GEOL1501: INTRODUCTION TO ENGINEERING GEOLOGY
Semester 2, 2016 | 6 Credit Points | Coordinator: A/Prof Tom Hubble
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INTRODUCTION

**GEOL1501: Introduction to Engineering Geology** is designed to give an insight into the way in which geological environments affect decisions about the design and construction of large and small structures. The course will provide a thorough introduction to geology and then move on to apply this knowledge to site investigation for construction. Students will gain rock identification and map interpretation skills, and then apply them to develop an understanding of the behaviour of the rock mass in the context of construction. Lectures will also be given that describe the tools commonly used to undertake subsurface investigations of construction site geology. Other geological topics presented during the course will include an introduction to hydrogeology; geophysical techniques in site investigation; and case studies in engineering geology with an emphasis on the construction of dams, bridges, roads, port infrastructure, tunnels as well as underground openings and large buildings. The course will present many examples from the Sydney area.

This course explores these topics through short video lectures, readings, activities, and discussions that will guide you throughout the semester.

The Earth beneath our feet...

*The Earth is the ultimate life-support system. It is the source of the air we breathe, the water we drink and, with help from the sun, the food we eat. The ground beneath our feet is all we have, and it delivers all we need, from rubies to rhubarb, from ink to ochre. It is a home-maker: it provides bricks and mortar, plaster of paris and roofing iron. It is not just a desirable residence: it is, so far, life's only residence.*

*We depend on a dynamic Earth, a planet going places: its movements through space make night and day, winter and summer, and these in turn power the weather systems that mould the landscapes that shape our histories. Its viscous, churning mantle delivers underfloor central heating and sends continents to collide, raising mountains and destroying oceans in a 4bn-year spree of planetary reconstruction.*

*Think of Earth as recycling system, forever turning granite into clay and sand, ocean mud into marble, gathering gold in veins and silver into seams. The Earth is the greatest show on earth. The puzzle is that so few people have noticed.*


ASSUMED KNOWLEDGE AND PROHIBITIONS

There is no assumed knowledge for GEOL1501.

- If you are enrolled in GEOL1501 the following Units are prohibited: GEOS1003 or GEOS1903 or GEOL1002 or GEOL1902.
COURSE AIMS, LEARNING OUTCOMES & GRADUATE ATTRIBUTES

COURSE AIMS

The objective of GEOL1501 is to get you thinking about the big questions relating to the origins, make-up, and operations of the planet and how this relates to the engineering geologist’s job of predicting how near-surface rocks, soils and groundwater will affect any man-made structure founded on, or excavated into, the earth. Think about it, buildings, bridges, tunnels, dams, towers, railways, roads, wharfs, aqueducts, canals, pipelines, airport runways, underground power stations, subsurface tanks – all these structures are built within or on the ground. The successful construction of the public and private infrastructure that we rely on to go about our daily business requires a proper understanding of the ground conditions that supports or encloses these structures.

During the semester you will be introduced to knowledge, theories, and debates about how the world’s physical systems operate and the characteristics of different geological environments. You will learn how an engineering geologist can use this knowledge to assist in the safe design and construction structures and the successful prediction of ground conditions and likely behaviour of that ground, which has a very long history.

LEARNING OUTCOMES

After completing GEOL1501 students should be able to demonstrate:

I. An understanding of the concepts and language of geology and engineering geology;
II. An understanding of the processes that have formed the earth and currently modify the earth’s surface physical features;
III. The ability to identify and name common rocks and minerals;
IV. An understanding of the relationship between the built environment and its geological substrate and the possible impacts of natural earth hazards on engineered structures;
V. The ability to interpret geological maps, geological cross-sections and rock-core logs, in the context of the built environment, construction, and engineered structures;
VI. A knowledge of site investigation techniques and their application to decision making in construction and civil engineering practice;
VII. The capacity to find and analyse information;
VIII. Enhanced skills in written, oral, and interpersonal communication;
IX. A team approach to scientific and engineering investigation, and the process of learning;
X. Basic skills in computing, numeracy, and data handling;
XI. A sense of responsibility and independence as a learner that will guide your ongoing professional development and civil engineering practice.
CONTACTS

Students should consult the eLearning/Blackboard site for general information about the unit. Before you contact the Unit of Study (UoS) Coordinator or the UoS email please make sure you have also read this document. Please post any generic questions to the eLearning Piazza discussion board where your peers may be able to answer the question, before e-mailing the lecturers/demonstrators.

The teaching team will monitor the Piazza discussion boards and provide feedback to the questions/issues. Given the high number of students enrolled in the course, it will not be possible to respond to each question or concern immediately. Every effort will be made to address posts as quickly as possible.

Please use email for assistance only after going through Piazza. Note that there is a private messaging system in Piazza for issues you wish to discuss on a one to one basis.

Best contact email: geol.1501@sydney.edu.au

We encourage you to use the following tools:
- Blackboard (see the HELP! Frequently Asked Questions page)
- Piazza discussion board (access via Blackboard)

The course coordinator is Dr Tom Hubble, Madsen Building F09. For important and urgent issues, you should contact him (tom.hubble@sydney.edu.au) or Dr Samantha Clarke (samantha.clarke@sydney.edu.au), but please note that time has been allocated to the end of the lecture sessions to deal with any questions students wish to ask about the unit of study. Otherwise, communication about the unit of study should be undertaken using the tools available in the eLearning site (Blackboard). To notify the teaching staff about issues such as Special Consideration (see full details later in this document), students should use the unit’s email address geol.1501@sydney.edu.au

Help with Content:

If you have questions about the course content, we encourage you to start by connecting with your peers in the forums we’ve set up for each week on Piazza. We encourage you to rely on your peers for solutions and support to questions/problems that you may encounter during class. We’ll also be monitoring the forums and will respond to these questions as we are able.

GRADUATE ATTRIBUTES AND THRESHOLD LEARNING OUTCOMES

At the end of this outline, details are provided on how GEOL1501 connects to the University of Sydney’s Graduate Attributes, and what its Threshold Learning Outcomes comprise.
**SEMESTER PROGRAM**

*Please note that this program is subject to change*

<table>
<thead>
<tr>
<th>Week starting…</th>
<th>Lecture Topic</th>
<th>Lecture</th>
<th>Practical</th>
<th>Group</th>
<th>Assessments</th>
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<tbody>
<tr>
<td><strong>Week 1</strong> (beginning 25-Jul-16)</td>
<td>Introduction - Geology and Engineering</td>
<td>Hubble</td>
<td>Minerals and Rocks (Ex1)</td>
<td>Odd</td>
<td>Pre-practical Quiz 1</td>
</tr>
<tr>
<td><strong>Week 2</strong> (beginning 1-Aug-16)</td>
<td>Geological Mapping 1 - Introduction to Mapping</td>
<td>Hubble</td>
<td>Minerals and Rocks (Ex1)</td>
<td>Even</td>
<td>Pre-practical Quiz 1</td>
</tr>
<tr>
<td><strong>Week 3</strong> (beginning 8-Aug-16)</td>
<td>Igneous Rocks and Processes</td>
<td>Hubble</td>
<td>Igneous Rocks (Ex2)</td>
<td>Odd</td>
<td>Pre-practical Quiz 2</td>
</tr>
<tr>
<td><strong>Week 4</strong> (beginning 15-Aug-16)</td>
<td>Sedimentary Rocks and Processes</td>
<td>Clarke</td>
<td>Igneous Rocks (Ex2)</td>
<td>Even</td>
<td>Pre-practical Quiz 2</td>
</tr>
<tr>
<td><strong>Week 5</strong> (beginning 22-Aug-16)</td>
<td>Metamorphic Rocks and Processes</td>
<td>Hubble</td>
<td>In class quiz</td>
<td>All</td>
<td>Geological Mapping Quiz 1 (in class)</td>
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<tr>
<td><strong>Week 6</strong> (beginning 29-Aug-16)</td>
<td>Geological Mapping 2 - Complex Mapping</td>
<td>Hubble</td>
<td>Sedimentary Rocks (Ex3)</td>
<td>Even</td>
<td>Pre-practical Quiz 3</td>
</tr>
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<td><strong>Week 7</strong> (beginning 5-Sep-16)</td>
<td>Plate Tectonics</td>
<td>Hubble</td>
<td>Sedimentary Rocks (Ex3)</td>
<td>Odd</td>
<td>Pre-practical Quiz 3</td>
</tr>
<tr>
<td><strong>Week 8</strong> (beginning 12-Sep-16)</td>
<td>Boundary Hazards</td>
<td>Hubble</td>
<td>Metamorphic Rocks (Ex4)</td>
<td>Even</td>
<td>Pre-practical Quiz 4</td>
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<tr>
<td><strong>Week 9</strong> (beginning 19-Sep-16)</td>
<td>Ground Investigations</td>
<td>Hubble</td>
<td>Metamorphic Rocks (Ex4)</td>
<td>Odd</td>
<td>Pre-practical Quiz 4</td>
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<td></td>
<td><strong>Mid-semester break</strong></td>
<td></td>
<td></td>
<td></td>
<td>(beginning 26-Sep-16)</td>
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<tr>
<td><strong>Week 10</strong> (beginning 3-Oct-16)</td>
<td>Revision</td>
<td>Hubble</td>
<td>Rock ID Quiz Revision</td>
<td>All</td>
<td>Geological Mapping Quiz 2 (online)</td>
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<td><strong>Week 11</strong> (beginning 10-Oct-16)</td>
<td>Site Investigation</td>
<td>Hubble</td>
<td>Introduction to Rock Core Logging (Ex5)</td>
<td>Odd</td>
<td>Pre-practical Quiz 5 Rock Core Logging Practical</td>
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<tr>
<td><strong>Week 12</strong> (beginning 17-Oct-16)</td>
<td>Site Investigation</td>
<td>Hubble</td>
<td>Introduction to Rock Core Logging (Ex5)</td>
<td>Even</td>
<td>Pre-practical Quiz 5 Rock Core Logging Practical</td>
</tr>
<tr>
<td><strong>Week 13</strong> (beginning 24-Oct-16)</td>
<td>Engineering Geology Problems (exam examples)</td>
<td>Hubble</td>
<td>In class: Rock ID Quiz</td>
<td>All</td>
<td>Rock ID Quiz</td>
</tr>
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COURSE CONTENT AND ACTIVITIES

Each week will include a mix of required readings, short video lectures, short multiple-choice quizzes, and activities to compliment the lecture and practical classes. A list of additional readings and resources related to the weekly topic will also be provided.

- The lecture videos are usually between 5 and 15 minutes long.
- Weekly quizzes help you review what you have learned
- The activities provide ways for you to explore the concepts and practice for assessment tasks
- The additional resources and materials are optional, provided for you to explore if you wish to research more about a particular topic

LECTURES

Lectures will be delivered on Tuesdays (8-10am, ABS LT. 1130) and Thursday (12-2 pm, Eastern Avenue LT.). Students must attend all lectures to derive benefit from this unit of study. Announcements and unit management will be handled primarily through Blackboard and Piazza. Lecture notes will be available on-line.

PRACTICALS

Practical classes are held in Laboratory 408, Carslaw Building, on Monday morning (10–1pm) and Monday, Tuesday, and Wednesday afternoons (2–5 pm).

These classes are compulsory and are concerned with problems illustrating lecture topics, and introducing features of rock identification and geotechnical problems. Wherever possible, practical work is timetabled to cover material discussed in lectures. All maps, hand specimens, and specialist instruments will be provided for practical classes. You will be given handouts for the first practical session, and you are required to collect a copy of the practical manual from the Copy Centre for subsequent classes.

From the first practical session onwards, students will need to bring the following equipment:

1. Hand lens (approx. 10X magnification)
2. Small pocket knife or metal point
3. A selection of colored pencils, a drawing pencil and an eraser
4. A compass, a protractor, and a 30 cm ruler

Note: Practical classes commence in Week 1.

Please see “Practical Classes Program” and your timetables for more details about your practical class schedule.
You are responsible for understanding the University policy regarding assessment and examination, which can be found at [http://sydney.edu.au/legal/policy](http://sydney.edu.au/legal/policy). Assessment in this unit will be both **formative** and **summative**. ‘Formative assessment’ provides benchmarks for and feedback on performance. ‘Summative assessment’ comprises marks for performance in assignments, quizzes and examinations, which will count towards a final mark for the unit of study.

### FORMATIVE ASSESSMENT

<table>
<thead>
<tr>
<th>Assessment Task (formative)</th>
<th>Available</th>
<th>Learning Outcomes</th>
</tr>
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<td>Lecture attendance</td>
<td>Weekly</td>
<td>I-VI, XI</td>
</tr>
<tr>
<td>Practical exercises</td>
<td>Weekly</td>
<td>I-XI</td>
</tr>
<tr>
<td>Take home assignments</td>
<td>Week 3 / Week 8</td>
<td>I, II, IV, V</td>
</tr>
<tr>
<td>Trial Exams</td>
<td>Week 12</td>
<td>I, II, IV, V, VI</td>
</tr>
<tr>
<td>On-line self-test quizzes</td>
<td>Ongoing</td>
<td>I, II, IV, VI-XI</td>
</tr>
</tbody>
</table>

### LECTURE ATTENDANCE

It is expected that you attend lectures weekly. See “Study Commitment” for more details on what is expected of you.

### PRACTICAL EXERCISES

Active intellectual participation is expected during the practical classes, which run for each week of the semester. See “Study Commitment” for more details on what is expected of you.

### TAKE HOME ASSIGNMENTS

Two take home assignments based on lecture and practical material will be provided prior to each in-class mapping quiz. You will be given “one week to complete these assignments at home in your own time. The answers/solutions to the assignments will be covered during a weekly lecture prior to the date of each in-class quiz.

These assignments will not count towards your final mark.
TRIAL EXAMS

These exams will not count towards your final mark but will to assist students in passing the course. It is in your interest to do well in this task.

ON-LINE SELF-TEST QUIZZES

Completion of these quizzes, which will be available on the Blackboard Site, will not count towards your final mark. They are provided to assist students to understand the course content. It is in your interest to attempt this task to provide you with feedback on your progress in understanding the practical and lecture material.

SUMMATIVE ASSESSMENT

<table>
<thead>
<tr>
<th>Assessment Task (summative)</th>
<th>Assessment conditions</th>
<th>Weight %</th>
<th>Due time</th>
<th>Due date</th>
<th>Due week</th>
<th>Learning Objectives</th>
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<tr>
<td>Pre-practical quizzes</td>
<td>Compulsory</td>
<td>5%</td>
<td>23:59</td>
<td>Before day of practical class</td>
<td>Bi-weekly</td>
<td>I-VI</td>
</tr>
<tr>
<td>Practical participation &amp; attendance</td>
<td>Compulsory - must pass</td>
<td>Pass/Fail</td>
<td>In class</td>
<td>Weekly</td>
<td>Weekly</td>
<td>I-XI</td>
</tr>
<tr>
<td>Geological mapping quiz 1</td>
<td>Compulsory</td>
<td>10%</td>
<td>In class</td>
<td>In class</td>
<td>Week 5</td>
<td>I, IV, V</td>
</tr>
<tr>
<td>Geological mapping quiz 2</td>
<td>Compulsory</td>
<td>10%</td>
<td>23:59</td>
<td>Friday, 7 Oct</td>
<td>Week 10</td>
<td>I, IV, V</td>
</tr>
<tr>
<td>Rock core logging practical</td>
<td>Compulsory</td>
<td>5%</td>
<td>In class</td>
<td>In class</td>
<td>Week 11 or 12</td>
<td>IV-IX</td>
</tr>
<tr>
<td>Rock ID quiz</td>
<td>Compulsory - must pass</td>
<td>10%</td>
<td>In class</td>
<td>In class</td>
<td>Week 13</td>
<td>III</td>
</tr>
<tr>
<td>Final Examination</td>
<td>Compulsory - must pass</td>
<td>60%</td>
<td>Final exam period</td>
<td>Final exam period</td>
<td>I, II, IV, V, VI</td>
<td></td>
</tr>
<tr>
<td>Academic honesty</td>
<td>Compulsory</td>
<td>N/A</td>
<td>Week 4</td>
<td>Week 4</td>
<td>Week 4</td>
<td>XI</td>
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In order to pass this unit of study students must successfully complete all assessment items as well as achieve an aggregated mark of 50% or above for all “Compulsory – must pass” items. This means that students must: a) pass the combined theory and map interpretation examination; b) pass the rock identification quiz; and c) get > 50% overall.

PRE-PRACTICAL QUIZZES

Completion of five online multiple-choice quizzes is required over the semester before attending each timetabled practical class. Each quiz will be based on that week’s practical exercise in the Practical Manual.

This is worth 5% of the semester mark and must be completed before you timetabled practical class.

PRACTICAL ATTENDANCE AND PARTICIPATION

Practical attendance and participation is based on the completion of the practical worksheets found in the Practical Manual. Worksheets must be completed during class and checked by your tutors. All practical work will be assessed on a pass/fail basis, that is, the submitted work must reach an acceptable minimum standard. Feedback will be provided as to the class as appropriate.
This is compulsory “must pass” assessment item. A pass for each worksheet is considered to be a serious attempt at the exercise with active intellectual participation. Non-serious attempts will not be counted. See “Study Commitment” for more details on practical classes and what is expected of you.

**GEOLOGICAL MAPPING QUIZZES 1 & 2**

During the practical classes of week 5 (in-class) and week 10 (online) of semester, all students are required to sit a geological mapping quiz. These quizzes will be based on material presented in the lectures and the formative take-home assignments.

Each quiz is worth 10% of the semester mark (20% total).

**ROCK CORE LOGGING PRACTICAL**

During the practical classes of week 11 or 12 of semester, all students are required attend, participate, and complete the rock core logging worksheet. This worksheet will be rigorously marked.

This worksheet is worth 5% of the semester mark.

**ROCK ID QUIZ**

During the practical classes of week 13 of semester (the last week of the semester), all students are required to sit a Rock ID quiz. This test will focus on the identification and description of a set of unknown geological samples (rocks / minerals).

This is worth 10% of the semester mark and is a “must pass” item.

**FINAL EXAMINATION**

An exam will be held for GEOL1501 during the formal examination period at the end of the semester. The exam will comprise multiple-choice questions, short and long answer responses, geological mapping questions, and a geotechnical engineering problem.

The final examination will cover the work you did in lectures and practical class. All material presented in lectures is potentially subject to examination questions. The practical component will focus on the interpretation of geological maps.

*Note: all students will be permitted to bring twenty pages of their own hand-written notes into the final exam. Twenty pages means twenty single A4 sides or 10 double-sided sheets of A4 paper. The exam will be invigilated and no printed or photographs will be permitted by the exam supervisors who will administer the exam.

This is worth 60% of the semester mark and is a “must pass” item.

**ACADEMIC HONESTY**

Most students will have already completed the University of Sydney’s Academic Honesty module during first semester. This is compulsory assessment item.

If you have not yet completed this module, you must do so by Week 4 of Semester 2.

The Academic Honesty Education Module appears as a compulsory extra unit of study (AHEM1001) on every new student’s eLearning page. Please follow the links from here to complete this module.
Final grades in this unit are awarded at levels of HD (High Distinction), D (Distinction), CR (Credit), P (Pass) and F (Fail) as defined by the Assessment Policy 2011 (Schedule 1), which is available on the University website at: http://sydney.edu.au/policies.

The award of a merit grade is based on the following standards. These standards act as a guide, and are inherently subjective when qualitative responses are required (such as in this case). It follows that ‘ticking the boxes’ for what constitutes a Distinction response following the guide below does not necessarily guarantee you will receive a Distinction for your work. It is how well you meet these qualitative standards, not the number of standards that you attempt to meet, which is being judged.

**Particular points relevant to the assessment of this unit of study**

Marks for the assessment tasks and grades awarded for the unit will conform to the University’s assessment policies and procedures. A recent change to this policy requires that marks be awarded relative to a set of standards that describe a graduated hierarchy of the levels of achievement. The marks assigned to the various grades pass, credit, distinction, high distinction remain as they were prior to the change in the policy. The grades are described below along with the criteria that will be used to identify the various levels of achievement. Note the acknowledgement of the several sources (e.g. SLS 2014) from which these grade descriptors were modified; given below, see section on plagiarism.

In reference to these grades students should note that:

a) all assessment tasks will normally contain an at least one item that will enable the full range of achievement levels to be demonstrated, although students should note that some, and perhaps the majority of the individual items, activities or questions presented in each of the assessment tasks will be intended to establish that students have achieved a pass or credit level of achievement.

b) that distinctions and high distinctions would normally only be awarded to students who have performed at a high level in all assessment tasks – in this context ‘performed at a high level in all assessment tasks’ means that distinction students will have achieved a credit minimum in all individual items of assessed work and will have achieved a distinction level of achievement (or better) for the majority of the assessment tasks. High distinction students will have achieved a distinction minimum in all individual items of assessed work and will have achieved a high distinction level of achievement for the majority of the assessment tasks.

**Fail (Below 50%)**

Work may fail for any or all of the following criteria

- No answer or response is provided
- Does not address or otherwise answer the question
- Contains numerous minor errors or presents a significant misconception
- Presents irrelevant material
- No evidence of research or analysis
- Presents a significantly inaccurate or flawed argument
- The answer is incomprehensible or difficult to understand due to significant problems with grammar, expression or structure

**Pass (Between 50% and 64%)**

Work awarded a passing grade will usually achieve the following minimum standards or present the described characteristics

- An appropriate but superficial answer or response is provided
- Presents relevant material in a superficial manner or in a simplistic descriptive style
- Correctly identifies key point or points (facts) but does not develop an appropriate explanation or argument if this is required
- Contains some minor errors or presents minor inaccuracies and misconceptions
- Little or no evidence of in-depth analysis or deep understanding of the concept
- Answers can be understood but may be poorly worded or somewhat flawed due to poor grammar, expression or structure

Credit (Between 65% and 74%)

Work awarded a credit grade will usually achieve the following minimum standards or present the described characteristics

- An appropriate, accurate and reasonable detailed answer or response is provided
- Appropriate key point or points (facts) and/or concepts clearly presented without significant errors or misconceptions
- Presents relevant material concisely with facts clearly integrated into the explanation
- Accurate quotation and/or source identification when appropriate.
- Evidence of some independent research or critical analysis of concept or problem
- Answers are easily understood with both clear expression and structure if appropriate

Distinction (Between 75% and 84%)

Work awarded a distinction grade will usually achieve the following minimum standards or present the described characteristics

- Accurately answers the question in a convincing, confident manner
- Presents relevant material accurately in a concise manner or with the facts well-integrated into a comprehensive explanation or argument
- Accurate quotation and/or source identification when appropriate.
- Evidence of extensive independent research
- Evidence of extensive critical analysis of concept, and/or innovative perspective on the topic, and/or deep understanding of problem
- Answers are well written, with clear structure and cogent expression

High Distinction (Above 85%)

Work awarded a distinction grade will usually achieve the following minimum standards or present the described characteristics

- Accurately answers the question in an impressive, compelling, or highly persuasive manner
- Presents relevant material accurately in a thoroughly convincing or forceful manner or with the facts well-integrated into an extended and comprehensive explanation or argument
- Accurate quotation and/or source identification when appropriate.
- Evidence of exhaustive independent research
- Evidence of extensive critical analysis of concept, and/or innovative perspective on the topic, and/or deep understanding of problem
- Answers demonstrate striking originality, an innovative approach, or impressive analytical skill
- Answers are exceptionally well written, with excellent structure expression
- Is otherwise exceptional in some way
**PENALTIES**

You are responsible for handing in written work on time and attending exams when they are scheduled. Being unaware of due dates or examination times is NOT a valid excuse for late submission or non-attendance.

**A late penalty of 5% of the total available marks will be applied for each 24-hr period after the submission deadline.**

If you have a genuinely serious injury, illness or misadventure and require more time to complete an assessment task you must apply through the Special Consideration process (details elsewhere in this document).

**STUDY COMMITMENT**

**Lectures**

It is expected that students attend lectures. Core material in each lecture will be audio recorded and made available through eLearning. However, a portion of each lecture will involve interactive and/or the presentation of high level materials, which **will not** be recorded. The non-recorded material is examinable.

**Practical Classes**

Practical classes complement the lectures, and are compulsory. During most weeks of the semester there is a bi-weekly, three-hour practical class. If you cannot attend a class for any reason you should contact your tutor/demonstrator and, if appropriate, submit a Special Consideration form available from the Student Centre (additional information provided in this Handbook).

**Your commitment**

The current standard workload for a 6 credit point unit of study is 3-7 hours per week of face-to-face teaching contact hours. Beyond this, you should assume that a commitment of an additional 6 hours per week of independent study is expected, in order to complete assignments, revise materials, etc. It should be noted that ‘Independent Study’ is based on what we believe to be the amount of time a typical student should spend to achieve to pass an item of assessment.

To complete the entire course, each week you can expect to:

1. Read the weekly overview sheet – this will provide details on the weekly readings, videos, and any additional information needed for each week
2. Explore the course readings, additional information, and resources
3. Watch the video lectures (if provided)
4. Attend the timetabled lectures
5. Complete all of the weekly quizzes
6. Complete any weekly activities
7. Attend and participate in the practical
PRACTICAL CLASSES PROGRAM

Practical classes are a vital component of GEOL1501. Their aim is –

- To provide a classroom context for interactive learning
- To introduce skills relevant to future studies in Geology/Geophysics, specifically:
  - An ability to identify common minerals
  - An ability to identify and describe different rock types + textures
  - An ability to interpret formation style and formational environment of different rocks
  - An ability to infer global processes which controlled rock and mineral formation
  - An ability to interpret geological maps and draw geological cross-sections
  - An ability to infer potential geotechnical issues from a geological map
  - An ability to analyze and interpret a rock core log

The GEOL1501 practical classes will introduce you to the methods required to interpret Earth processes on any scale. These are the fundamental skills of engineering geology. You’ll focus on the identification of minerals and textures of igneous, metamorphic and sedimentary rocks, their formational environment, and how this relates to geotechnical engineering problems. You’ll learn how to understand and interpret geological maps and cross sections and apply these skills to solving geotechnical problems.

Practical class program – an overview of student requirements

Over the semester you have been timetabled for a number of three-hour practical sessions. You are required to read the practical handout BEFORE attending the class. Prior to each practical class you will be required to complete a short online quiz.

There are 5 practical classes through the semester, 1 geological mapping quiz week, 1 revision week, and 1 rock ID quiz week. Students are required to attend all timetable classes. It should also be noted that students are expected to attend for the duration of the class. Students arriving unreasonably late to class or leaving early without approved explanation may be deemed to have not attended the class.

If you cannot attend a class for any reason you should contact your tutor/demonstrator and, if appropriate, submit a Special Consideration form available from the Student Centre (additional information provided in this Handbook).

All material covered and the weekly worksheets can be found in the Practical Manual.

- Even Week Group – attend classes during weeks 2, 4, 5, 6, 8, 10, 12, and 13
- Odd Week Group – attend classes during weeks 1, 3, 5, 7, 9, 10, 11, and 13
- Classes during weeks 1, 2, 3, 4, 6, 7, 8, 9, 11, 12 require attendance and participation.
- Class during week 5 will be used to complete in-class mapping quiz 1. You must attend your normal timetabled day.
- Class during week 10 will be used as revision for the Rock ID quiz. You can attend a Tuesday or Wednesday afternoon class. No Monday classes.
- Class during week 11 and 12 will be used to complete the rock core logging practical. Your worksheet from this practical counts 5% towards your final grade.
- Class during week 13 will be used to complete the Rock ID quiz. You must attend your timetabled day.

PRACTICAL MANUAL

Practical Manuals are available from the Copy Centre, as well as online. It is required that at the very least, students bring hardcopy printouts of the weekly exercise worksheets that need to be completed. It is highly recommended that
students also bring printed copies of the full exercise notes. If you purchase the Practical Manual, these are all included within.

Prior to class, you are expected to read the material relating to that week’s exercise and complete the pre-practical quiz.

LEARNING RESOURCES

PRESCRIBED OR RECOMMENDED TEXTS

There is one prescribed text for GEOL1501, along with one recommended textbook (listed below). Any further readings, along with other basic information relevant to the course, will be made available through the University library. Practical manuals are available from the Copy Centre, as well as online.

Required:


Recommended:


ELEARNING

An eLearning site will be used to support the learning and teaching activities in this course. It is important to note that any material provided through eLearning is designed to support, rather than replace, face-to-face activities. Note well the study commitment requirements given above.

Students are advised to monitor the Piazza page to keep abreast of important information and to participate in class discussions. Any announcements made in class will be posted to Piazza and, therefore, it is your responsibility to check it regularly.

To access the eLearning site follow the instructions below:

- Open a browser window
- Go to the University of Sydney home page (http://sydney.edu.au/)
- Select the ‘Current Students’ link
- Choose ‘Learning Management System (LMS)’ from the menu far right
- Enter your UniKey login name and password
- Select the link of the Subject you wish to look at from your ‘My eLearning sites’ home page.

Please note that your UniKey login name and password will be printed on your initial confirmation of enrolment. If you have lost your password, either contact the ICT helpdesk at ict.helpdesk@sydney.edu.au or take some photo ID to one of the ICT Computer Access Labs.

PIAZZA

We will be using Piazza for all class communications and discussions. The system is highly catered to getting you help fast and efficiently from classmates, tutors, and lecturers. Rather than emailing questions to the teaching staff, we encourage you to post your questions on Piazza. Course announcements and responses from the instructional team will be posted on the Piazza announcements page and the Q & A discussion board.
We have a class page set-up which can be accessed directly through the eLearning site. We recommend you check this out as soon as possible!

**LEARNING AND TEACHING POLICIES**

The University's Policies (academic honesty, assessment, disability, special consideration, etc.) apply to this unit of study in the same way that they apply to all units of study presented at the University of Sydney. Students are advised to acquaint themselves or reacquaint themselves with these policies by viewing and reading the current versions of the appropriate policies online at [http://sydney.edu.au/policies/](http://sydney.edu.au/policies/). The folder ‘Studying at Sydney’ contains the policies that are relevant to most student matters as well as the Student Code of Conduct. These documents are revised and updated on a regular basis.

**PLAGIARISM**


The rules make a distinction between:

- **Negligent plagiarism** (defined as: innocently, recklessly or carelessly presenting another person’s Work as one’s own Work without Acknowledgement of the Source).
- **Dishonest plagiarism** (defined as: knowingly presenting another person’s Work as one’s own Work without Acknowledgement of the Source).

In cases of negligent plagiarism, it is usually the case that students will be required to resubmit their work. In cases of dishonest plagiarism, the School of Geosciences reserves the right to impose the full degree of sanctions on students, which includes automatic failure for the unit of study.

To avoid committing plagiarism, you should directly quote the source of material, or paraphrase it in your own words. When submitting documents for assessment you will be required to submit a cover sheet that includes a signed declaration of the originality of your work. Relevant documents will be available through the eLearning site and MUST accompany all submitted materials. These documents aim to focus your attention on the issue of plagiarism. If you any questions about what constitutes plagiarism ask your tutor, or one of the lecturers.

**SPECIAL CONSIDERATION AND RELATED CONCERNS**

Students are entitled to claim ‘Special Consideration’ if genuine illness or misadventure impacts upon their academic performance (such as sit an inability to sit any of the in-class tests, hand in material on time, or if you miss two or more practical classes). All applications for Special Consideration in this Unit of Study must be processed officially through both the Faculty of Science (regardless of the student’s particular faculty) and the School of Geosciences. The Faculty of Science official guidelines can be found at the Faculty website: [http://www.science.usyd.edu.au/cstudent/ug/forms/special_cons.shtml](http://www.science.usyd.edu.au/cstudent/ug/forms/special_cons.shtml)

**Process to follow:**

Students obtain a Special Consideration Pack from the Faculty of Science website. This pack includes all instructions needed to fill out the documentation correctly.

The completed application must then be stamped by the Faculty of Science prior to its submission to the School of Geosciences. Students then bring the completed forms to the Unit coordinator for processing.
The decision will be recorded on the student file in the Faculty of Science, who will then notify the student by email of the decision. Copies of all completed forms will be kept in-confidence by the School of Geosciences for future reference.

**SPECIAL ARRANGEMENTS FOR EXAMINATION AND ASSESSMENT**

In exceptional circumstances, special arrangements may be made for assessment tasks, including examinations outside the formal university examination period. The policy, guidelines and application form are available at the Faculty website: [http://sydney.edu.au/science/cstudent/ug/forms.shtml#special_arrangements](http://sydney.edu.au/science/cstudent/ug/forms.shtml#special_arrangements)

**STUDENT APPEALS AGAINST ACADEMIC DECISIONS**

Students have the right to appeal any academic decision made by a School or Faculty. The appeal must follow the appropriate procedure so that a fair hearing is obtained. The formal application form is available at the Faculty website: [http://sydney.edu.au/science/cstudent/ug/forms.shtml#appeals](http://sydney.edu.au/science/cstudent/ug/forms.shtml#appeals)

**COUNSELLING, ILLNESS AND MISADVENTURE**

The University of Sydney Counselling Service (phone 8627 8433) ([www.usyd.edu.au/stuserv/counselling/index.shtml](http://www.usyd.edu.au/stuserv/counselling/index.shtml)) provides free and confidential support to students. Male and female registered psychologists are available who can provide counselling on a range of issues relating to life and study, including time management, motivation, stress, communicating with lecturers, depression, self-esteem, family issues, relationship difficulties, grief and bereavement, anxiety, traumatic experiences, social fears, sexuality concerns, eating disorders and problems with drugs and alcohol.


**LEARNING CENTRES**

The Learning Centre ([http://sydney.edu.au/stuserv/learning_centre/index.shtml](http://sydney.edu.au/stuserv/learning_centre/index.shtml)) offers a wide range of courses intended to develop the generic skills required for success at University, and was established to assist students achieve their academic potential. They also offer workshops for undergraduate students from non-English speaking backgrounds.

**GEOSOC**

GEOSOC is the student society open to all undergraduate and postgraduate students. It runs social functions, provides support and information to students in the School.
### GRADUATE ATTRIBUTES

In GEOL1501 you will be working towards achieving a range of research, study and skill sets through the Learning Outcomes (listed earlier in this Outline). Undertaking these Learning Outcomes will enable you to progress towards achieving our Graduate Attributes. These are generic attributes that encompass not only technical knowledge but additional qualities that will equip students to be strong contributing members of professional and social communities in their future careers. The overarching graduate attributes identified by the University relate to a graduate’s attitude or stance towards knowledge, towards the world, and towards themselves. These are a combination of five overlapping skills or abilities, the foundations of which are developed as part of specific disciplinary study. See [www.itl.usyd.edu.au/graduateAttributes/facultyGA.cfm?faculty=Science](http://www.itl.usyd.edu.au/graduateAttributes/facultyGA.cfm?faculty=Science). The Bachelor of Science Graduate Attributes are outlined below:

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<tr>
<td>A1</td>
<td>Apply scientific knowledge and critical thinking to identify, define and analyse problems, create solutions, evaluate opinions, innovate and improve current practices</td>
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<tr>
<td>A2</td>
<td>Gather, evaluate and deploy information relevant to a scientific problem.</td>
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<td>A3</td>
<td>Design and conduct investigations, or the equivalent, and analyse and interpret the resulting data</td>
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<td>A4</td>
<td>Critically examine the truth and validity in scientific argument and discourse, and evaluate the relative importance of ideas</td>
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<td>A5</td>
<td>Disseminate new knowledge and engage in debate around scientific issues</td>
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<td>A6</td>
<td>Value the importance of continual growth in knowledge and skills, and recognise the rapid, and sometimes major, changes in scientific knowledge and technology</td>
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<tr>
<td>B1</td>
<td>Use a range of searching tools (such as catalogues and databases) effectively and efficiently to find information</td>
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<tr>
<td>B2</td>
<td>Access a range of information sources in the science disciplines, for example books, reports, research articles, patents and company standards</td>
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<tr>
<td>B3</td>
<td>Critically evaluate the reliability and relevance of information in a scientific context.</td>
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<td>B4</td>
<td>Consider the economic, legal, social, ethical and cultural issues in the gathering and use of information</td>
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<td>B5</td>
<td>Use information technology to gather, process, and disseminate scientific information</td>
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<td>C1</td>
<td>Explain and present ideas to different groups of people in plain English</td>
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<td>C2</td>
<td>Write and speak effectively in a range of contexts and for a variety of different audiences and purposes</td>
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<tr>
<td>C3</td>
<td>Use symbolic and non-verbal communication, such as pictures, icons and symbols as well as body language and facial expressions, effectively</td>
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<tr>
<td>C4</td>
<td>Present and interpret data or other scientific information using graphs, tables, figures and symbols</td>
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<td>C5</td>
<td>Work as a member of a team, and take individual responsibility within the group for developing and achieving group goals</td>
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<tr>
<td>C6</td>
<td>Take a leadership role in successfully influencing the activities of a group towards a common goal</td>
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<td>C7</td>
<td>Actively seek, identify, and collaborate with others in a professional and social context</td>
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<td>D1</td>
<td>Demonstrate an understanding of the significance and scope of ethical principles, both as a professional scientist and in the broader social context, and a commitment to apply these principles when making decisions</td>
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<tr>
<td>D2</td>
<td>Appreciate the importance of sustainability and the impact of science within the broader economic, environmental and socio-cultural context.</td>
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<tr>
<td>D3</td>
<td>Demonstrate empathy with, and sensitivity towards, another’s situation, feelings and motivation</td>
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<tr>
<td>E1</td>
<td>Evaluate personal performance and development, recognise gaps in knowledge and acquire new knowledge independently</td>
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<tr>
<td>E2</td>
<td>Demonstrate flexibility in adapting to new situations and dealing with uncertainty</td>
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<td>E3</td>
<td>Reflect on personal experiences, and consider their effect on personal actions and professional practice</td>
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<td>E4</td>
<td>Set achievable and realistic goals and monitor and evaluate progress towards these goals</td>
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<tr>
<td>E5</td>
<td>Demonstrate openness and curiosity when applying scientific understanding in a wider context</td>
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