Faculty of Engineering

School of Minerals and Energy Resources Engineering

Postgraduate Course Outline

MINE5046

Graduate Diploma in Mine Ventilation

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Senior Lecturer **Guangyao Si**

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1. INFORMATION ABOUT THE COURSE

<table>
<tr><td>Course Code:</td><td>MINE5046</td><td>Term:</td><td>T1/2/3, 2021</td><td>Level:</td><td>PG</td><td>Units/Credits</td><td>24 UOC</td></tr>
<tr><td>Course Name: Term 1</td><td colspan="7">MNNG*/MINE9901 Ventilation and Mine Services
MNNG*/MINE9902 Environmental Contaminants
MNNG/MINE9903 Heat in Underground Mines</td></tr>
<tr><td>Course Name: Term 2</td><td colspan="7">MNNG/MINE9904 Ventilation System Management
MNNG/MINE9905 Coal Mine Hazards and Control
MNNG/MINE9920 Spontaneous Combustion and Reactive Ground</td></tr>
<tr><td>Course Name: Term 3</td><td colspan="7">MNNG/MINE9921 Mine Ventilation Legislation
MNNG/MINE9922 Mine Ventilation Practices</td></tr>
<tr><td>Course Convenor:</td><td colspan="7">Duncan Chalmers;</td></tr>
<tr><td rowspan="2">Contact Details</td><td colspan="3" rowspan="2">School of Minerals and Energy Resources Engineering OMB 159B</td><td>EMAIL:</td><td colspan="3">d.chalmers@unsw.edu.au,
r.moreby@unsw.edu.au
g.si@unsw.edu.au</td></tr>
<tr><td>Phone</td><td colspan="3">+61 2 9385 5727</td></tr>
<tr><td>Contact times</td><td colspan="7">Contact times are scheduled for:
Introductory Tutorial: 1st to 5th Mar 2021
Second Tutorial: 31st May to 4th June 2021
Third Tutorial: 11th to 15th Oct 2021
Final Exams: 17th to 19th Nov 2021 (To be confirmed)

The course will be running in hybrid mode.
Face-2-face students: the lecture room is G51, K15 Old Main Building, UNSW. It is strongly recommended for all students to attend face-2-face lectures.

Online students: In case if you cannot travel to UNSW to attend the lectures in-person, all the lectures will be streamed (and recorded) via Microsoft Teams. You need to use your UNSW account (zid@ad.unsw.edu.au) to log-in Teams. The Link to online lectures will be sent through calendar invite. We will use the same Link for all our lectures, which has also been provided below. All lecture recordings will be available on Moodle as well.</td></tr>
<tr><td>Online lecture access</td><td colspan="7">Microsoft Teams meeting
Join on your computer or mobile app
Click here to join the meeting
Join with a video conferencing device
teams@vtc.unsw.edu.au
Video Conference ID: 134 490 194 1
Alternate VTC dialing instructions
Or call in (audio only)
+61 2 8318 0024,,243922184# Australia, Sydney
Phone Conference ID: 243 922 184#
Find a local number | Reset PIN</td></tr>
</table>

1.1. Course Description

This program will focus on the essential interaction between the disciplines of mining and ventilation engineering to provide the basis of safe operation of mines, the need to maintain production and the need to control costs. In this context, a major task of the Ventilation officer/ practitioner is to be thoroughly grounded in the underpinning principles of fluid flow and network analysis.

This course will enable students to gain knowledge and skills needed for effective communication between mine management and technical services.

There is a face to face tutorial class at the campus or at a specified location. This tutorial is shared across other courses within the Graduate Diploma of Mine Ventilation Program. It is recommended that approximately 150 hours is required for satisfactory performance per course, depending on background and experience. It is the students' responsibility to manage and plan workloads as much as possible to enable a minimum of 8 hours per week, plus time for assessments. Some weeks may require 20 to 50 hours.

1.2. Program Completion

Graduate Diploma in Mine Ventilation Program and Statutory Mine Ventilation Officer' (Non Award) Program completion requires completion of assessments identified in section 5.1 of this outline.

Failure to submit all assessment items will result in the award of an Unsatisfactory Failure (UF) grade for the Course for which the Assignment relates.

The underground practical also applies to Graduate Diploma students wishing to gain the Ventilation Officer qualification.

1.3. Assumed Background Knowledge

This Program assumes a student has knowledge of:

- Basic mining and geological terms and descriptions;
- 2 years, or equivalent, underground coal mine experience for the Statutory Mine Ventilation Officer (Non award) course
- As this is a technical course in a postgraduate program, a fundamental understanding of mathematics and physics is required.

2. AIMS, LEARNING OUTCOMES AND GRADUATE ATTRIBUTES

2.1. Course Aims

This course aims to provide mine ventilation practitioners/ mine managers and mining engineers a thorough knowledge of the fundamental principles of mine ventilation. The essential interaction between the ongoing mining operations and the role of ventilation in providing a safe underground environment.

2.2. Learning Outcomes

Learning outcomes are contained within the learning guide that is available on the CD provided and on Moodle.

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
5. having HSEC consciousness
6. being active life-long learners.

3. REFERENCE RESOURCES

3.1. Recommended Textbooks

- Mine Ventilation and Air Conditioning (Grad Dip only)
- Subsurface Ventilation And Environmental Engineering
- Le Roux's Notes on Environmental Engineering.
- Mine Fires In Australian Underground Coal Mines
- Spontaneous Combustion In Australian Underground Mines

3.2. Other Resources

- Report Writing Guide for Mining Engineers, 2011. P Hagan & P Mort Mining Education Australia (MEA).
- 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
- ELISE, the on-line study skills tutorial and ELISE Plus. Both tutorials will be useful to students when preparing the Annotated Bibliography and Project Progress Report assignment submissions. The latter in particular includes a tutorial on EndNote and Refworks. The tutorials can be accessed at < http://info.library.unsw.edu.au/skills/tutorials.html >.

3.3. Online Resources

- Course resources, other relevant papers and reference texts will be made available on LTMS.
- 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
- New postgraduate course students are strongly advised to visit the above website, and
    - complete the ELISE and ELISE Plus tutorials. These will help develop skills in finding, using and evaluating scholarly information.

3.4. Software and Hardware (if required for the course)

- Ventsim Design (Previous known as Ventsim Visual)
- MS Office or similar

3.4.1 Ventsim Proficiency

It is recommended that students not proficient in Ventsim undertake the following preparatory work;

1. View the tutorials at www.ventsim.com/resources/tutorials/
2. Obtain a site licence for Ventsim or at least download an up to date version of Ventsim so that they can view files.
3. Review contents of the Ventsim manual included in the download. In particular creating a network and assigning attributes to airways.

3.4.2 Microsoft Office Proficiency

It is recommended that students not proficient in Microsoft Office (Word and Excel in particular) use the following free online tutorials to improve their skills.

Excel @ https://support.office.com/en-us/article/excel-for-windows-training-9bc05390-e94c-46af-a5b3-d7c22f6990bb

Word @ https://support.office.com/en-us/article/word-for-windows-training-7bcd85e6-2c3d-4c3c-a2a5-5ed8847eae73

PowerPoint @ https://support.office.com/en-us/article/powerpoint-for-windows-training-40e8c930-cb0b-40d8-82c4-bd53d3398787

This course only requires basic skills and does not require development of spreadsheets. However, use of Word and Excel is required to answer assessment questions. These are skills that will be required to perform the function of a ventilation officer in any event.

4. PROGRAM CONTENT AND LEARNING ACTIVITIES

4.1. Learning Activities Summary

The Program consists of 8 Courses, topics from those courses are covered in the scheduled learning summary. Assignments to be submitted by students (GDMV-Metal, GDMV-Coal and VO) are identified in the table under section 5.1 of this outline

UNSW Week	Week Starting	Content/activities	Presenter
T1/W3	**1 March**	**Directed learning** **Fluid Flow, Fans, Networks, Heat** **Preliminary mine ventilation circuits** **Heat and heat stress management**	**Roy Moreby** **Duncan Chalmers** **John Rowland (guest)**
T1/W10	19 April	Final deadline for assignments 1b, 3	
T1/W14	17 May	Final deadline for assignments 1a	
T2/W1	**31 May**	**Directed learning** **Gases** **Coal Mine Hazards** **Spontaneous Combustion and Reactive ground**	**Roy Moreby** **Duncan Chalmers** **Basil Beamish (guest)**
T2/W12	16 Aug	Final deadline for assignment 2	
T3/W5	**11 Oct**	**Directed learning** **Ventilation practice** **Respirable and flammable dust,** **Mine Legislation**	**Roy Moreby** **Duncan Chalmers** **Mark Parcel (guest)**
T3/W10	15 Nov	Final deadline for assignments 3.1, 4, and 5	
T3/W10	**17 Nov**	**Final Exam**	**Duncan Chalmers**
		Practical sessions - TBA	Duncan Chalmers

Total student effort hours: Approx. 150hrs per Course

(Note: The above indication of "student effort hours" is indicative only – It reflects the anticipated level of total student involvement with the course – either through accessing or participating in online materials and activities; private research; preparation of assignments. Individual students may find their level of involvement differs from this schedule.

5. COURSE ASSESSMENT

5.1. Assessment Summary

Assessment of the research project is based on the submissions made at various project milestones over the course of the year. Specific details of the requirements of the project milestones related to each item of assessment are contained in the Learning Guide: Mining Research Project.

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

Assessment Methods		GDMV Metal	GDMV Coal	VO Coal	Terms	Due Date
Assignments	Content					
1A	Ventilation Survey	Yes	Yes	Yes	1	17 May
1B	Ventilation Circuits (Coal or Metal)	Yes	Yes	Yes	1	19 Apr
2	Gas Monitoring	Yes	Yes	Yes	2	16 Aug
3	Heat	Yes	Yes	No	1	19 Apr
3.1	Refrigeration	Yes	No	No	3	15 Nov
4	Ventilation Management	Yes	Yes	Yes	3	15 Nov
5	Hazards and Vent Design (Coal or Metal)	Yes	Yes	Yes	3	15 Nov
6	Ventilation Officer Site Work	No	No	Yes		TBA
Other assessment						
	Legislation questions (class session)	Yes	Yes	Yes	3	W/S 11 Oct
	Final Exam	Yes	Yes	Yes	3	W/S 17-19 Nov
	Underground practical Exam	No	No	Yes		TBA

All the course materials and assignments will be available online through Moodle. Access to the Moodle site is via the Moodle icon on the MyUNSW homepage, or at https://moodle.telt.unsw.edu.au

5.2. Assessment Requirements (If relevant)

Who

- ***All assessment items must be submitted to the assigned Dropbox on Moodle.***

When

- If not otherwise stated, **the default deadline for submission of an assignment is 12:00am on Monday in the nominated week**. If the Monday coincides with a Public Holiday then the due date is the next business day in the nominated week.
- Prior to submission, students should read the School Policy on *Assignment Submissions* which can be viewed at: < www.mining.unsw.edu.au/information-about/our-school/policies-procedures-guidelines >.
- In particular, the student should make sure they have read and understood the:
- Declaration of Academic Integrity;
- Assignment Submission requirements detailed in the *University Policies* section of the Course

Outline; and

- School Policy on *Assignment Submission* 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.
  o Turnitin is a plagiarism checking service that will retain a copy of the assessment item on its database for the purpose of future plagiarism checking.
- For more guidance on Turnitin: https://student.unsw.edu.au/turnitin

What

- The submission must be:
  o a single document in PDF format; and
  o prepared in the form of a formal report that includes a list of reference sources cited in the report, prepared in accordance with the report writing standards of the School as contained in the ***MEA Report Writing Guide for Mining Engineers***. A copy can be obtained from the UNSW Bookshop or downloaded from the School webpage.
- Each submission must have appended:
  o to the front, a signed copy of the Student Declaration Form and Coversheet; and
  o to the end, a completed self-assessed copy of the Assessment Criteria.

Copies of both documents are available for download from LTMS.

- It is **strongly recommended** when preparing the major assignment; students use the ***Report Template*** available from LTMS. Note: as this template already incorporates the required the Student Declaration Form, a student does not need to separately append a signed copy of coversheet to their assignment.

How

- The submitted document must be consistent with the following file naming convention:
  < FamilyNameInitials_CourseCode_AssignmentNumber.pdf >.
- A typical complaint filename would take the following form < SmithPD_MIN5046_A1a.pdf > which elements correspond to:
  o File format: PDF document

5.3. Penalties for Non-Compliant Submission (If relevant)

A submission that is non-compliant with the School Policy on *Assignment Submission* and/or requirements as contained in this Course Outline may not be marked and/or penalty marks subtracted from the assignment mark for non-compliance.
Some examples of a non-compliant assignment include that the assignment submission:

- is not a single PDF document. *Penalty for non-compliance:* assignment not marked.
- does not contain a signed copy of the *Student Declaration Statement*. *Penalty for non-compliance:* assignment not marked.
- is not fully consistent with the designated file naming convention as listed above and defined as Item #6 in the School Policy on electronic submission. For example, a file name such as
- <Assignment 1a.pdf > is NOT compliant. *Penalty for non-compliance:* 10 marks.
- does not have appended at the end of the assignment a completed self-assessment by the

student of the assignment using the official *Assessment Criteria* template. *Penalty for non-compliance:* 10 marks.

5.4. Assignment Attachments (If relevant)

Each assignment submitted for assessment must be attached with:

- an official School Coversheet at the front of the assignment; and
- Any Simulation files, and excel spreadsheets, plans that support the assignment.

6. STUDYING A PG COURSE IN UNSW MINERALS AND ENERGY RESOURCES ENGINEERING

6.1. 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

6.2. 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.

6.3. 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

6.4. 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

6.5. 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 a assessment cover sheet attached.

6.6. Late Submission of an Assignment

Full marks for an assignment are only possible when an assignment is received by the due date. In fairness to those students who do meet the assignment due date and time, deductions will apply to submissions made after this time. Details on deductions that are automatically applied to late submissions are available on our webpage: http://www.engineering.unsw.edu.au/mining-engineering/late-submissions

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 as soon as possible: https://student.unsw.edu.au/special-consideration

6.7. Unsatisfactory and/ or Non-completion of course

A student who has not satisfactorily completed all the requirements of 5046 will not be awarded a Graduate Diploma nor will they be eligible to be assessed for the Statutory Ventilation Officer's Certificate.

Similarly for students who have not satisfactorily completed all the requirements the Non Award

Courses (Statutory Ventilation Officer's Course).

Aspects of the Course require the candidate demonstrates that he/she meets requirements of the competency standard. For a Ventilation Officer, the requirement is an overall pass mark of 70% with

a pass mark of 100% in those matters that pertained to the Competency Standard.

6.8. 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:

- 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.

6.9. Special Consideration

You can apply for special consideration through UNSW Student Central 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.

6.10. 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/

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.

6.11. 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.

6.12. Continual Course Improvement

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.

7. SCHOOL ASSESSMENT COVER SHEET

School of Minerals and Energy Resources Engineering

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 > to ensure they are familiar with the requirements to provide appropriate acknowledgement of source materials.

If after reviewing this material there is any doubt about assessment requirements, then in the first instance the student should consult with the Course Convenor and then if necessary with the Director – Undergraduate Studies.

While students are generally encouraged to work with other students to enhance learning, all assignments submitted for assessment must be their entire own work and duly acknowledge the use of other person's work or material. The student may be required to explain any or all parts of the assignment to the Course Convenor or other authorised persons. *Plagiarism* is using the work of others in whole or part without appropriate acknowledgement within the assignment in the required form. *Collusion* is where another person(s) assists in the preparation of a student's assignment without the consent or knowledge of the Course Convenor.

Plagiarism and *Collusion* are considered as Academic Misconduct and will be dealt with according to University Policy.

STUDENT DECLARATION OF ACADEMIC INTEGRITY

I declare that:

- This assessment item is entirely my own original work, except where I have acknowledged use of source material [such as books, journal articles, other published material, the Internet, and the work of other student/s or any other person/s].
- This assessment item has not been submitted for assessment for academic credit in this, or any other course, at UNSW or elsewhere.

I understand that:

- The assessor of this assessment item may, for the purpose of assessing this item, reproduce this assessment item and provide a copy to another member of the University.
- The assessor may communicate a copy of this assessment item to a plagiarism checking service (which may then retain a copy of the assessment item on its database for the purpose of future plagiarism checking).

Student Signature: Date:

Students are advised to retain a copy of this assessment for their records and submission should be made in accordance to the assessment details available on the course Moodle site.