Description: Optimisation Applications I

<table>
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<tr>
<th>Subject</th>
<th>Cat-Nbr</th>
<th>Class</th>
<th>Term</th>
<th>Mode</th>
<th>Units</th>
<th>Campus</th>
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<tr>
<td>MGT</td>
<td>2100</td>
<td>10167</td>
<td>1, 2002</td>
<td>ONC</td>
<td>1.00</td>
<td>TW MBA</td>
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Academic Group: FOBUS
Academic Org: FOB002
HECS Band: 2
ASCED Code: 080301

STAFFING
Examiner: Latif Al-Hakim
Moderator: Dom Pensiero

PRE-REQUISITES
Pre-requisite: MGT 1100

SYNOPSIS
This course, together with MGT2102, covers the Operations Research techniques and algorithms which are most commonly used in business. These methods are presented primarily as applications, without neglecting the mathematical understanding of their operation. The emphasis is on formulation of problems, and the interpretation of solutions obtained from an appropriate computer software package.

OBJECTIVES
Completion of this course will enable students to:

- Formulate business problems in mathematical terms.
- Choose the appropriate technique for a particular problem.
- Identify the requirements for the use of the different techniques covered in this course, in terms of information.
- Use software or calculation, as appropriate, to derive solutions to business-related problems.
- Interpret the mathematical and computer solutions from the algorithms in business terms.
- Present management reports incorporating the solutions and the information derived from the above.
## TOPICS

<table>
<thead>
<tr>
<th>Description</th>
<th>Weighting (%)</th>
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<tr>
<td>1. Formulating business information as mathematical equations. The meaning of variables and constraints.</td>
<td>5.00</td>
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<tr>
<td>2. Linear Programming. Standard form and the Simplex method of solution.</td>
<td>20.00</td>
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<tr>
<td>3. Computers in LP formulation and solution.</td>
<td>5.00</td>
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<td>4. Interpretation of solution output. Sensitivity Analysis and the use of Duality.</td>
<td>20.00</td>
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<td>5. Integer programming and mixed linear programming.</td>
<td>20.00</td>
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<tr>
<td>6. Special-case linear programming. The transportation and assignment algorithms.</td>
<td>15.00</td>
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<tr>
<td>7. Other special cases. Network optimisation algorithms.</td>
<td>15.00</td>
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</table>

## TEXT and MATERIALS required to be PURCHASED or ACCESSED:

Books can be ordered by fax or telephone. For costs and further details use the 'Book Search' facility at [http://bookshop.usq.edu.au](http://bookshop.usq.edu.au) by entering the author or title of the text.

**USQ External Study Package**


Summers, J. & Smith, B., (eds), 2001 *Faculty of Business Communication Skills Handbook*, 4th edn, Faculty of Business, USQ, Toowoomba, Qld.

## REFERENCE MATERIALS

Reference materials are materials that, if accessed by students, may improve their knowledge and understanding of the material in the course and enrich their learning experience.

Any text in *Management Science or Operations Research*, will be useful.


STUDENT WORKLOAD REQUIREMENTS

ACTIVITY HOURS
Assessment 45
Directed Study 33
Private Study 87

ASSESSMENT DETAILS

<table>
<thead>
<tr>
<th>Description</th>
<th>Marks Out of</th>
<th>Wtg(%)</th>
<th>Required</th>
<th>Due Date</th>
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<tr>
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<tr>
<td>ASSIGNMENT 2</td>
<td>35.00</td>
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<td>ASSIGNMENT 3</td>
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<td>EXAMINATION 3 HOURS</td>
<td>50.00</td>
<td>50.00</td>
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</table>

NOTES:
1. Further details about the due dates are detailed in the assessment section of the Course Specifications.
2. Further details about the due dates are detailed in the assessment section of the Course Specifications.
3. Further details about the due dates are detailed in the assessment section of the Course Specifications.
4. Further details about the due dates are detailed in the assessment section of the Course Specifications.

OTHER REQUIREMENTS

1. To be assured of a passing grade in this unit students will be required to obtain at least 50% for the assignments in aggregate and at least 50% in the final examination and an overall mark of 50%. Criteria for higher grades: Final grades for the unit will be determined by the addition of the marks obtained in each assessment item, weighted as in the Assessment Details and by considering the students’ level of achievement of the objectives of the unit. To be assured of a B grade students will be required to obtain an overall mark of 65%. To be assured of an A grade students will be required to obtain an overall mark of 75%. To be assured of an HD grade students will be required to obtain an overall mark of 85%.
2. The due date of an assignment is the date by which a student must despatch the assignment to the University, and is normally that defined in the relevant course specification. The onus is on the student to provide, if requested, proof of date of despatch.
3 Students should organise their affairs to ensure that they meet due dates for all assignments. Extensions will be granted only under exceptional extenuating circumstances, normally involving a significant medical condition.

4 Students may apply for an assignment extension either by application through DEC before the due date or by including application with the submitted assignment after the due date. Such applications should be in writing and include supporting documentary evidence. The authority for granting extensions rests with the relevant Course Leader.

5 All assignments despatched after due dates without appropriate extension approvals or after approved extension dates will be penalised up to a maximum of 20% of the assigned mark per work day.

6 Students must retain a copy of all assignments which must be provided if/when required by the Course Leader.

7 Course weightings of topics should not be interpreted as applying to the number of marks allocated to questions testing those topics in an examination paper.