The University of Southern Queensland

Course Specification

Description: Optimisation Applications I

<table>
<thead>
<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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<tbody>
<tr>
<td>MGT</td>
<td>2100</td>
<td>20168</td>
<td>1, 2003</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: Tom Rafferty

PRE-REQUISITES
Pre-requisite: MGT1100

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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<tbody>
<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, Problem formulation.</td>
<td>20.00</td>
</tr>
<tr>
<td>3. Computers in LP formulation and solution.</td>
<td>5.00</td>
</tr>
<tr>
<td>4. Interpretation of solution output. Sensitivity Analysis and the use of Duality.</td>
<td>20.00</td>
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<tr>
<td>5. Integer programming and mixed linear programming.</td>
<td>20.00</td>
</tr>
<tr>
<td>6. Special-case linear programming. The transportation and assignment algorithms.</td>
<td>15.00</td>
</tr>
<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 by entering the author or title of the text.

MGT 2100 study package available from the USQ Bookshop.


(includes CD-ROM package)


(revised edition)

### 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

<table>
<thead>
<tr>
<th>ACTIVITY</th>
<th>HOURS</th>
</tr>
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<tbody>
<tr>
<td>Assessment</td>
<td>45</td>
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<tr>
<td>Directed Study</td>
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<td>Private Study</td>
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ASSESSMENT DETAILS

<table>
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<tr>
<th>Description</th>
<th>Marks Out of</th>
<th>Wtg(%)</th>
<th>Required</th>
<th>Due Date</th>
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<tr>
<td>ASSIGNMENT 1</td>
<td>10.00</td>
<td>10.00</td>
<td>Y</td>
<td>04 Apr 2003</td>
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<tr>
<td>ASSIGNMENT 2</td>
<td>30.00</td>
<td>30.00</td>
<td>Y</td>
<td>09 May 2003</td>
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<tr>
<td>ASSIGNMENT 3</td>
<td>10.00</td>
<td>10.00</td>
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<td>06 Jun 2003</td>
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<td>EXAMINATION 3 HOURS</td>
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<td>50.00</td>
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</table>

NOTES:
. The examination is scheduled to be held in the end-of-semester examination period. Students will be advised of the official examination date after the timetable has been finalised.

IMPORTANT ASSESSMENT INFORMATION

1 Attendance requirements:
It is the students' responsibility to attend and participate appropriately in all activities (such as lectures, tutorials, laboratories and practical work) scheduled for them, and to study all material provided to them or required to be accessed by them to maximise their chance of meeting the objectives of the course and to be informed of course-related activities and administration. If you are an International student in Australia it is a requirement of your student visa that you attend all classes at your campus.

2 Requirements for students to complete each assessment item satisfactorily:
To complete the assignments satisfactorily, students must obtain at least 50% of the marks available for the assignments in aggregate. To complete the examination satisfactorily, students must obtain at least 50% of the marks available for the examination.

3 Penalties for late submission of required work:
If students submit assignments after the due date without prior approval then a penalty of 10% of the total marks available for the assignment will apply for each working day late.

4 Requirements for student to be awarded a passing grade in the course:
To be assured of receiving a passing grade a student must attempt all of the summative assessment items, achieve an aggregated mark of at least 50% in the total marks allocated for the assignments, achieve at least 50% in the examination,
and at least 50% of the available weighted marks for the summative assessment items.

5 Method used to combine assessment results to attain final grade:
The final grades for students will be assigned on the basis of the weighted aggregate of the marks (or grades) obtained for each of the summative assessment items in the course.

6 Examination information:
This is a restricted examination. Candidates are allowed access to specific materials during the examination. The only materials that candidates may use in the restricted examination for this course are: writing materials (non-electronic and free from material which could give the student an unfair advantage in the examination); calculators which cannot hold textual information (students must indicate on their examination paper the make and model of any calculator(s) they use during the examination).

7 Examination period when Deferred/Supplementary examinations will be held:
Any Deferred or Supplementary examinations for this course will be held during the next examination period.

8 University Regulations:
Students should read USQ Regulations 5.1 Definitions, 5.6 Assessment, and 5.10 Academic Misconduct for further information and to avoid actions which might contravene University Regulations. These regulations can be found at the URL: http://www.usq.edu.au/SECARIAT/calendar/Part5/ or in the printed version of the current USQ Handbook. Students should also read The Guide to Policies and Procedures of the Faculty which can be found at the URL: http://www.usq.edu.au/handbook/2003/business/polproc/index.htm or in the printed version of the current USQ Handbook.

ASSESSMENT NOTES

1 Assignments: (i) The due date for an assignment is the date by which a student must despatch the assignment to the USQ. The onus is on the student to provide proof of the despatch date, if requested by the Examiner. (ii) Students must retain a copy of each item submitted for assessment. This must be produced within 24 hours if required by the Examiner. (iii) The Examiner may grant an extension of the due date of an assignment in extenuating circumstances. Students may apply for an assignment extension by contacting the Examiner 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 Examiner.

2 Course Weightings: 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.