



**MONASH** University  
Information Technology

**FIT5097**  
**Business intelligence modelling**

**Unit Guide**

**Semester 2, 2012**

The information contained in this unit guide is correct at time of publication. The University has the right to change any of the elements contained in this document at any time.

*Last updated: 13 Jul 2012*

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# **FIT5097 Business intelligence modelling - Semester 2, 2012**

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 (Day)

## **Contact Hours**

2 hrs lectures/wk, 2 hrs laboratories/wk

## **Workload**

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

## 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.

## Graduate Attributes

Monash prepares its graduates to be:

1. responsible and effective global citizens who:

- a. engage in an internationalised world
- b. exhibit cross-cultural competence
- c. demonstrate ethical values

critical and creative scholars who:

- a. produce innovative solutions to problems
- b. apply research skills to a range of challenges
- c. communicate perceptively and effectively

## Assessment Summary

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

<b>Assessment Task</b>	<b>Value</b>	<b>Due Date</b>
Spreadsheet modelling	30%	Friday 21st September 2012
Tutorial Work	10%	After each tutorial session.
Examination 1	60%	To be advised

## Teaching Approach

### Lecture and tutorials or problem classes

This teaching and learning approach provides facilitated learning, practical exploration and peer learning

## Feedback

### Our 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

### 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 SETU, Student Evaluation of Teacher and Unit. 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, and on student evaluations, see:

<http://www.monash.edu.au/about/monash-directions/directions.html>

<http://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

<https://emuapps.monash.edu.au/unitevaluations/index.jsp>

## Recommended Resources

Excel Solver is available for use in all University labs.

## Unit Schedule

Week	Activities	Assessment
0	Please register for tutorials in Allocate Plus. There will be NO tutorials in Week 1. However, students are advised to attempt a "Do-it-Yourself" Tutorial in Week 1 to familiarise with EXCEL basics.	No formal assessment or activities are undertaken in week 0
1	Introduction to Management Science and Operations Research; Introduction to Optimisation and Linear Programming	No tutorial in Week 1
2	Modelling and Solving LP Problems Graphically	Assessment Task 2: Tutorial Work is assessed weekly between weeks 2-12
3	Spreadsheet Modelling	
4	Sensitivity analysis and the interpretation of solutions	
5	Integer Linear Programming & Goal Programming	
6	Transportation and Assignment Problems; and Network Modelling	
7	Decision Analysis and Probability Theory	
8	Decision Trees	
9	Time Series Analysis and Forecasting	Assignment 1: Spreadsheet Modelling - due on 21st September
10	Inventory Modelling	
11	Queuing	
12	Simulation	
	SWOT VAC	No formal assessment is undertaken in SWOT VAC
	Examination period	LINK to Assessment Policy: <a href="http://policy.monash.edu.au/policy-bank/academic/education/assessment/assessment-in-coursework-policy.html">http://policy.monash.edu.au/policy-bank/academic/education/assessment/assessment-in-coursework-policy.html</a>

\*Unit Schedule details will be maintained and communicated to you via your MUSO (Blackboard or Moodle) learning system.

# Assessment Requirements

## Assessment Policy

Faculty Policy - Unit Assessment Hurdles

(<http://www.infotech.monash.edu.au/resources/staff/edgov/policies/assessment-examinations/unit-assessment-hu>)

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 21st September 2012

#### • 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:**

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

## 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).

## Online submission

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

## 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.infotech.monash.edu.au/resources/student/equity/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.



## 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:

<http://policy.monash.edu.au/policy-bank/academic/education/index.html>

Key educational policies include:

- Plagiarism  
(<http://www.policy.monash.edu/policy-bank/academic/education/conduct/plagiarism-policy.html>)
- Assessment  
(<http://www.policy.monash.edu/policy-bank/academic/education/assessment/assessment-in-coursework-p>)
- Special Consideration  
(<http://www.policy.monash.edu/policy-bank/academic/education/assessment/special-consideration-policy.h>)
- 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/key-dates/>);
- Orientation and Transition (<http://www.infotech.monash.edu.au/resources/student/orientation/>);  
and
- Academic and Administrative Complaints and Grievances Policy  
(<http://www.policy.monash.edu/policy-bank/academic/education/management/complaints-grievance-policy>)
- Codes of Practice for Teaching and Learning  
(<http://www.policy.monash.edu.au/policy-bank/academic/education/conduct/suppdocs/code-of-practice-tea>)

### 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 [www.monash.edu.au/students](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/>

The Monash University Library provides a range of services and resources that enable you to save time and be more effective in your learning and research. Go to <http://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/>.

Academic support services may be available for students who have a disability or medical condition. Registration with the Disability Liaison Unit is required. Further information is available as follows:

- Website: <http://monash.edu/equity-diversity/disability/index.html>;
- Email: [dlu@monash.edu](mailto:dlu@monash.edu)
- Drop In: Equity and Diversity Centre, Level 1 Gallery Building (Building 55), Monash University, Clayton Campus, or Student Community Services Department, Level 2, Building 2, Monash University, Sunway Campus
- Telephone: 03 9905 5704, or contact the Student Advisor, Student Community Services at 03 55146018 at Sunway

## **Reading list**

Ragsdale C.T. Spreadsheet Modeling & Decision Analysis, 6th edition, Thomson 2011, (Prescribed Textbook).

Anderson, D., Sweeney, D., Williams, T. Quantitative Methods for Business, 8th Edition (or latest edition), 2001, Thomson Learning.

Lapin LL and Whisler WD, "Quantitative Decision Making with Spreadsheet Applications", Seventh Editions, Duxbury Press, 2002

Winston WL, "Operations Research: Applications & Algorithms", 3rd edition, Duxbury Press, 2004

Winston WL and Albright SC, "Practical Management Science: Spreadsheet Modelling and Applications" Third Edition, Duxbury Press, 1997