

THE UNIVERSITY OF SYDNEY
Semester 1, 2009

Information Sheet for **MATH1901 Differential Calculus (Advanced)**

Web Site

It is important that you check the Junior Mathematics web site regularly.

It may be found by following links from the University of Sydney front page, or from WebCT, or by going directly to

<http://www.maths.usyd.edu.au/u/UG/JM/>

Important announcements relating to Junior Mathematics are posted on the site, and there is a link to the MATH1901 page. On the MATH1901 page you will find on-line resources and other useful links. Announcements regarding assessment tasks will be made on this page at various times throughout the semester. Make sure you check the page weekly.

Lectures

Times	Location	Lecturers	Consultation
8 am Thurs & Fri	Carslaw 157	Dr C Cosgrove, Carslaw room 716	Thursdays, 1-2pm

Lectures run for 13 weeks, and the last lecture will be on Friday 5 June.

Tutorials

Tutorials (one per week) start in week 2. You should attend the tutorial given on your personal timetable. Attendance at tutorials will be recorded. Your attendance cannot be recorded unless you attend the tutorial in which you are enrolled. Your attendance record will be taken into account in the event that you apply for special consideration at any stage.

Tutorial sheets

The tutorial sheets are printed in the back of the course notes. **You should take your notes to your tutorial, since you will need to have the current week's sheet with you at your tutorial.** The tutorial sheets will also be available on the MATH1901 web page.

Solutions to tutorial exercises for week n will usually be posted on the web on the Tuesday of week n .

Assessment

Your final raw mark for this unit will be calculated as follows:

- 70%: Exam at end of semester 1.
- 20%: Quiz mark.
- 10%: Assignment mark.

Your final raw mark is then scaled to produce your final mark. Marks are scaled so that the distribution of grades is consistent with the quality of the class, and the difficulty of the unit, as required by the University.

Examination

There is one examination of 1.5 hours duration during the examination period at the end of semester 1. Further information about the exam will be made available at a later date.

Quizzes

Two quizzes will be held during tutorials on **Monday 20 April** and **Monday 18 May**. (MATH1906 students will do the quizzes on Thursday 23 April and Thursday 21 May.) Each quiz is worth 10% of your final raw mark. You must sit for the quiz during the tutorial in which you are enrolled. Your quiz mark will not be recorded if you sit for the quiz in a tutorial in which you are not enrolled.

Assignments

Two assignments will be set and marked. Each assignment is worth 5% of your final raw mark. Assignments will be due on **Tuesday 24 March** and **Tuesday 26 May**. Please see page 26 of the Junior Mathematics Handbook for details relating to the submission of assignments.

Course notes

J. Henderson. *MATH1901 and MATH1906: Differential Calculus (Advanced)*. Available for purchase from Kopystop, 55 Mountain St, Broadway.
See the Junior Mathematics Handbook for other references.

Where to go for help

For administrative matters, go to the **Student Office, Carslaw room 520**.

For help with mathematics, see your lecturer, or your tutor. Lecturers guarantee to be available during their indicated office hour, but may well be available at other times as well.

Proposed week-by-week outline

Week	Topics
1	Complex numbers in Cartesian and polar form. Complex powers and De Moivre's Theorem.
2	n th roots. The complex exponential function. Representing complex functions.
3	Injective and bijective functions. Inverse functions. Hyperbolic functions.
4	Limits and the limit laws.
5	Continuity. Intermediate Value Theorem.
6	Differentiability. Rolle's Theorem.
7	Mean Value Theorem. L'Hopital's Rule.
8	Taylor polynomials.
9	Curves and surfaces in 3D space. Functions of 2 variables. Level curves.
10	Limits of functions of 2 variables. Partial derivatives. Tangent planes.
11	Linear approximations. Chain rule for functions of 2 variables.
12	Implicit differentiation. Directional derivative and gradient.
13	Revision.