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FIT5097 Business intelligence modelling - Semester 2, 2013

This unit introduces students to the principles, techniques and applications of computer-based decision support models for business and industry. Topics include: decision trees; linear programming and optimisation; other mathematical programming methods; waiting lines and queues; time series analysis and forecasting; inventory modelling and discrete-event simulation. Models will be built and solved using spreadsheets or other computer applications as appropriate.

Mode of Delivery

Caulfield (Evening)

Contact Hours

2 hrs lectures/wk, 2 hrs laboratories/wk

Workload requirements

Workload commitments are:

- One two-hour lecture per week,
- One two-hour tutorial per week,
- Approximately 8 hours per week are required for reading, tutorial exercises and assignment work.

Unit Relationships

Prohibitions

BUS5570

Prerequisites

At least one quantitative unit (such as Mathematics or Statistics) in an undergraduate degree.

Chief Examiner

Dr John Betts

Campus Lecturer

Caulfield

Mark Carman
Academic Overview

Learning Outcomes

At the completion of this unit students will:

• have knowledge of a variety of techniques for modelling business decision problems;
• be able to choose the appropriate decision model for a particular problem;
• have skills in setting up simple models and solving with hand calculations;
• have skills in setting up mathematical models for solution in a spreadsheet or other application software;
• have skills in the validation of models and conducting a sensitivity analysis.
• have skills in analysing a real problem and reporting the results;
• understand the difficulty of applying models to real situations, which often requires that approximations, simplifications and generalisations be made;
• understand that the approximate nature of some types of business modelling means that a sensitivity analysis be conducted.
Unit Schedule

<table>
<thead>
<tr>
<th>Week</th>
<th>Activities</th>
<th>Assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Please register for tutorials in Allocate Plus. There will be NO tutorials in Week 1. However, students are advised to attempt a &quot;Do-it-Yourself&quot; Tutorial in Week 1 to familiarise with EXCEL basics.</td>
<td>No formal assessment or activities are undertaken in week 0</td>
</tr>
<tr>
<td>1</td>
<td>Introduction to Management Science and Operations Research; Introduction to Optimisation and Linear Programming</td>
<td>No tutorial in Week 1</td>
</tr>
<tr>
<td>2</td>
<td>Modelling and Solving LP Problems Graphically</td>
<td>Assessment task 2: Tutorial Work is assessed in Weeks 2 to 12 after each tutorial session</td>
</tr>
<tr>
<td>3</td>
<td>Spreadsheet Modelling</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Sensitivity analysis and the interpretation of solutions</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Integer Linear Programming &amp; Goal Programming</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Transportation and Assignment Problems; and Network Modelling</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Decision Analysis and Probability Theory</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Decision Trees</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Time Series Analysis and Forecasting</td>
<td>Assessment task 1: Spreadsheet Modelling due on 27 September 2013</td>
</tr>
<tr>
<td>10</td>
<td>Inventory Modelling</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Queuing</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Simulation</td>
<td></td>
</tr>
<tr>
<td></td>
<td>SWOT VAC</td>
<td>No formal assessment is undertaken in SWOT VAC</td>
</tr>
</tbody>
</table>

*Unit Schedule details will be maintained and communicated to you via your learning system.

Assessment Summary

Examination (2 hours): 60%; In-semester assessment: 40%

<table>
<thead>
<tr>
<th>Assessment Task</th>
<th>Value</th>
<th>Due Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spreadsheet modelling</td>
<td>30%</td>
<td>Friday 27 September 2013</td>
</tr>
<tr>
<td>Tutorial Work</td>
<td>10%</td>
<td>Weeks 2 to 12 after each tutorial session</td>
</tr>
<tr>
<td>Examination 1</td>
<td>60%</td>
<td>To be advised</td>
</tr>
</tbody>
</table>
Teaching Approach

Lecture and tutorials or problem classes

This teaching and learning approach provides facilitated learning, practical exploration and peer learning.
Assessment Requirements

Assessment Policy

Faculty Policy - Unit Assessment Hurdles

Academic Integrity - Please see the Demystifying Citing and Referencing tutorial at http://lib.monash.edu/tutorials/citing/.

Assessment Tasks

Participation

• Assessment task 1

  Title:  Spreadsheet modelling

  Description:
  Solving business decision problems by linear programming and integer programming using the Excel Solver

  Weighting:
  30%

  Criteria for assessment:
  The criteria used to assess the assignment are:

  1. Correctness and understanding - Correct answers are to be provided with explanations and justifications. We will look for answers that reflect understanding of the underlying modelling techniques.
  2. Completeness - that you have answered all parts of each question. Presentation - that you have presented your answers in a suitably formatted report style.

  Due date:
  Friday 27 September 2013

• Assessment task 2

  Title:  Tutorial Work

  Description:
  Tutorial work will be assessed.

  Weighting:
  10%

  Criteria for assessment:
  The criteria used to assess submissions are:

  1. Correctness and understanding - We will look for answers that reflect understanding of the underlying modelling techniques.
  2. Completeness - that you have answered all parts of each tutorial question.

  Due date:
  Weeks 2 to 12 after each tutorial session
Examinations

- Examination 1

  **Weighting:**
  60%

  **Length:**
  2 hours

  **Type (open/closed book):**
  Closed book

  **Electronic devices allowed in the exam:**
  Non-programmable calculators

Learning resources

Reading list


Monash Library Unit Reading List
http://readinglists.lib.monash.edu/index.html

Feedback to you

Types of feedback you can expect to receive in this unit are:

- Informal feedback on progress in labs/tutes
- Graded assignments with comments
- Solutions to tutes, labs and assignments

Extensions and penalties

Submission must be made by the due date otherwise penalties will be enforced.

You must negotiate any extensions formally with your campus unit leader via the in-semester special consideration process: http://www.monash.edu.au/exams/special-consideration.html
Returning assignments

Students can expect assignments to be returned within two weeks of the submission date or after receipt, whichever is later.

Assignment submission

It is a University requirement (http://www.policy.monash.edu/policy-bank/academic/education/conduct/plagiarism-procedures.html) for students to submit an assignment coversheet for each assessment item. Faculty Assignment coversheets can be found at http://www.infotech.monash.edu.au/resources/student/forms/. Please check with your Lecturer on the submission method for your assignment coversheet (e.g. attach a file to the online assignment submission, hand-in a hard copy, or use an online quiz). Please note that it is your responsibility to retain copies of your assessments.

Online submission

If Electronic Submission has been approved for your unit, please submit your work via the learning system for this unit, which you can access via links in the my.monash portal.

Prescribed text(s)

Limited copies of prescribed texts are available for you to borrow in the library.


Recommended Resources

Excel Solver is available for use in all University labs.
Other Information

Policies

Monash has educational policies, procedures and guidelines, which are designed to ensure that staff and students are aware of the University’s academic standards, and to provide advice on how they might uphold them. You can find Monash’s Education Policies at: www.policy.monash.edu.au/policy-bank/academic/education/index.html

Key educational policies include:

- Academic integrity; http://www.policy.monash.edu/policy-bank/academic/education/conduct/student-academic-integrity-policy.html
- Special Consideration; http://www.policy.monash.edu/policy-bank/academic/education/assessment/special-consideration-policy.html
- Grading Scale; http://www.policy.monash.edu/policy-bank/academic/education/assessment/grading-scale-policy.html
- Discipline: Student Policy; http://www.policy.monash.edu/policy-bank/academic/education/conduct/student-discipline-policy.html
- Academic Calendar and Semesters; http://www.monash.edu.au/students/dates/
- Orientation and Transition; http://intranet.monash.edu.au/infotech/resources/students/orientation/
- Graduate Attributes Policy http://www.policy.monash.edu/policy-bank/academic/education/management/monash-graduate-attributes-policy.html

Student services

The University provides many different kinds of support services for you. Contact your tutor if you need advice and see the range of services available at http://www.monash.edu.au/students. For Sunway see http://www.monash.edu.my/Student-services, and for South Africa see http://www.monash.ac.za/current/.

Monash University Library

The Monash University Library provides a range of services, resources and programs that enable you to save time and be more effective in your learning and research. Go to www.lib.monash.edu.au or the library tab in my.monash portal for more information. At Sunway, visit the Library and Learning Commons at http://www.lib.monash.edu.my/. At South Africa visit http://www.lib.monash.ac.za/.
Disability Liaison Unit

Students who have a disability or medical condition are welcome to contact the Disability Liaison Unit to discuss academic support services. Disability Liaison Officers (DLOs) visit all Victorian campuses on a regular basis.

Website: http://www.monash.edu/equity-diversity/disability/index.html
Telephone: 03 9905 5704 to book an appointment with a DLO; or contact the Student Advisor, Student Community Services at 03 55146018 at Sunway
Email: dlu@monash.edu
Drop In: Equity and Diversity Centre, Level 1, Building 55, Clayton Campus, or Student Community Services Department, Level 2, Building 2, Monash University, Sunway Campus

Your feedback to Us

Monash is committed to excellence in education and regularly seeks feedback from students, employers and staff. One of the key formal ways students have to provide feedback is through the Student Evaluation of Teaching and Units (SETU) survey. The University’s student evaluation policy requires that every unit is evaluated each year. Students are strongly encouraged to complete the surveys. The feedback is anonymous and provides the Faculty with evidence of aspects that students are satisfied and areas for improvement.

For more information on Monash’s educational strategy, see:

www.monash.edu.au/about/monash-directions and on student evaluations, see:
www.policy.monash.edu/policy-bank/academic/education/quality/student-evaluation-policy.html

Previous Student Evaluations of this Unit

Previous student feedback for the course was highly positive and thus no changes have needed to be made this year.

If you wish to view how previous students rated this unit, please go to