My office hours:

- Monday: 10:00 - 11:00
- Wednesday: 10:00 - 11:00
- (other times - drop by and see)

I may also be there at

http://www.unimelb.edu.au/~dmhr/1620-161

Consultation hours on the web

http://www.unimelb.edu.au/~dmhr/1620-161

Dr. Deborah King

S344-8C52

Introductory Maths

Richard Berry Building

Room G47

Alternative Help

You can also approach

Dr. Sunming Zhou

Room 146, Richard Berry

You may also attend

tutorials!

Tutorials: 1 per week

FRIDAY: 12:00 - 1:00

Lectures: 3 per week

MONDAY: 12:00 - 1:00

WEDNESDAY: 12:00 - 1:00

You can also approach

Dr. Sunming Zhou

Room 146, Richard Berry

See first year noteboom

for allocation list.
There will also be a roster of tutors on duty. Consult timetable in First Year learning Centre.
Consultation hours commence in Week 3.

Assessment

1. Final Exam (3 hours)
2. Mid-semester test (Friday 23rd April)
3. Assignments (10 weekly assignments)

Final Mark

Either

Test (15%) + Exam (90%) + Homework (10%) OR

Text [Barnett & Ziegler]
Applied mathematics for Business, Economics, Life Sciences, and Social Sciences (eds 600-4).

Access to additional material.
Lecture notes will be available on the website.
These will be updated weekly.
* You will need a password.
Hard copies of handouts will be available in G65 R.B.B.

Previous exam papers and answers.
Sample mid-semester test.
Your orange book is an integral part of the tutorial system. Please ensure that you always bring it to class with you!
Course Aims

- To refine and extend knowledge and skills already obtained in VCE.
- To introduce new concepts: particularly linear algebra and multivariate ideas.
- To appreciate how these ideas can be used in practical situations.

Outline of Topics:

1. Linear Equations
2. Linear Programming (graphs)
3. Linear Programming (simplex)
4. Dual (LP) & Logs/Exps.
5. Functions & Derivatives (one variable)
6. Implicit differentiation
7. Optimization (one variable)
8. Partial derivatives
9. Optimization (two variables)
10. Least squares

These topics are revision with some extensions.

1. Linear Equations

Objectives:

1. Revise the equation of a straight line.
4. Introduction to Gaussian elimination.

Exs.: 8.4-1, 8.4-2.
A system of equations is a set of equations that we wish to solve simultaneously. Geometrically, this corresponds to the intersection points of the lines represented by the system.

Example 1 (continued)

\[ \begin{align*}
  y &= 3x + 2 \\
  y &= 6 - x
\end{align*} \]

This simultaneous system has solution \( x = 1, y = 5 \).

(You can check this for yourself by substitution!!)

**Formal (algebraic) Solution.**

We first rewrite the equations with variables on the left and constant terms on the right.

\[ \begin{align*}
  3x - y &= -2 \\
  x + y &= 6
\end{align*} \] system represents two lines in the plane.

(A) Interchange order of equations; different system with the same solution.

\[ \begin{align*}
  x + y &= 6 \\
  3x - y &= -2
\end{align*} \]

(B) Multiply one equation by a non-zero constant.

\[ \begin{align*}
  3x + 3y &= 18 \\
  3x - y &= -2
\end{align*} \]

(C) Add a multiple of one equation to another.

\[ \begin{align*}
  -4y &= -20 \\
  y &= 5
\end{align*} \]

So \( x = \frac{1}{3}(18 - 5) \). [Note: Calculation]

What operations did we use to produce equivalent systems with the same solution?

\[ \begin{align*}
  & (A) \text{ Interchange order of equations.} \\
  & (B) \text{ Multiply one equation by a non-zero constant} \\
  & (C) \text{ Add a multiple of one equation to another}
\end{align*} \]

A shorthand notation allows us to avoid writing \( x, y \) in every step of our calculation.

Using matrix notation and the operations (A), (B) and (C) we can perform the previous calculation much more efficiently.
Your Free Orange
Book

- detailed course information
- 11 Example Sheets
  - You should work through an average of 1 sheet per week.
- details of homework to be handed in for correction
- Answers (not full solutions) to example sheets.