MONASH University
Information Technology

FIT2017
Computer models for business decision making

Unit Guide

Semester 1, 2010

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FIT2017 Computer models for business decision making - Semester 1, 2010

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Introduction

Welcome to FIT2017 Computer models for decision making Semester 2, 2009. This 6 point unit is a core unit in the Bachelor of Business Information Systems degree at Monash University. The unit has been designed to prodvide you with an understanding of computer modelling techniques, such as linear programming 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

The objective of this unit is to introduce students to the quantitative modelling techniques commonly used by executives in decision making and the application of IT tools to real-world decision making situations. Techniques covered typically include decision making under uncertainty, linear and nonlinear programming, sequential decision making, forecasting, and simulation. Upon the completion of this unit, the students are expected to recognise a complex decision making situation and to build a corresponding quantitative model. They are also expected to solve the model by applying techniques covered in this unit, to interpret results and finally, to provide analyst-type recommendations. The unit includes extensive use of advanced modelling tools available in Microsoft Excel as well as some VBA programming.

Learning outcomes

At the completion of this unit students will have:
A knowledge and understanding of:

- the role of business decision making in organisations;
- the decision making lifecycle;
- model building techniques;
- model solving techniques;
- model results presentation and interpretation;
- the role of interactivity in decision modelling;
- popular and leading edge decision modelling tools.

Developed attitudes that enable them to:

- recognise the value of effective decision making within an organisation;
- adopt a critical approach to decision models and their use in a business context;
- appreciate the value of modelling and simulation as effective decision making tools;
- appreciate the limitations of formal decision models and the necessity of post-solution interpretation stage;
- appreciate the risks and benefits of interactive computer-centered decision making.

Developed the skills to:

- create interactive decision models;
- interpret the results produced at model solving stage;
- select an appropriate decision modelling technique;
- assess models limitations;
- analyse appropriateness of modelling environments;
- use Popular and leading edge decision modelling tools.

Demonstrated the communication skills necessary to:

- document and communicate a decision model;
- work in a team during model design and results interpretation stages;
- communicate during, and coordinate the decision making life cycle.

Contact hours

2 hrs lectures/wk, 2 hrs laboratories/wk

Workload

- 1 two-hour lecture
- 1 two-hour laboratory
- 6 - 8 hours of personal study per week in order to satisfy the reading and assignment expectations.

Unit relationships

Prerequisites

FIT1006 or BUS1100 or ETC1000

Prohibitions

ETC2480, ETC3480, ETC4348, ETF2480, ETF9480, GCO2802, MAT1097, BUS1110

Teaching and learning method

Teaching approach

This is an on-campus unit. Students are required to attend lectures and tutorials (compulsory and attendance will be taken). Each lecture topic will be supported by tutorial exercises. It is expected that students spend at least additional 3-4 hours per week to study the lecturing material and prepare for tutorial exercises. Solutions to the tutorial exercises will be available following the tutorial.

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	01/03/10	Introduction to the course, The role of Management Science in business decision making, Introduction to modelling.	Ragsdale Chapter 1	
2	08/03/10	Linear Programming - Modelling and solving problems by hand.	Ragsdale Chapter 2	
3	15/03/10	Linear Programming - Solving problems using Excel.	Ragsdale Chapter 3	
4	22/03/10	Linear programming - Sensitivity analysis and the interpretation of solutions.	Ragsdale Chapter 4	
5	29/03/10	Integer Linear Programming.	Ragsdale Chapter 6	
Mid semester break				
6	12/04/10	Inventory Modelling	Ragsdale Chapter 15	Assignment 1 due this week
7	19/04/10	Decision making under uncertaintty.	Ragsdale Chapter 15	
8	26/04/10	Decision Trees. Decision making using sample information.	Winston Chapter 11	
9	03/05/10	Queuing Theory.	Ragsdale Chapter 12	
10	10/05/10	Test during lecture.	N/A	Assignment 2 due this week
11	17/05/10	Simulation.	Ragsdale Chapter 11	
12	24/05/10	Time Series Analysis and Forecasting.	Ragsdale Chapters 9 and 11	
13	31/05/10	Exam Preparation and revision	N/A	

*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 CT (2005) *Spreadsheet Modeling & Decision Analysis, 5th edition*, Thomson 2007

Text books are available from the Monash University Book Shops. Availability from other suppliers cannot be assured. The Bookshop orders texts in specifically for this unit. You are advised to purchase your text book early.

Recommended text(s) and readings

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

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

Savage S, "Insight Business Analysis Software", Thomson Learing, 2003

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

Albright SC, Winston WL, and Zappe C, "Data Analysis and Decision Making with Microsoft Excel" Duxbury Press, 1999

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:

- Notes for each lecture in pdf format.
- Tutorial worksheet and solutions for each lecture.
- Excel spreadsheets, other files. Other applications as required.
- Selected solutions to exercises.

All downloadable from Moodle.

Assessment

Overview

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

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.

Students must pass the examination and obtain a weighted average of all assessments greater than 50% to pass 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 task 1**

  Title:
  Assignment 1
  Description:
  Spreadsheet modelling using linear programming and integer linear programming.
  Weighting:
  15%
  Due date:
  16th April

- **Assignment task 2**

  Title:
  Assignment 2
  Description:
  Decision Tree analysis using Excel and TreePlan
  Weighting:
  5%

Due date:
14th May

- **Assignment task 3**

Title:
Test during class
Description:
This test will cover topics studied in Weeks 1 to 9.
Weighting:
10%
Due date:
During Lecture, Week 10.

- **Assignment task 4**

Title:
Tutorial Participation
Description:
Students are assessed on their participation in tutorials.
Weighting:
10%
Due date:
All tutorials

Examination

- **Weighting:** 60%
  Length: 2 hours
  Type (open/closed book): Closed book

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 after the due date will normally not be accepted unless an agreement has been reached with the lecturer prior to the due date.

Return dates

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

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