Lecturers

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Day Lectures  There are four (4) hours of lectures a week, arranged as follows.

<table>
<thead>
<tr>
<th>Lecture 1</th>
<th>Mon 9 am</th>
<th>E7A Mason</th>
<th>Okada w.1-5, w.12&amp;13/Duong w.6-11</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lecture 2</td>
<td>Wed 9 am</td>
<td>E7A Mason</td>
<td>Corbett w.1-6/Myerson w.7-12</td>
</tr>
<tr>
<td>Lecture 3</td>
<td>Thu 9 am</td>
<td>E7A Mason</td>
<td>Okada w.1-5, w.12&amp;13/Duong w.6-11</td>
</tr>
<tr>
<td>Lecture 4</td>
<td>Fri 9 am</td>
<td>E7A Mason</td>
<td>Corbett w.1-6/Myerson w.7-12</td>
</tr>
</tbody>
</table>

Evening Lectures  There are four (4) hours of lectures a week, arranged as follows.

<table>
<thead>
<tr>
<th>Lectures 1 &amp; 2</th>
<th>Mon 6 pm</th>
<th>E7BT4</th>
<th>Okada w.1-5, w.12&amp;13/Duong w.6-11</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lectures 3 &amp; 4</td>
<td>Wed 6 pm</td>
<td>E7BT3</td>
<td>Corbett w.1-6/Myerson w.7-12</td>
</tr>
</tbody>
</table>

Lecture Notes and Textbooks  The following set of lecture notes Elementary Mathematics (MATH 130) by Chen and Duong is available from the web site


The following texts are suggested for reference only, and it is not essential to own copies:
- Aufman, Barker and Nation: Precalculus (LIBRARY QA331.3.A8/1993)

Assessment  Your raw score, out of 100, will be

\[
\max\{E, (10A + 20T + 70E)/100\},
\]

where \(A\) denotes the assignment mark, \(T\) denotes the test mark and \(E\) denotes the examination mark, each out of 100. Your raw score is used in assigning your grade and calculating your official scaled mark. Grade P or higher in this unit is one way of entry to MATH 135. It is a policy of the Mathematics Department not to waive prerequisites, except in very special cases of academic merit.

Syllabus

Algebra.
- Basic algebra: the real numbers, arithmetic, expansion and factorization.
- Introduction to matrices, application to linear equations.
- Trigonometry: trigonometric functions and identities.
- Indices and logarithms.
- Polynomial equations.
- Inequalities and absolute values.
- Arithmetic and geometric progressions.
- Elementary counting techniques: permutations and combinations.
- Introduction to complex numbers.
Calculus

- Functions and graphs. Lines, gradients and intercepts.
- Introduction to differentiation, arithmetic of derivatives.
- Chain rule, implicit differentiation.
- Derivatives of pseudopolynomials and rational functions.
- Derivatives of trigonometric, exponential and logarithmic functions.
- Second derivatives, maximum and minimum values of functions.
- Applications of differentiation.
- Newton’s method.
- Integration as antidifferentiation, integration by substitution.
- Definite integrals, areas and volumes of revolution.

Below is some rough indication of the contents of the lectures. The numbers in brackets correspond to the chapters in the lecture notes by Chen and Duong.

<table>
<thead>
<tr>
<th>Week</th>
<th>Monday</th>
<th>Task</th>
<th>Okada/Duong</th>
<th>Corbett/Myerson</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>03/03</td>
<td></td>
<td>Basic algebra (1)</td>
<td>Introduction to matrices (2)</td>
</tr>
<tr>
<td>2</td>
<td>10/03</td>
<td>Q1</td>
<td></td>
<td>Functions and lines (10)</td>
</tr>
<tr>
<td>3</td>
<td>17/03</td>
<td>A1, Q2</td>
<td>Trigonometry (3)</td>
<td>Introduction to differentiation (11)</td>
</tr>
<tr>
<td>4</td>
<td>24/03</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>31/03</td>
<td>A2</td>
<td>Indices &amp; logarithms (4)</td>
<td>Further techniques of differentiation (12)</td>
</tr>
<tr>
<td>6</td>
<td>07/04</td>
<td>T1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>28/04</td>
<td>A3</td>
<td>Polynomial equations (5)</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>05/05</td>
<td>Q3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>12/05</td>
<td>A4</td>
<td>Inequalities &amp; absolute values (6)</td>
<td>Applications of differentiation (13)</td>
</tr>
<tr>
<td>10</td>
<td>19/05</td>
<td>T2</td>
<td>Progressions (7)</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>26/05</td>
<td>A5</td>
<td>Elementary counting techniques (8)</td>
<td>Introduction to integration (14)</td>
</tr>
<tr>
<td>12</td>
<td>02/06</td>
<td></td>
<td>Complex numbers (9)</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>09/06</td>
<td>REVISION</td>
<td></td>
<td>REVISION</td>
</tr>
</tbody>
</table>

Tests. There will be two (2) written tests, designed to check your understanding and monitor your progress. They will be conducted in the tutorials in the following weeks:
- Test 1: week 6, starting on Monday 7 April.
- Test 2: week 10, starting on Monday 19 May.

Electronic quizzes. Electronic quizzes will be provided for revision of basic skills. These will be available via the web and must be completed successfully. Their web address is

http://rutherglen.ics.mq.edu.au/~macqtex/MATH130quizzes.html

Quiz 1: must be completed by the end of Week 2.
Quiz 2: must be completed by the end of Week 3.
Quiz 3: must be completed by the end of Week 8.

(If there are technical difficulties regarding network capacity or unsatisfactory server performance then these deadlines may be relaxed.) The quizzes may be attempted many times within the allocated time, a different quiz will be generated each time. A quiz is passed if, in one attempt, you get at most 2 questions wrong. If you cannot pass a quiz in time, please consult the lecturers for advice.

☞ Students must pass all three quizzes in time or have made alternative arrangements with Fran Griffin (E7A 306), otherwise they will be given an F grade.

Assignments. There will be five (5) assignments. It is crucial that you make a reasonable attempt at each assignment. Start working on these questions well before the due date, as you may need to make several attempts. Do not be discouraged if you cannot solve a problem at your first attempt. A good strategy is to spend short amounts of time on several occasions thinking about the problem.

You are encouraged to ask your lecturers and tutors for help. Note, however, that they will tend to answer your questions by asking you questions. In this way, your thinking will be guided, so that if you come away
with a solution it will be you who has worked it out, not the lecturer. You should show your written attempts when asking a lecturer or tutor for help.

It is permissible, and indeed you are encouraged, to discuss assignment questions with your friends. That does not constitute copying and a lot can be learned this way. However, you must write out your solutions independently and understand what you are writing. Mindless copying is easy to detect and may result in disciplinary action.

Assignments are due by 22:00 on the following days:

<table>
<thead>
<tr>
<th>Assignment</th>
<th>Week</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>3</td>
<td>19/3/2003</td>
</tr>
<tr>
<td>2</td>
<td>5</td>
<td>2/4/2003</td>
</tr>
<tr>
<td>3</td>
<td>7</td>
<td>30/4/2003</td>
</tr>
<tr>
<td>4</td>
<td>9</td>
<td>14/5/2003</td>
</tr>
<tr>
<td>5</td>
<td>11</td>
<td>28/5/2003</td>
</tr>
</tbody>
</table>

You must put your assignments in the relevant assignment boxes. These boxes are located in the corridor between E7A and E7B, near Room E7B 363. You must put your name, student number and tutorial group clearly at the top on the front page. Pages should be securely stapled together, and folder and plastic sleeves must not be used. Poorly presented work will be given the mark of zero (0). Late assignments will not be marked except where there is documented medical or other evidence that it has not been possible to submit in time.

Only selected questions in assignments will be marked. The markers will read your solutions of these selected questions up to the first serious mistake and then attempt to make relevant comments. They will not check calculations in detail. Model solutions will be distributed the following week, when assignments will usually be returned in the tutorials. Please note that any marked assignment not collected in the tutorial will be left in the alphabetical pigeonholes near the assignment boxes. These pigeonholes are not secure, and assignments are known to be lost frequently.

The Department takes no responsibility for any such uncollected assignments when they are deposited in these pigeonholes.

Students who do not attempt assignments rarely do well in the final examination.

**Tutorials.** Tutorials commence in Week 2. Tutorials are at the time and place indicated on the advice you received at enrolment. If you need to change your tutorial group, please see one of the lecturers.

In tutorials you will be expected to work on questions given in advance. You will have the opportunity to ask your tutor for help with these questions or any other aspects of the unit. The tutor will spend the time answering individual questions and discussing tutorial questions. To get the most out of tutorials, spend some time thinking about the questions before the tutorial.

**Compulsory Requirements.** Students in this unit are required to successfully complete all of the electronic quizzes.

The assessment of the unit is based on the six assignments, the two written tests and the final examination. Students who miss assignments or tests will have them counted as zero. While the formula for computing your weighted score for assessment purposes allows all the marks to come from the final exam, you should note that these in-term marks will be used as the basis for assessing whether your prior performance in the unit was satisfactory for the purposes of granting special consideration.

Please contact one of the lecturers in case of any misadventure that prevents you from attending a test or submitting an assignment on time. In appropriate circumstances, and at the lecturers discretion, appropriate alternative arrangements may be made.

**Withdrawal.** To withdraw from the unit, you must fill out a change of program form, available from the Student Centre. Failure to complete this form in time will result in the grade of FA or FW. Your attention is drawn to the following deadline:


See p.127 of the 2003 Handbook of Undergraduate Studies.
**Special Consideration.** If illness or misadventure makes it impossible for you to attend the examination, or interferes significantly with your performance in the examination, then you are entitled to request special consideration. If we are satisfied, either by your previous performance in the unit or by the quality of work you have been able to produce in the examination, that there is evidence that you have not been able to show your true ability, then we may decide to invite you to attend a special examination to resolve your grade for the unit. Please note the following:

- It is the decision of the Division whether to offer a special examination or not. Students cannot apply for one, or expect to be granted one automatically, and requests “to sit for special examination” will not be looked upon with favour. We will not consider offering a special examination unless your assignment records indicate satisfactory performance.
- It is essential that you notify the Registrar in writing of the misadventure, accompanied by any appropriate documentary evidence (see page 130 of the 2003 Handbook of Undergraduate Studies). It is also advisable for you to let us know informally that you have written to the Registrar.
- The purpose of the special examination is to resolve the temporary difficulty caused by your illness or misadventure, not to give you an advantage over other students by allowing you extra time to study. We will therefore hold the special examination as soon as possible. In determining your grade for a special examination, we may also take into account the effect of extra study time available to you.
- In view of the previous paragraph, you must make sure that you are readily available to be contacted, and must hold yourself available to attend the special examination at short notice on the date and time the Division sets.
- If you elect to be away from Sydney during the special examination, or cannot be contacted, or are unavailable to attend the special examination, then the Division will accept this as a firm indication that our assessment should be based solely on the academic merit of the work you have already submitted.

**Learning Centre for Numeracy Skills.** Each new idea you conceptualize in mathematics usually depends on earlier work. It is therefore important to sort out misunderstandings as soon as they occur. First consult the relevant lecturer or tutor. Alternatively, any student is entitled to seek help from the Numeracy Centre, located in Room C5A 225. Most of the services of the Centre are free or at low cost to students. The following services are offered:

- Advice on supplementary work needed: Students may consult with the staff of the Numeracy Centre, who will recommend work needed to fill in the gaps in background knowledge in mathematics.
- Independent study: The Centre has a collection of self-study material on elementary mathematics, including topics needed for MATH 130. Solutions to worked problems are kept so that students can work through them.
- Supplementary workshops: A special class may be arranged for groups of six (6) or more students who are all in need of help. If you would like to join such a class, please go to the Centre.
- There is expected be a series of weekly workshops for MATH 130 from Week 3 onwards.

**General Skills.** The following human skills are expected to be developed by students of mathematics.

1. Intellectual curiosity. Why does it work? How does it work?
2. Deriving pleasure from grappling with intellectual challenges.
   Pappus (300 A.D.) reported on two types of analysis
   (a) Problems to prove, we aim at establishing true statements.
   (b) Problems to find, we aim at finding an unknown.
   Synthesis involves retracing the steps of the analysis.
4. Listening intelligently and taking notes.
5. Following a logical argument in detail without losing the thread.
6. Expressing oneself clearly and logically.
7. Withholding judgement until all has been checked. A healthy scepticism.
8. Recognising the difference between what is given and what is required.
9. Developing the confidence to think about what at first sight may seem strange, unusual or different and to find analogies, similarities and affinities. Pattern recognition.
10. Seeing problems as adventures.