Computing in Math1151
Maths for Actuarial Studies and Finance

Session 1, 2009

Last updated on March 2, 2009
Welcome to Math1151

Who’s who:

Algebra Lecturer: Assoc. Prof. Jie Du
Calculus Lecturer: Dr. Thanh Tran
Matlab Coordinator: Dr. William McLean
MapleTA Quizzes: Dr. Jonathan Kress

You will also have an algebra tutor and a calculus tutor.
Essential Reading

- *Math1151 Information Booklet* (included in course pack).
- School of Maths and Stats *Computing Laboratories Information for Students*.
- School of Maths and Stats *Introduction to Matlab*.
- Math1151 *My eLearning* course module.
Assessment in Math1151

<table>
<thead>
<tr>
<th>Component</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Algebra and calculus class Tests</td>
<td>20%</td>
</tr>
<tr>
<td>Online algebra and calculus quizzes (MapleTA)</td>
<td>4%</td>
</tr>
<tr>
<td><strong>Online Matlab quizzes</strong></td>
<td>4%</td>
</tr>
<tr>
<td>Matlab test</td>
<td>8%</td>
</tr>
<tr>
<td>Final exam</td>
<td>64%</td>
</tr>
</tbody>
</table>

Final exam includes a small computing component so that, overall, Matlab accounts for about 15% of your overall mark.

We expect you to devote an average of one hour per week to learning Matlab.
Online Algebra and Calculus Quizzes

Log on to *My Elearning* and select the module called

MATH1151 - 2009T1_MATH1151

and follow the links

Course Materials > On-line Tutorial Tests

Read the instructions there and use MapleTA link.

You can also log in to the *MapleTA server* directly without going through My eLearning.

Note:

My eLearning password = UNIPASS,
MapleTA password = Maths and Stats password.
The first-time you log in to the *MapleTA server* click on the link 

Find classes open for registration

Tick the box next to MATH1151.

Click on *Register* and then *Confirm*.

MapleTA refers to the online tests as *Assignments*. 
Online Matlab Quizzes

Log on to My Elearning and select the module called

matlab - 2009T1 matlab

This module is used by several courses, not just Math1151.

Follow the links

Course Materials  >  Matlab Introduction and Tests

Work through sections 1–6, completing the five tests at the end of sections 2–6 by 9PM Friday of week 6 (24th April).

You do not have to worry about sections 7–9 until Session 2.
Typical (easy) question:

In Matlab, which of the following gives [4 7 10 13]?

a. 4:13
b. 4:3:13
c. [4;7;10;13]
d. linspace(4,13,3)
Matlab Test

This test will take place during Week 9 (11–15th May).

From Week 7 you will be able to use an online facility to book one of several available time slots.

The “Computing Information” section in the Math1151 Information Booklet includes a set of Matlab Computing Exercises and a sample test.

During Week 8 I will post solutions to the Matlab Computing Exercises on the Math1151 My eLearning module.
The Week 9 tests use a special “exam mode” version of the Linux desktop environment. You will log in as usual, but will not see any of your files. Internet and email access are disabled, but you can use all of Matlab’s built-in help system.

During the test you must create Matlab script M-files q1.m, q2.m, . . . . Just save these files to your home (login) directory.

After the test, your M-files are automatically archived for grading.
Typical question:

3. Create a plot of the polynomial $x^6 - 7x^4 + 5x^3 + x - 8$ for $-2 \leq x \leq 3$. Add gridlines, and then save the plot as an encapsulated postscript file called myplot.eps.

Solution: use the Matlab editor to create a file q3.m containing the following code.

```matlab
x = linspace(-2, 3, 200);
y = polyval([1, 0, -7, 5, 0, 1, -8], x);
plot(x,y)
grid on
print -depsc myplot.eps
```
How do I learn to use Matlab?

We do not devote any class time to teaching Matlab in a systematic way, but the lectures will include examples illustrating the use of Matlab.

Your tutor might know a lot about Matlab, or s/he might know nothing about Matlab.

What to do:

▶ Begin by reading the *Introduction to Matlab*. Ideally, try the examples on a computer as you read the text.
▶ Learn to use Matlab’s built-in help system.
▶ Work through the online quizzes.
▶ Prepare for the lab test in week 9 by working through the practice problems and then studying their model solutions.
Running Matlab on a laptop or home PC

You can use Matlab in the Maths and Stats computer labs from Monday to Friday between 8AM and 9PM.

Usually you should be able to find a free computer, but the labs will be very busy during Week 8.

You can buy the student version of Matlab 2008b (for Windows, Mac or Linux) from the UNSW Bookstore for $119. The licence allows you to use the software on one computer and only for course work.

Buying you own copy of Matlab is not essential, but is probably worth while if you are sure you will use the software in future courses.
Octave — a free alternative

_Octave_ is a free software application that provides a high degree of compatibility with the Matlab programming language. Make sure you have version 3.0 or higher.

You can download a Windows or Mac installer from the _Octave-Forge_ web page.

Most Linux distributions include pre-built Octave packages in their repositories.

Since Octave does not have a graphical user interface, before the test in Week 9 you need to practice using Matlab in the labs.

The Windows version of Octave includes an editor called _Scite_.

The Maths and Stats Computing Centre is located on the Mezzanine and Ground Floors of the East Wing of the Red Centre.

<table>
<thead>
<tr>
<th>Room</th>
<th>Number of PCs</th>
<th>Operating System</th>
</tr>
</thead>
<tbody>
<tr>
<td>RC-M020</td>
<td>40</td>
<td>Windows/Linux</td>
</tr>
<tr>
<td>RC-G012A</td>
<td>35</td>
<td>Linux</td>
</tr>
<tr>
<td>RC-G012B</td>
<td>40</td>
<td>Windows/Linux</td>
</tr>
<tr>
<td>RC-G012C</td>
<td>40</td>
<td>Windows</td>
</tr>
</tbody>
</table>

Windows = Windows XP,

Linux = Debian KDE.

The Helpdesk is located next to RC-M020.
We create a computer account for each student enrolled in a Maths and Stats course.

If your student number is 1234567 then the account name is z1234567.

To use your account, you must first set your Maths and Stats password:

1. Log in to *My eLearning* (you will need your UNIPASS).
2. Go to the Math1151 module.
3. Click on the “Maths Info” link.
4. Log in to the Maths and Stats Student Web Portal (using your UNIPASS) and follow the instructions.
Lab Consultants

The School of Maths and Stats employs lab consultants to provide help to students in the computer labs.

The main job of these consultants is to assist first-year students to learn Maple, but some of the consultants also know about Matlab.

In Week 0 we have Matlab-capable consultants at the following times:

- Wednesday 3–4PM
- Thursday 2–4PM
- Friday 2–4PM
More Details

- *Math1151 Information Booklet* (included in course pack).
- School of Maths and Stats *Computing Laboratories Information for Students*.
- School of Maths and Stats *Introduction to Matlab*.
- Math1151 *My eLearning* course module.