

# GEOS1003 Introduction to Geology: unit of study outline

Semester 2, 2009

6 credit points

**Aims:** The aim of this unit of study is to examine the chemical and physical processes involved in mineral formation, the interior of the Earth, surface features, sedimentary environments, volcanoes, and metamorphism. Lectures and laboratory sessions on mountain building processes and the formation of ore deposits will lead to an understanding of the forces controlling the geology of our planet. Processes such as weathering, erosion and nature of sedimentary environments are related to the origin of the Australian landscape. In addition to laboratory classes there is a two-day excursion to the western Blue Mountains and Lithgow on 13&14 September, to examine geological objects in their setting.

Registration: All students enrolling in this unit of study must register with the School during the first practical class in Laboratory 408 in the Carlaw building (Thursday 11:00-14:00 or 14:00-17:00).

**Lectures** will be delivered at 10 am on Monday, Wednesday and Thursday in Carlaw Lecture Theatre 173. Students must attend all lectures to derive benefit from this unit of study.

**Practical** classes are held in Laboratory 408, Carlaw Building, starting on Thursday morning (11 am to 2 pm) and afternoon (2.00 to 5.00 pm). These classes are compulsory and concerned with problems illustrating lecture topics, and introducing features of rock identification and aspects that will be encountered on the field trip. 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 two practical sessions, and 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

Lecture notes will be available on-line.

<b>Assessment:</b>	Lithgow Excursion	10%
	Laboratory tests during class and written work	20%
	Theory and practical exam	60%
	Quizzes	10%

In addition to these formal assessment procedures, students will be given a trial exam that does not count toward the final mark in week 12 of the semester. This trial exam is run to assist students in passing, and it is in your own interest to do well in this task. Students will be broken into small groups to prepare a poster on a relevant theme; details will be given in the second prac class.

**Excursion:** A two day excursion will be run to the western Blue Mountains and Lithgow on Saturday and Sunday September 12 and 13, led by Prof. Clarke (phone 9351 2919) and Dr Hubble. Attendance is compulsory. Cost: \$120 per person. This covers overnight accommodation, evening meal, breakfast and a packed lunch for Sunday as well as transport. On the excursion, students need a small notebook as well as the equipment used in practical classes. A geological hammer and a magnetic compass are optional but useful for field-work in geology.

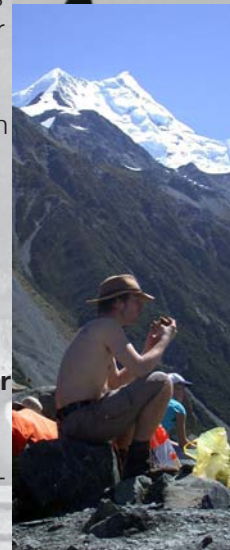
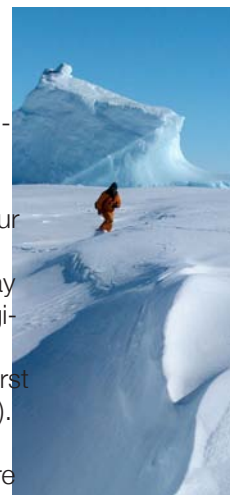
**Tutorials:** During stuvac there will be special tutorials, particularly for students who perform poorly in the trial exam.

**Textbooks:** Marshak, **Earth, Portrait of a Planet** (recommended) or Hamlin et al., **Earth's Dynamic Systems** available from the Coop Bookshop  
Prac manual - will be made available in hard and electronic copy

## Teaching Staff:

**Tom Hubble**, tom@geosci.usyd.edu.au, Room D114, engineering geologist. **Unit Coordinator**  
**Geoffrey Clarke**, geoffc@mail.usyd.edu.au, Madsen Room 406, petrologist

Geosciences is currently housed in two locations - the Madsen Building (F09) and the Demountable Buildings (H11). Staff with expertise in Geology & Geophysics are mostly housed in H11.



## Geos1003 Lecture and practical topics

Week	Lectures (Mon,Wed,Thu)		Practical Sessions (Thu)
1	Where did Earth come from?	Clarke	free
2	What makes a volcano?	Clarke	Minerals
3	Turning soufflé into rock	Clarke	Igneous rocks
4	The underbelly of mountains	Clarke	Igneous rocks
5	Will your diamond ring outlive your mountain home?	Clarke	Metamorphic rocks

EXCURSION 13 & 14 September (Clarke and Hubble)

6	The Geological Map	Clarke	Metamorphic rocks
7	Weathering	Hubble	Maps I
8	Sedimentary Processes	Hubble	Sedimentary rocks I
9	Sedimentary Environments	Hubble	Sedimentary rocks II

MID SEMESTER BREAK

10	Turning into stone	Hubble	Maps II
11	Geological Structures	Hubble	Trial exam
12	Plate tectonics & Earth structure	Hubble	Maps III
13	free (in lieu of excursion)		

Stuvac Tutorials at scheduled lecture times as required

Geoffrey Clarke, 27 June, 2008

### **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 re-construction.*

*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.*

*Tim Radford, The Guardian Weekly, March 18-24 2004*

