.lc.unsw.edu.au
- Counselling support - www.counselling.unsw.edu.au

Equitable Learning Services aims to provide all students with a free and confidential service that provides practical support to ensure that your health condition doesn't adversely affect your studies. https://student.unsw.edu.au/els

Academic Honesty and Plagiarism

Your lecturer and the University will expect your submitted assignments are truly your own work. UNSW has very clear guidelines on what plagiarism is and how to avoid it. Plagiarism is using the words or ideas of others and presenting them 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. The University has adopted an educative approach to plagiarism and has developed a range of resources to support students. All the details on plagiarism, including some useful resources, can be found at www.student.unsw.edu.au/plagiarism.

All Mining Engineering students are required to complete a student declaration for academic integrity which is outlined in the assignment cover sheets. By signing this declaration, you agree that your work is your own original work.

If you need some additional support with your writing skills, please contact the Learning Centre or view some of the resources on their website: www.lc.unsw.edu.au. The Learning Centre is designed to help you improve your academic writing and communication skills. Some students use the Centre services because they are finding their assignments a challenge, others because they want to improve an already successful academic performance.

Academic Information

Course Results

For details on UNSW assessment policy, please visit: www.student.unsw.edu.au/assessment

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:

- LE – indicates you have not completed one or more items of assessment; or
- WD – indicates 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.

Studying a course in the School of Minerals and Energy Resources Engineering at UNSW

Report writing guide

The School has a Report Writing Guide (RWG) available. A copy of this is available on the course Moodle site.

Computing Resources and Internet Access Requirements

UNSW Minerals and Energy Resources Engineering provides blended learning using the on-line Moodle LMS (Learning Management System). Also see - Transitioning to Online Learning: www.covid19studyonline.unsw.edu.au

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
- Petroleum Engineering Students: TETB LG34 & LG 35

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

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

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 instructions on how to redirect your UNSW emails: "How can I forward my emails to another account?"

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 should be directed to the Course Convenor

Image Credit

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Acknowledgement of Country

We acknowledge the Bedegal people who are the traditional custodians of the lands on which UNSW Kensington campus is located.