MONASH University
Information Technology

FIT5097
Business intelligence modelling

Unit Guide

Semester 2, 2010

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FIT5097 Business intelligence modelling - Semester 2, 2010

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Introduction

Welcome to FIT5097 Business intelligence modelling. This 6-point unit is a core unit in the Business Intelligence professional track for the MBIS, MBusSys and MIMS degrees, and an elective unit for others studying these degrees and other postgraduate courses with the Faculty of IT at Monash University. The unit has been designed to provide you with an understanding of computer modelling techniques, such as linear programming, network modelling and decision tree analysis, that can be used to help the business decision maker understand, analyse and solve a wide range of business problems.

Unit synopsis

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.

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.

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

Prerequisites

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

Prohibitions

BUS5570

Teaching and learning method

Teaching approach

Modelling concepts and techniques will be introduced during lectures. Tutorials will be used to reinforce practical skills, which include manual calculations and the use of computer software for modelling and analysis. Each lecture will be accompanied by designated reading which students are expected to have completed beforehand.

Timetable information

For information on timetabling for on-campus classes please refer to MUTTS,
http://mutts.monash.edu.au/MUTTS/

Tutorial allocation

On-campus students should register for tutorials/laboratories using the Allocate+ system:
http://allocate.its.monash.edu.au/

Unit Schedule

Week	Date*	Topic	References/Readings	Key dates
1	19/07/10	Unit Outline, Management Science in Business Decision Making, Introduction to Modelling	Ragsdale Chapter 1	
2	26/07/10	Linear Programming - Modelling and Solving Problems by Hand	Ragsdale Chapter 2	
3	02/08/10	Linear Programming - Solving Problems using Excel	Ragsdale Chapter 3	
4	09/08/10	Linear programming - Sensitivity analysis and Interpretation of Solutions	Ragsdale Chapter 4	
5	16/08/10	Integer Linear Programming	Ragsdale Chapter 6	
6	23/08/10	Transportation and Assignment Problems	Ragsdale Chapter 5	
7	30/08/10	Network Modelling	Ragsdale Chapter 5	
8	06/09/10	Inventory Modelling	Winston Chapter 11	
9	13/09/10	Decision Making under Uncertainty	Ragsdale Chapter 15	Assignment due
10	20/09/10	Decision Trees, Decision Making using Sample Information	Ragsdale Chapter 15	
Mid semester break				
11	04/10/10	Time Series Analysis and Forecasting	Ragsdale Chapters 9 and 11	
12	11/10/10	Queuing Theory and Simulation	Ragsdale Chapters 12 and 13	
13	18/10/10	Exam Preparation and Revision		

*Please note that these dates may only apply to Australian campuses of Monash University. Off-shore students need to check the dates with their unit leader.

Unit Resources

Prescribed text(s) and readings

Ragsdale, C.T., Spreadsheet Modeling and Decision Analysis: A Practical Introduction to Management Science, 5e, Thomson, 2008.

Recommended text(s) and readings

Lapin, L. and Whisler, W., Quantitative Decision Making with Spreadsheet Applications 7th Ed. (or latest), Wadsworth (Thomson Learning) Belmont, 2002. (Prescribed Additional Text)

Anderson, D., Sweeney, D., Williams, T. Quantitative Methods for Business, Thompson Learning, 11th Edition (or latest edition), 2008.

Winston, W. L. Operations Research: Applications and Algorithms, with cases by Jeffrey B. Goldberg, Thomson Brooks/Cole, Southbank, Vic., 4th edn, 2004.

Willis, R. J. Business Modelling, Eruditions (2000) or latest edition (Additional Reading)

Required software and/or hardware

Microsoft Office 2007

Equipment and consumables required or provided

Students may use the facilities available in the computing labs. Information about computer use for students is available from the ITS Student Resource Guide in the Monash University Handbook. You will need to allocate up to 6 hours per week for use of a computer, including time for newsgroups/discussion groups.

Study resources

Study resources we will provide for your study are:

- Weekly detailed lecture notes outlining the learning objectives, discussion of the content, required readings and exercises;
- Weekly tutorial or laboratory tasks and exercises with sample solutions provided one to two weeks later;
- Assignment specifications;
- A sample examination and suggested solution
- Excel spreadsheets, other files and other applications as required.
- This Unit Guide outlining the administrative information for the unit;
- The unit web site on Blackboard, where resources outlined above will be made available.

Assessment

Overview

Examination (2 hours): 70%; In-semester assessment: 30%

Faculty assessment policy

To pass a unit which includes an examination as part of the assessment a student must obtain:

- 40% or more in the unit's examination, and
- 40% or more in the unit's total non-examination assessment, and
- an overall unit mark of 50% or more.

If a student does not achieve 40% or more in the unit examination or the unit non-examination total assessment, and the total mark for the unit is greater than 50% then a mark of no greater than 49-N will be recorded for the unit.

To pass this unit, a student must obtain :

- 40% or more in the unit's examination and
- 40% or more in the unit's non-examination assessment and
- an overall unit mark of 50% or more

If a student does not achieve 40% or more in the unit examination or the unit non-examination assessment then a mark of no greater than 44-N will be recorded for the unit.

Assignment tasks

Assignment coversheets

Assignment coversheets are available via "Student Forms" on the Faculty website: http://www.infotech.monash.edu.au/resources/student/forms/
You MUST submit a completed coversheet with all assignments, ensuring that the plagiarism declaration section is signed.

Assignment submission and return procedures, and assessment criteria will be specified with each assignment.

Assignment submission and preparation requirements will be detailed in each assignment specification. 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.

- **Assignment task 1**

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

Weighting:
20%
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 17 September 2010

- **Assignment 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.

Examination

-
Weighting:
70%
Length:
2 hours
Type (open/closed book):
Closed book
Electronic devices allowed in the exam:
None

See Appendix for End of semester special consideration / deferred exams process.

Due dates and extensions

Please make every effort to submit work by the due dates. It is your responsibility to structure your study program around assignment deadlines, family, work and other commitments. Factors such as normal work pressures, vacations, etc. are not regarded as appropriate reasons for granting extensions. Students are advised to NOT assume that granting of an extension is a matter of course.

Students requesting an extension for any assessment during semester (eg. Assignments, tests or presentations) are required to submit a Special Consideration application form (in-semester

exam/assessment task), along with original copies of supporting documentation, directly to their lecturer within two working days before the assessment submission deadline. Lecturers will provide specific outcomes directly to students via email within 2 working days. The lecturer reserves the right to refuse late applications.

A copy of the email or other written communication of an extension must be attached to the assignment submission.

Refer to the Faculty Special consideration webpage or further details and to access application forms: http://www.infotech.monash.edu.au/resources/student/equity/special-consideration.html

Late assignment

Assignments received later than one week after the due date will not normally be accepted.

Return dates

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

Feedback

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

Graded assignments with comments

Appendix

Please visit the following URL: http://www.infotech.monash.edu.au/units/appendix.html for further information about:

- Continuous improvement
- Unit evaluations
- Communication, participation and feedback
- Library access
- Monash University Studies Online (MUSO)
- Plagiarism, cheating and collusion
- Register of counselling about plagiarism
- Non-discriminatory language
- Students with disability
- End of semester special consideration / deferred exams