DIVISION OF ECONOMIC AND FINANCIAL STUDIES

STAT888: Applied Business Techniques

First Semester, 2006

Unit Outline

Students in this unit should read this unit outline carefully at the start of the semester.

ABOUT THIS UNIT

This unit provides the skills necessary to apply the techniques of quantitative analysis in organisational decision-making situations. The approach taken consists of defining the business problem, developing a model, acquiring the necessary data, developing and analysing the solution, and implementing the results. Practical examples taken from a wide variety of business situations will be used and case studies discussed with the emphasis being on applications of the techniques rather than the theory.

The aim of the unit is to provide an appreciation of information requirements within the business and competence in the analysis of management decisions.

The topics covered in this unit are broadly classified as:
- introduction to probabilistic models
- linear programming
- queuing theory and project management.

STAT888 is a 4-credit point unit offered by the Statistics Department in the Division of Economic and Financial Studies as part of the Master of Commerce Program.

Software*:*
Microsoft Excel and *QM for Windows* (supplied with the textbook).

Prerequisite: There is no prerequisite.

TEACHING STAFF

Dr Nino Kordzakhia (unit convenor)
Room: E4A 537
Phone: 9850-8549
Fax: 9850-7669
email: nino.kordzakhia@mq.edu.au
Consultation hours: on Wednesdays 11 am – 12 pm, or by appointment

Dr Frederick Wong
Room: E4A 507
Phone: 9850-8544
Fax: 9850-7669
email: frederick.wong@mq.edu.au
Consultation hours: Wednesdays 11am-2pm, or by appointment

CLASSES

Lectures begin in Week 1. Lectures are held on Wednesdays from 3pm to 6 pm in **E5A 116**.

There are no tutorials. Examples are integrated into the lectures. Students should attempt the exercises after each lecture. Solutions will be given in the next lecture.

The timetable for classes can be found on the University web site at:
http://www.timetables.mq.edu.au/

REQUIRED AND RECOMMENDED TEXT.

Render, B., Stair, R. and Hanna, M., *Quantitative Analysis for Management.* Prentice-Hall 2006, 9th edition, (or, Prentice-Hall 2003, 8th edition). Lecture notes, including the exercises and examples, will be provided.

UNIT WEB PAGE

Information relating to this unit can be found by visiting the Macquarie University Statistics Department web site. The URL for this unit is
http://www.stat.mq.edu.au/units/stat888/

LEARNING OUTCOMES

By the end of this unit students should be able to understand:
    Basic business statistics
    Optimal allocation of resources
    Making business decisions
    Maximising profits
    Applications of scientific method in business
    Inventory management
    Provision of service versus customer waiting times
    Project management

Students will be expected to gain a reasonable mastery of current implementations of the program *QM for Windows* (supplied with the textbook) and Microsoft Excel.

In addition to the discipline-based learning objectives, all academic programs at Macquarie seek to develop students' generic skills in a range of areas. One of the aims of this unit is that students develop their skills in the following:

Critical analysis skills;
Problem-solving skills;
Creative thinking skills.

TEACHING AND LEARNING STRATEGY

The unit is taught in traditional mode; that is, on campus in standard semesters with weekly lectures.

- Students are expected to attend all lectures;
- The weekly exercises will *not* be collected. They are for practice purposes, and students are *strongly advised to do the exercises.* The solutions are handed out in the next week's lecture.
- There is only *one* <u>individual</u> major assignment for credit. This will be handed out at the **Week 7** and is due to be handed in at the lecture in **Week 9**. *For each day late* there is a potential loss of assignment marks of 20%.
  It is essential that the Assignment solution have a cover sheet with the student's ID, Given Name and Family Name at the TOP of the sheet.

Assessment

Major assignment	20%	
Mid-semester Examination	20%	**Week 7, April 12**
Final Examination	60%	**Week 13, June 7**

Students must perform to a satisfactory level in the final examination as well as in the overall assessment in order to be awarded an appropriate grade.

RELATIONSHIP BETWEEN ASSESSMENT AND LEARNING OUTCOMES

While attendance at lectures is important it is only a small proportion of the total workload for the unit: reading, research in the library, completing the individual assignment, using the computer and private study are all part of the work involved. At Macquarie it is expected that in average a student should spend about 4 hours per week per credit point.

FINAL EXAMINATION

Your final exam will be in Week 13; at the same time, 3-6 pm, and place, E5A 116, that the lecture would normally take place. Students may bring one A4-sized sheet, hand written on both sides, notes, formulae, etc. Any photocopied or computer printed sheets are forbidden. No other materials such as lecture notes and textbooks are permitted. Scientific calculators will be needed but must not be of the text (i.e. A, B, C up to Z) or programmable type.

The only exception to not sitting an examination at the designated time is because of documented illness or unavoidable disruption. In these circumstances you may wish to consider applying for Special Consideration. Information about unavoidable disruption and the special consideration process is available at http://www.reg.mq.edu.au/Forms/APSCon.pdf

If a Supplementary Examination is granted as a result of the Special Consideration process the examination will be scheduled after the conclusion of the official examination period.

You are advised that it is Macquarie University policy not to set early examinations for individuals or groups of students. All students are expected to ensure that they are available until the end of the teaching semester, that is the final day of the official examination period.

PLAGIARISM

The University defines plagiarism in its rules: "Plagiarism involves using the work of another person and presenting it as one's own." Plagiarism is a serious breach of the University's rules and carries significant penalties. You must read the University's practices and procedures on plagiarism. These can be found in the *Handbook of Undergraduate Studies* or on the web at: http://www.student.mq.edu.au/plagiarism/

The policies and procedures explain what plagiarism is, how to avoid it, the procedures that will be taken in cases of suspected plagiarism, and the penalties if you are found guilty. Penalties may include a deduction of marks, failure in the unit, and/or referral to the University Discipline Committee.

UNIVERSITY POLICY ON GRADING

Academic Senate has a set of guidelines on the distribution of grades across the range from fail to high distinction. Your final result will include one of these grades plus a standardised numerical grade (SNG).

On occasion your raw mark for a unit (i.e., the total of your marks for each assessment item) may not be the same as the SNG which you receive. Under the Senate guidelines, results may be scaled to ensure that there is a degree of comparability across the university, so that units with the same past performances of their students should achieve similar results.

The process of scaling to SNG does not change the order of marks among students. A student who receives a higher raw mark than another will also receive a higher final scaled mark.   The grades and what they mean are given as below:

HD – High Distinction   Denotes a performance that meets all unit objectives in such an exceptional way and with such marked excellence that it deserves the highest level of recognition.

D – Distinction   Denotes performance that clearly deserves a very high level of recognition as an excellent achievement in the unit.

C – Credit   Denotes performance that is substantially better than would normally be expected of competent students in the unit.

P – Pass   Denotes performance that satisfies unit objectives.

PC – Conceded Pass Denotes performance that meets unit objectives only marginally.

F – Fail   Denotes that a candidate has failed to complete a unit satisfactorily.

For an explanation of the policy see
http://www.mq.edu.au/senate/MQUonly/Issues/Guidelines2003.doc or
http://www.mq.edu.au/senate/MQUonly/Issues/detailedguidelines.doc.

STUDENT SUPPORT SERVICES

Macquarie University provides a range of Academic Student Support Services. Details of these services can be accessed at
http://www.student.mq.edu.au.

Unit Schedule

Lectures

LECTURE (DATE)	TOPIC
1 (1 March)	**Introduction to Management Science. Modeling. Data Types. Descriptive statistics.**
2 (8 March)	**Discrete and Continuous Random Variables. Characteristics of random Variables. Parameter Estimation.**
3 (15 March)	**Linear programming Problem formulation Graphical solutions**
4 (22 March)	**Linear programming Special cases Integer programming**
5 (29 March)	**Linear and integer programming Sensitivity analysis Business applications**
6 (5 April)	**Inventory systems EOQ models Reorder point Quantity discount**
7 (12 April)	*MID-SEMESTER EXAMINATION MAJOR ASSIGNMENT GIVEN OUT* *MID SEMESTER BREAK*
8 (3 May)	**Waiting line models Assumptions Simple queues**
9 (10 May)	**Waiting line models Multi-server queues Constant service time** *MAJOR ASSIGNMENT DUE*
10 (17 May)	**Project management Critical Path Method Arrow diagrams Microsoft Project 98 Gantt charts**
11 (24 May)	**Simulation Random numbers Monte Carlo techniques**
12 (31 May)	**Revision lecture**
13 (7 June)	*FINAL EXAMINATION*