Faculty of Engineering

School of Minerals and Energy Resources Engineering

Course Outline

MINE 8680

Geotechnical Data Collection and Analysis

Dr Hamed Lamei Ramandi

CONTENTS

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1 INFORMATION ABOUT THE COURSE

Course Code:	MINE8680	Semester:	T2, 2020	Level:	PG	Units/Credits	6 UOC
Course Name:	**Geotechnical Data Collection and Analysis**						

Course Convenor:	***Dr Hamed Lamei Ramandi***		
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Contact times	By appointment		

1.1 Course Description

The course is designed to cover a broad range of geotechnical data from instrumentation, testing and rock mass characterisation including stress measurement data. Emphasis is placed on data interpretation and the role of statistics in geomechanics for design, study and operational management. Throughout the course, practical examples of the use and misuse of data, including empirical databases will be emphasised to demonstrate the importance of understanding data before its application in design and numerical modelling. Assessment in the course will consist of a series of assignments outside lectures and an in-class examination for proof of practical competence and understanding in all of the above areas. The course content will include the following components:

1. Instrumentation in geotechnical engineering
2. Statistics for scientists and engineers
3. Data collection and interpretation for rock mass characterisation and classification
4. Data collection practices in coal mines
5. Remote monitoring applications: Pit slope monitoring
6. Empirical design databases
7. Seismic and microseismic data acquisition, processing and applications
8. Data interpretation
9. Geomechanics data uncertainty and management

How much time is required?

This course is worth 6 UOC. It will be presented in a block mode. It is recommended that approximately 150 hours is required for this course, for satisfactory performance in this program, 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.

1.2 Course Completion

Course completion requires:

- submission of **all assessment items**; failure to submit all assessment items will result in the award of an Unsatisfactory Failure (UF) grade for the Course.

1.3 Assumed Knowledge

This course assumes that a student:

- has completed MINE8140 Mining Geomechanics or equivalent. Consideration will be given to candidates with significant underground mining experience for which case permission should be sought.; and
- has a sound knowledge of mining terms and systems and has had previous exposure to mining operations through industry employment and/or field trips.

2 AIMS, LEARNING OUTCOMES AND GRADUATE ATTRIBUTES

2.1 Course Aims

This course aims to equip the student with the importance of instrumentation and monitoring, the importance of understanding empirical databases in geotechnical design and the benefits and limitations of statistics in geoengineering. Use of sound engineering judgement and critical thinking in geomechanics is emphasised.

2.2 Learning Outcomes

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

1. Understand the importance of data in geo-engineering as input in numerical models and for their validation,
2. Understand the importance of data in the development of empirical design procedures and as a means of monitoring design performance.
3. Understand the difference between theoretical statistics and its pitfalls in geomechanics when used without sound engineering judgement.
4. Scientifically handle data taking into account recommendations by the International Society for Rock Mechanics, e.g. Is averages of numbers always representative of data?
5. Why it will sometimes not make engineering sense to quote values with so much precision in geomechanics
6. Understand the use and benefits of remote sensing and photogrammetry in geotechnical engineering.

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 assessment skills with the ability to tolerate ambiguity
3. ability for engineering design and creativity
4. awareness of opportunities to add value through engineering and the need for continuous improvement
5. being able to work and communicate effectively across discipline boundaries
6. having HSEC consciousness
7. being active life-long learners.

3 REFERENCE RESOURCES

3.1 Reference Materials

1. MEA Report Writing Guide for Mining Engineers. P Hagan and P Mort (Mining Education Australia (MEA)). (Latest edition available for download from the School website or a hardcopy version is available from the UNSW Bookshop)
2. Guide to Authors. (Australasian Institute of Mining and Metallurgy: Melbourne) (Available for download from the AusIMM website)
3. Harr, M.E. 1987. *Reliability-based design in civil engineering*. New York: McGraw-Hill.
4. Pine. R.J. 1992. Risk analysis design applications in mining geomechanics. *Trans. Instn Min. Metall. (Sect.A)* 101, pp. 149-158.
5. Rosenbleuth, E. 1981. Two-point estimates in probabilities. *J. Appl. Math. Modelling* 5, pp. 329-335.
6. Hadjigeorgiou, J. 2012. Where do the data come from? *Trans. Instn Min. Metall. (Sect.A) Mining Technology*, Vol. 121(4), pp. 236 – 247.

7. Suorineni, F.T., Kaiser, P.K. and Tannant, D.D. 2001. Likelihood statistic for interpretation of the stability graph for open stope design. *International Journal of Rock Mechanics & Mining Sciences* 38, pp. 735–744.)
8. Suorineni, F.T. 2010. The stability graph after three decades in use: Experiences and the way forward. *International Journal of Mining, Reclamation and Environment*, Vol. 24, No. 4, pp. 307–339.
9. Baecher, G. B. and Christian, J. T. 2005. Reliability and Statistics in Geotechnical Engineering. John Wiley & Sons, Ltd., 619 p.
1. Wiles, T. 2006. Reliability of numerical modelling predictions. *International Journal of Rock Mechanics & Mining Sciences* 43, 454–472.
2. William, N. 2010. *Statistics for engineers and scientists*. 3rd Edition, McGraw-Hill Science, 928 p.
3. Hudyma, M.R., Frenette, P. and Leslie, I. 2010. Monitoring open stope caving at Goldex Mine. *Trans. Instn Min. Metall. (Sect.A) Mining Technology*, VOL 119 NO 3, pp. 142 – 150.
4. Potvin, Y., Jarufe. J. and Wesseloo, J. 2010. Interpretation of seismic data and numerical modelling of fault reactivation at El Teniente, Reservas Norte sector. *Trans. Instn Min. Metall. (Sect.A) Mining Technology*, VOL 119 NO 3, pp. 175 – 181.
5. Kaiser, Pk., Vasak, P., Suorineni, F.T. and Thibodeau, D. 2006. New dimensions in seismic data interpretation with 3D virtual reality visualisation for burst-prone mines. Keynote Address, RAiSM6.
6. Trifu, C. and Suorineni, F.T. 2010. Use of microseismic monitoring for rockburst management at Vale Inco Mines. *In Controlling Seismic Hazard and Sustainable Development of Deep Mines*, C. Tang (ed.), 1105-1114, Rinton Press, New York.
7. Hoek, E. 1998. Reliability of Hoek-Brown Estimates of Rock Mass Properties and their Impact on Design. Technical Note, *In. J. Rock Mech. Min. Sci.* Vol. 35, No I, pp. 63-68.
8. Hoek, E. 1999. Putting numbers to geology – an engineer's viewpoint. *Quarterly Journal of Engineering Geology*, Vol. 32, No. 1, pp. 1 – 19.

3.2 Other Resources (if applicable)

- *Report Writing Guide for Mining Engineers,* 2011. P Hagan & P Mort (Mining Education Australia (MEA) ISBN 978 0 7334 3032 9. Available on-line on course homepage.

3.3 Online Resources

Selected readings as well as other supporting material (e.g. course outline and lecture notes will be made available on Moodle.

4 COURSE CONTENT AND LEARNING ACTIVITIES

4.1 Course content

1. Describing Data
2. Modelling data
3. Visualising Data
4. Analysing Data
5. Objectives of seismic monitoring in mines
6. Basics of mine seismology
7. Seismic monitoring technologies
8. Interpretation of seismic monitoring data
9. Applications of seismic monitoring and
10. What can go wrong in seismic monitoring
11. What to collect and how for rock mass characterisation
12. Data collection practices in coal mines
13. Fundamentals of use of drones, satellites and photogrammetry
14. Tunneling Quality Index (Q) and Rock mass Rating System
15. Geological Strength Index (GSI)
16. Hard rock pillar design
17. Source of stress in ground and management of stress
18. Digital rock analyses
19. Pit slope monitoring
20. Why Monitor
21. Selection and installation of monitoring systems

4.2 Learning Activities Summary

Presentations and reading material are provided to provide students with technical information on the various topics covered in the course. Such materials will be placed under the various topics covered in Moodle.

Discussions will be used to encourage students to articulate and defend positions, consider different points of view and evaluate evidence. Case studies will be used to provide practice in identifying potential problems and evaluating alternative course of actions based on sound engineering principles and judgement.

UNSW Days	Day	Hrs.	Topic	Content/Activities	Presenter
1	20 July	8	Statistics for scientists and Engineers	Describing Data	G. Bournival
				Modelling data	
				Visualising Data	
				Analysing Data	
2	21 July	8	Data collection in coal and hard rock mines for rock mass characterisation	What to collect and how for rock mass characterisation	H. Ramandi
				Data collection practices in coal mines	I. Canbulat
				Smart Sensing Technology for Geotechnical Data Collection	S. Raval
				Tunnelling Quality Index (Q), Rock Mass Rating system (RMR) and Geological Strength Index (GSI)	H.Ramandi
				Hard rock pillar design	C. Zhang
3	22 July	8	Seismicity in mines	Objectives of seismic monitoring in mines	Denver Birch
				Basics of mine seismology	
				Seismic monitoring technologies	Stephen Meyer
				Interpretation of seismic monitoring data	
				Applications of seismic monitoring	Dmitriy Malovichko
				What can go wrong in seismic monitoring	
4	23 July	8	Slope monitoring, sources of stress, dynamic failures in coal mines and digital rock analyses	Pit slope monitoring	A. McQuillan
				Source of stress in ground and management of stress	I. Canbulat
				Dynamic failures in coal mine	
				Digital rock analyses	H. Ramandi
5	24 July	8	Monitoring	Why Monitor?	M. Zoorabadi
				Selection and installation of monitoring systems including SMART support systems - Underground monitoring	

Total student effort hours: Approx. 150

(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 study; preparation of assignments. Individual students may find their level of involvement differs from this schedule.

Other UNSW Key dates: https://student.unsw.edu.au/new-calendar-dates

5 COURSE ASSESSMENT

5.1 Assessment Summary

The range of assessment tasks have been designed to ensure a student can demonstrate they have satisfactorily attained the minimum requirements of the course as defined in the *Learning Outcomes* of the course and *Graduate Attributes* of the program. The student is also advised to review the relevant *Assessment Criteria* before completing each of the assessment items.

Item No.	*Assessment*	*Due Date*	*Weighting*	*Learning outcomes*
A01	**Individual report** – instrumentation and data analysis for mine design	4 Aug 23:55	30%	1,2,3,6
A02	**Individual report** – seismic monitoring and data analysis	18 Aug 23:55	40%	4,5
A03	**Individual report** – rock characterisation	25 Aug 23:55	30%	1,2,3,5

You will need to bring a notebook computer, with Wi-Fi connection to be able to participate in the In-class activities.

5.2 Assessment Requirements

- 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

When

- As indicated above.
- Early submission is required in cases where the student will otherwise be absent on the due date of submission.
- Prior to submission, students should read the School Policy on *Assignment Submissions* which can be viewed at: www.engineering.unsw.edu.au/mining-engineering/what-we-do/about-the-school/school-general-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 Moodle unless otherwise stated. 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.

What

- Submission requirements for all assignments are listed in Section 5.
- The submission must be:
  - a single document in PDF format; and

- 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.

How

- The submitted document must be consistent with the following file naming convention: < **FamilyNameInitials_CourseCode_AssignmentNumber.pd**f >.
- A typical complaint filename would take the following form < *SmithPD_MINE8680_A01.pdf* > which elements correspond to:
  - Family name of student: Smith
  - Initial(s) of student: PD
  - Course Code: MINE8680
  - Assignment number: A01...as defined in the Course Outline for the assessment task
  - File format: PDF document

6 ASSESSMENT CRITERIA

The assessment criteria provides a framework for you to assess your own work before formally submitting major assignments to your course convenor. Your course convenor will be using this framework to assess your work and as a way to assess whether you have met the listed learning outcomes and the graduate attributes for your program. We ask that you don't use the assessment criteria guidelines as a checklist, but as a tool to assess the quality of your work. Your course convenor will also be looking at the quality, creativity and the presentation of your written assignment as they review the framework. Rubrics, wherever applicable, will be provided at the time of the assignment release.

The following assessment criteria provide a framework for students when preparing assignments in the course as well as a guideline for assessors when marking an assignment. The student is advised to review the relevant framework before undertaking their assignment.

The criteria listed for each item of assessment and the descriptions contained therein are not intended to be prescriptive nor is it an exhaustive list. Rather it should be viewed as a framework to guide the student as to the type of information and depth of coverage that is expected to be evident in a submission for assessment; the framework illustrates for example what would distinguish an excellent achievement from a poor achievement.

The student should be cognisant that a range of factors is often being assessed in any one assignment; not just whether the final results are numerically correct. Consideration is given to other relevant elements that contribute to the *Learning Outcomes* of the course as well as the *Graduate Attributes* of the overall degree program.

The student is cautioned against merely using the assessment criteria as a checklist. When assessing an assignment, elements in the framework will be examined in terms of quality and creativity. Hence ensuring all the listed elements are merely covered in an assignment is often not sufficient in itself and will not automatically lead to full marks being awarded. Other factors such as how the student went about presenting information, how an argument was structured and/or the elements supporting a particular recommendation or outcome are also important.

Finally the framework can also be used to provide feedback to a student on their performance in an assignment.

6.1 Assignment Reports

The assignment should be ordered; critical and reasoned exposition of knowledge gained through the student's efforts. Assignments should be approximately 10 pages excluding appendices, tables and illustrative matter.

First introduce the assignment, let the reader know what methodology you used, state the results and discuss them, identify the conclusions. A reference list should appear at the end of your report. The report should adhere to AusIMM's Guide to Authors. Information that is not essential to explain findings, but that supports analysis, validates conclusions or pursues a related point should be placed in an appendix.

The assessment criteria is summarised in the following table.

Assignment assessment criteria

Criteria	*Excellent*	*Good*	*Satisfactory*	*Unsatisfactory*	*Poor*	*nil*
Executive summary	• Executive summary is well written and accurately yet concisely captures all the essential aspects of the project objective, methodology, outcomes and issues	• Executive summary is reasonably well written and captures most of the essential elements of the project	• Executive summary is adequately written and captures most elements though missing some information	• Executive summary is poorly written and does not clearly convey information concerning project topic, method, issues and/or outcomes	• Executive summary is badly written and/or does not summarise the project topic and its outcomes	• Executive summary is missing and/or largely incomplete
	10 9	8 7	6 5	4 3	2 1	0
Introduction	• Introduction provides a clear definition of the aims and objectives and, scope of project clearly identifies the relevance and significance of the project to the industry	• Introduction provides a good definition of the aims and objectives and scope of project identifies the relevance and significance to industry	• Introduction satisfactorily outlines the aims and objectives and/or provides a reasonable discussion of relevance and significance to industry	• Incomplete and/or unclear definition of project scope	• Project topic and scope are very unclear and/or confused	• Introduction is missing and/or largely incomplete
	5	4	3	2	1	0
Experimental procedures	• presented an excellent description of the study methodology and/or experimental procedure that was used to obtain data	• presented a good description of the study methodology and/or experimental procedure that was used to obtain data	• presented an acceptable description of the study methodology and/or experimental procedure that was used to obtain data	• presented a limited description of the study methodology and/or experimental procedure that was used to obtain data	• poor description of the study methodology and/or experimental procedure that was used to obtain data	• methodology and/or experimental procedures missing
	10 9	8 7	6 5	4 3	2 1	0
Results and analysis	• all relevant results are presented in a manner from which meaningful analyses and interpretations are drawn • good and creative approach to analysis of results interpreted against the stated objectives of the study	• most results are presented in a manner from which meaningful analyses and interpretations are drawn • results are interpreted based on established approach relevant to stated objectives of the study	• many results are presented in a manner from which meaningful analyses and interpretations are drawn • results are not interpreted against the stated objectives of the study.	• some results are presented and some analysis and interpretations of these results are given • not aligned to the stated objectives of the study.	• poorly presented some results and/or some results missing • little or no analysis or interpretation of results	• no results presented and/or analysed
	30 26	25 20	19 15	14 8	7 1	0

Criteria	*Excellent*	*Good*	*Satisfactory*	*Unsatisfactory*	*Poor*	*nil*
Quality of study and innovation in study process	• approach highlights creativity and innovation, while working to an organised plan • actual execution of the work showed the application of knowledge gained from background study through relevant analysis of data.	• approach is systematic and showed some innovation • actual execution of the work showed the application of knowledge gained from background study through analysis of data.	• approach is reasonably systematic. • actual execution of work showed some understanding via application of prior knowledge and some background study to produce limited analysis of data	• approach is not well considered and does not flow logically from the background study presented • actual execution of work shows flawed understanding and little application of either background study or prior knowledge	• approach is haphazard and has no logical basis • actual execution of the work shows very little understanding and little application of either background study or prior knowledge	• little/no evidence of quality of study and innovation
	20 19	18 15	14 10	9 5	4 1	0
Conclusions and recommendations	• excellent, clear and concise summary of the outcomes of the study that demonstrates sound comprehension and insight into the significance of the results • excellent and appropriate recommendations for continuation and improvement of the study were discussed	• good summary of the outcomes of the study that demonstrates comprehension and some insight into the significance of the results • some recommendations for continuation and improvement of the study were discussed	• reasonable summary of the outcomes of the study that demonstrates some comprehension but limited insight into the significance of the results • limited recommendations for continuation and improvement of the study were discussed	• summary of the outcomes of the study that demonstrates limited comprehension • few, inappropriate and/or irrelevant recommendations	• fails to explain what was achieved with no real comprehension demonstrated	• no conclusions and/or recommendations
	10 9	8 7	6 5	4 3	2 1	0
Referencing	• **all in-text citations were correct** as per the RWG; and • **all sources** of information were **referenced**; and • **all listings in** the **References** section were **correct** and exactly in total accord with AusIMM referencing requirements as defined in the GTA and RWG; and • there were **no references missing** from the References section	• majority of in-text citations were correct with only a few minor errors; and • majority of sources of information were referenced with only a few minor exceptions; and • most of listings in the References section were correct and in total accord with AusIMM referencing requirements as defined in the GTA and RWG; and • there was only one reference missing from the References section	• most in-text citations were correct though there were several minor errors; and/or some information was not referenced; and • many listings in the References section were correct and in accord with AusIMM referencing requirements as defined in the GTA and RWG with only a few very minor exceptions; and • there were only a few references missing from the References section	• many errors with in-text citations; and/or • limited/poor range of references and/or not relevant to study topic; and/or • too little use of in-text citations and/or • several instances of information not being properly referenced to identify source of information; and/or • many errors in the References section and/or references were not correct and were not in accord with AusIMM referencing requirements as defined in the GTA and RWG; and/or • there were several references missing from the References section	• most in-text citations had errors; and/or • too few references and/or most references were not relevant to study topic; and/or • little use of made of in-text citations to identify source of information and/or only a few references cited in the text to identify source of information; and/or • many instances of information not being properly referenced to identify source of information; and/or • most of the listings in the References section were incorrect and/or were not in accord with AusIMM referencing requirements as defined in the GTA and RWG; and/or • there were many references missing from the References section and/or it was largely incomplete.	• there was no References section and/or • no in-text citation in main body of report of information sources; and/or • incorrect system of citing references was used; and/or • incomplete bibliographic details provided for references; and/or • incorrect system of listing references in the References section; and/or • no details provided for References; and/or • did not conform to AusIMM referencing requirements as defined in the GTA and RWG.
	5	4	3	2	1	0

Criteria	*Excellent*	*Good*	*Satisfactory*	*Unsatisfactory*	*Poor*	*nil*
Standard of assignment presentation	• **structure of assignment contains all required sections** and follows standard order of presentation progression for a assignment in accord with *RWG* • structure follows a logical progression • **format** of is **completely in accord** with the report writing conventions detailed in *RWG* • use of **tables, figures and equations is correct** and completely in accord with the *RWG* with no errors • **writing style is appropriate** and completely in accord with a assignment • **no spelling and grammatical errors etc**	• structure is complete though it has a few minor errors • format is largely in accord with *RWG* with only a few minor errors • use of tables, figures and equations is largely correct with only a few minor errors • style is largely appropriate for a technical report with a few minor exceptions • largely free of spelling and grammatical errors	• structure is mostly correct and/or has some minor errors • format is mostly in accord with the RWG though it has some minor errors • use of tables, figures and equations is mostly correct though there are several minor errors • style is appropriate in most instances with some minor errors • several minor spelling and grammatical errors	• several issues with structure and/or many minor errors and/or omissions • many issues with format of assignment as it deviates from *RWG* • some issues with use of tables, figures and/or equations • writing style is inappropriate in some instances • many instances of spelling and/or grammatical errors	• significant issues with structure and/or many major errors and significant omissions • large number of significant major issues in format • use of tables, figures and/or equations is largely inconsistent with *RWG* • writing style is inappropriate in many instances • large number of spelling and/or grammatical errors	• information not presented in a form expected in a study assignment and/or not compliant with *RWG* • most essential elements of structure are missing • assignment has no logical structure • significant amount of information is missing • format not in accord with the *RWG* standards • use of tables, figures and/or equations is incorrect • inappropriate writing style for a study assignment • major issues /numerous spelling and/or grammar errors
	10 9	8 7	6 5	4 3	2 1	0

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 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

7.2 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.

7.3 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

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 a assessment cover sheet attached.

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.

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 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

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 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.

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.

8 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.