



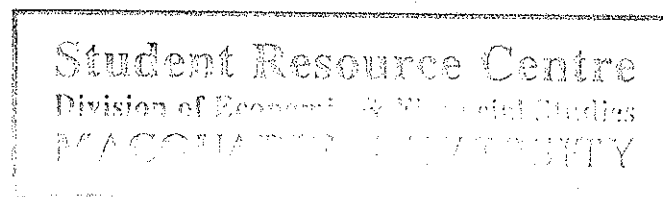
**MACQUARIE UNIVERSITY  
DIVISION OF EFS**

**UNIT OUTLINE**

**STAT279 Operations Research I**

**Year and Semester: 2005 Semester 1**

**Unit convenors: Michael Petersons & Sibba Gudlaugsdottir**



Students in this unit should read this unit outline carefully at the start of semester. It contains important information about the unit. If anything in it is unclear, please consult one of the teaching staff in the unit.

## ABOUT THIS UNIT

- Unit Value: Three (3) credit points
- This unit aims to introduce students to a variety of techniques and solution methods used for optimisation. The techniques require the formulation of problems, logical reasoning and interpretation of results. Linear programming, graphical solutions, the Simplex method, transportation models, inventory, queuing, project planning and simulation are the topics covered. Use is made of a statistical package to analyse data, solve linear programming problems and produce reports.
- Unit rationale: Formulation of problems, their solution and analysis are an integral part of business decision making. This unit provides the background for making informed decisions about complex problems based on the principle of optimisation.

## TEACHING STAFF

- Convenors Michael Petersons C5C 469 Phone 9850 8549  
Sibba Gudlaugsdottir C5C 456 Phone 9850 8582

## CLASSES

	LECTURES		
STREAM A	Mon10 Mason	STREAM B	Fri11 C5CT1
	Wed11 Mason		Fri12 C5CT1
	Wed13 Mason		Fri13 C5CT1
	PRACTICALS		
	Wed14 E7BT5	Wed15 E7BT5	
	Wed16 E7BT5	Wed17 E7BT2	

- Students must attend the class to which they have been allocated.
- Attendance at practicals is compulsory and will be monitored.  
Non submission of homework or poor attendance will jeopardise your final grade.

## REQUIRED AND RECOMMENDED TEXTS AND/OR MATERIALS

- The set text is  
Quantitative Decision Making with Spreadsheet Applications  
by Lapin and Whisler 7<sup>th</sup> Ed.
- You must purchase the study guides consisting of  
Lecture overheads.  
Practical material
- Reference books available in the library are as follows:  
**Operations Research Applications and Algorithms (3d Ed)**  
by Winston W. L.(PWS Kent)  
**Operations Research: An Introduction**  
by H A Taha (Macmillan)

## UNIT WEB PAGE

- The web page for this unit is <http://www.stat.mq.edu.au/units/stat279/index.htm>

## LEARNING OUTCOMES

- The learning outcomes of this unit are outlined at the beginning of each section of the printed notes. However there are some generic outcomes which are listed below.

Students must be able to

- Formulate problems
- Use a computer package to find solutions to formulated problems.
- Interpret output and write up conclusions based on the output which are relevant to the original problem that was posed.

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:

*Foundation skills of literacy, numeracy and information technology;*  
*Communication skills;*  
*Critical analysis skills;*  
*Problem-solving skills;*  
*Creative thinking skills.*

## TEACHING AND LEARNING STRATEGY

- Students must attend three lectures each week at which new material is introduced
- Students are expected to have read through the material to be covered using the lecture notes provided in the study guides.
- Students are expected to attend one practical class each week for which they have attempted a solution to the homework problems that have been prescribed and during which they will solve any new problems presented under the guidance of the instructor.
- Week-by-week list of the topics to be covered is available at the end of this document.

## RELATIONSHIP BETWEEN ASSESSMENT AND LEARNING OUTCOMES

### **Practicals**

Practicals will commence in week 2 of the semester.

The practicals are meant to be a learning exercise. Participation in the practicals is essential for your understanding of the course content and the solution of problems.

**Attendance is compulsory and will be monitored. If you miss more than two practical classes you may be excluded from the unit resulting in a fail grade.**

Before the practical each week you should prepare the set of homework problems as stipulated in the STAT279 Homework Exercises. You must hand in a photocopy of your solution during the practical. The practical demonstrator will go through some further problems as outlined in the Study Guide.

During the **PRACTICALS** in weeks **5** and **10** you will be asked to solve a set of questions called **quizzes** made up of multiple choice questions. They will be collected and marked.

The mark for the quizzes **DOES** count towards final assessment.  
Each quiz is worth 5% of the total assessment.

## **Homework**

All homework problems will be given in a separate handout in week one.

You must complete and hand in a **COPY** of your homework.

The homework must be submitted to the demonstrator in the week they are due. Late homework will not be accepted. The submitted homework will **NOT** be returned.

Each homework task requires you to assimilate the procedures, content and methodology covered in the preceding weeks and apply them to solving the problems presented. If you have satisfied all the behavioural objectives for a topic you will be able to successfully complete the homework based on that weeks' topic.

The feedback from the demonstrator during the practical class and the model solution provided in ERIC should be used to remediate any part of the subject matter with which you are having difficulty. This solution will be available on the day after the last practical class each week.

## **Examinations, Tests and Quizzes**

### **Class Test**

There will be a class test in this unit, worth 10% of total assessment.

The class test will be held in **week 7** in the

**Wednesday 11am LECTURE for Stream A**

**Friday 11am LECTURE for Stream B.**

The class test is **closed book**. Any relevant formulae, if needed, will be given with the test papers. The class test is **compulsory** and there will be **NO** make up tests.

If you miss the class test you must submit relevant documentation or you may receive a fail grade for the unit. A valid absence will mean your other coursework marks will be scaled up.

The Class Test covers lecture material from weeks 1-6 inclusive and will be of 40 minutes duration.

**You should bring to the test a calculator, writing implements and a ruler**

Students can pick up their marked class test papers from ERIC -C5C244. Students will have to show their student ID in order to get their papers back.

Solutions to the class test will be summarised in the practicals in week 8.

The class test will enable you to get feedback and continuing information about your progress in this unit.

### **Quizzes**

There are 2 (two) quizzes, each worth 5% of total assessment.

The quizzes will be held in the **PRACTICALS** in **week 5 and 10**.

Both the quizzes are **closed book**. Both quizzes are **compulsory** and there will be **NO** make up quizzes.

If you miss a quiz you must submit relevant documentation or you may receive a fail grade for the unit. A valid absence will mean your other quiz will be worth double.

The first Quiz covers material from lecture weeks 1- 4 inclusive.  
The second Quiz covers lecture material from weeks 5-9 inclusive.  
Each Quiz is of 10 – 15 minutes duration.

**Students should bring to the quizzes a calculator and writing implements.**

Students getting **below half marks** in the combined marks for the tests and quizzes will be **downgraded by one grade** from their performance in the final exam.  
Quizzes will not be returned to students since they are multiple choice but the marks will be published on the statistics notice board in the week after the quiz.

### **Final Examination**

The final exam will be closed book and held during the end of year exam session. It will be worth 80% of the total assessment, and will cover the whole semesters work.

Summary of Assessment	
Test	10%
Quiz 1	5%
Quiz 2	5%
Final Exam	80%

**NOTE:** To obtain a passing grade in the course a **satisfactory performance** will be required in the final exam irrespective of any marks gained during the semester. Evidence from your tests and quizzes will be used in determining the final grades. The final examination enables you to display your assimilation and understanding of the behavioural objectives for each topic and to demonstrate your analytic skills in identifying the statistical methods appropriate to solving problems in a wider context. The Examination period in First Semester commences on 15<sup>th</sup> June.

You are expected to present yourself for examination at the time and place designated in the University Examination Timetable. The timetable will be available in Draft form approximately eight weeks before the commencement of the examinations and in Final form approximately four weeks before the commencement of the examinations.

<http://www.timetables.mq.edu.au/exam>

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.

**Special consideration will only be granted to students whose performance in all parts of the coursework is satisfactory.** 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.

It is important that you realise that the policy does not require that a minimum number of students are to be failed in any unit. In fact it does something like the opposite, in requiring examiners to explain their actions if more than 20% of students fail in a unit.

The process of scaling 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. 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>.