



Faculty of Engineering

School of Minerals and Energy Resources Engineering

Undergraduate Course Outline

Coal Geology Component of
MINE2810 Minerals and Processing &
GEOS3141 Minerals and Energy Resources

Mr Jonathan Barber

T3 2021

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1. INFORMATION ABOUT THE COURSE

Course Code:	GEOS3141	Term:	T3, 2021	Level:	UG	Units/Credits	6 UOC
Course Name:	Coal Geology component of GEOS3141						

Course Convenor:	Mr Jonathan (Jon) Barber						
Contact Details	School of Minerals and Energy Resources Engineering	EMAIL:	j.barber@unsw.edu.au				
		Phone:	+61 412163460				
Contact times	Lecture time schedule Week 5 Both Lectures will be online via Moodle. An optional Collaborate session will be held in lecture period						

1.1. Course Description

Introduction to coal geology, coal formation, coal exploration, coal testing, coal mining and coal beneficiation or processing prior to sale and finally the industrial areas of coal utilisation.

1.2. Course Completion

Course completion requires submission of one assignment and submission of the coal components of the final exam. A weighted of 50%, for the assignment and exam, will be required to complete this component. Failure to submit all assessment items can result in the award of an Unsatisfactory Failure (UF) grade for the Course.

1.3. Assumed Knowledge

Prerequisite: None

1.4. Attendance

Lectures will be online and there is as such no attendance list process. A least two Moodle Collaborate workshops will be held to answer questions on the assignment and lecture material.

2. AIMS, LEARNING OUTCOMES AND GRADUATE ATTRIBUTES

2.1. Course Aims

The aim of this course is to provide an understanding of the geology of coal formation. Understanding this formation process will give you an insight into the different types of coal and their different industrial applications.

2.2. Learning Outcomes

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

1. Understand how and where coal was formed and how it transitioned from a wet swamp environment to a dry high carbon content fuel.
2. Understand how different vegetation, swamp conditions and burial processes lead to different final coal types with different industrial applications.

3. Understand the different exploration methods applied in coal exploration.
4. Understand the different types of laboratory tests applied to test the chemical and physical properties of the explored coal.
5. Understand how mined coal may be improved or beneficiated, called washing in coal, to meet a particular market requirement.

3. REFERENCE RESOURCES

3.1. Reference Materials

Support material for this course including, whenever available, copies of lecture notes, recommended readings, etc. can be found on Moodle. The lecture notes may be viewed and downloaded from the UNSW-Moodle.

3.2. Recommended Resources

Followings are the recommended books for this course.

- *Coal Geology*, Thomas, L (2002).
- *Coal Geology & Coal Technology*, Ward, C (1984) on Moodle
- *Applied Coal Petrology*. Suarez-Ruiz, I & Crelling, J 2008.
- *Geology Australian Coal Basins* Geological Society.
- *Handbook of Coal Analysis*. Speight, J. 2005. P662.622/48

3.3. Online Resources

There are numerous articles / information sources on coal geology on the web.

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.

4. COURSE CONTENT AND LEARNING ACTIVITIES

4.1. Course content

1. Introduction to coal geology
2. Coal formation & coal progression from peat to anthracite
3. Coal properties – chemical & physical and laboratory test methods.
4. Introduction to coal mining & processing
5. Coal exploration
6. Coal utilisation in steel making and electricity generation

4.2. Learning Activities Summary

UNSW Week	Activity	Content	Presenter (optional)
5 21 th October	Lecture + In class activity	<ul style="list-style-type: none"> • Course introduction • Coal formation • Coal analysis both chemical & physical • Coal analysis exercise in class. A calculator or laptop will be required for this exercise. 	Jon Barber
5 22 th October	Lecture + In class activity	<ul style="list-style-type: none"> • Coal exploration. Mainly drilling & down hole geophysics • Coal mining introduction • Coal usage in steel & electricity • Coal correlation exercise in class 	Jon Barber

Exam: End of term date & time to be confirmed (Exam is taken by MINE2810 students only)

5. COURSE ASSESSMENT

5.1. Assessment Summary

Assessment task	Due date / week	Weight	Assessment	Learning outcomes assessed
Assignment	11pm on 10 th November	5%	<p>Individual student assignment.</p> <p>Assignment available on Moodle. Submission will be via Moodle drop box</p>	3 & 4 & 5
Theory Exam	Week 7 date to be confirmed	25%	<p>Questions on coal in Mine2810 end of term theory exam. The exam mark weight of 25% covers the ORE and Coal questions.</p>	1 to 5

The full split of marks between the geology and the mineral processing components is shown on Moodle MINE2810 under Course Outline.

6. ASSESSMENT CRITERIA

The assignment will require some report writing, some mathematical calculations and some diagrammatic presentations.

- For written portions a logical hypothesis and methodology needs to be presented.

- For the mathematical sections the final answer is important, however students need to show the process used to arrive at that final answer. Students showing the correct final answer without showing the working material will not score full marks.
- For any graphical or sketched submissions, the presentation should be technically correct. However, the presentation must also be neat and tidy, such that it could be shown to a company board to justify coal exploration funding.

6.1 In-class activities

Due to COVID restrictions there will be no face-to-face class time

7. STUDYING A UG COURSE IN UNSW MINERALS AND ENERGY RESOURCES ENGINEERING

7.1. How We Contact You

At times, the School or your course conveners may need to contact you about your course or your enrolment. Your course conveners 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

Course inquiries should be directed to the Course Convenor.

7.3. Computing Resources and Internet Access Requirements

UNSW Minerals and Energy Resources Engineering & BEES 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.

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. Please use the BEES Assessment Cover Sheet. This is available at the BEES Student office or:

<https://www.bees.unsw.edu.au/sites/default/files/Assessment%20Cover%20Sheet%202014.pdf>

7.6. 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 following section.

In the case of the Project Progress Report, penalty marks will be applied at the following rate if submitted after the due date: five (5) percentile points of the maximum possible mark for each day or part thereof that the assessment is overdue.

For example if a student submitted the Project Progress Report five days after the due date and the unadjusted mark was 68% then the final adjustment mark for the assignment would be 43%; that is the raw mark of 68% less 25 percentile points (5 days @ 5 percentile points per day).

7.7. 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.

We ask that you please contact the Course Convener 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

7.8. 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.

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

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 & BEES 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: <http://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.

7.11. 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.