MONASH University
Information Technology

FIT2033
Computer models for business decisions

Unit Guide

Semester 2, 2013

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.

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FIT2033 Computer models for business decisions - Semester 2, 2013

This unit examines the principles and applications of business modelling, how a business system is used as a key component of the broad decision support system or DSS. At the completion of the subject the student should understand some of the most commonly used computer modelling techniques used in business and industry and be familiar with the applications of these techniques to the solution of business related problems. Topics will include the fundamental breakeven analysis, various types of linear programming, network models, various aspects of decision making, waiting lines systems, Monte Carlo simulation and forecasting techniques.

Mode of Delivery

- Gippsland (Day)
- Gippsland (Off-campus)
- South Africa (Day)

Contact Hours

2 hrs lectures/wk, 2 hrs laboratories/wk

Workload requirements

For on-campus students, workload commitments per week are:

Lectures: 2 hours per week
Tutorials/Lab Sessions: 2 hours per week per tutorial (lab based, advance preparation is required)

and up to an additional 8 hours in some weeks for completing lab and project work, private study and revision.

Off-campus students generally do not attend lecture and tutorial sessions, however, you MUST spend equivalent time working through the relevant resources and participating in discussion groups each week.

Unit Relationships

Prohibitions

FIT2017, ETC2480, GCO2802

Prerequisites

One of FIT1006, ETW1102 or MAT1097 or equivalent.

Chief Examiner

Mr Neil Manson

Campus Lecturer

Gippsland

Dengsheng Zhang

South Africa

Neil Manson

Consultation hours: Please book an appointment for consultation at http://goo.gl/X2lqM

Tutors

Gippsland

Dengsheng Zhang

South Africa

Neil Manson

Academic Overview

Learning Outcomes

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

- principles and applications of business models in decision support systems;
- cost analysis using breakeven technique;
- main approaches to deal with decision making problems in business;
- widely used linear programming tools;
- carrying out sensitivity analysis using computer software on a series of problems;
- queuing theory and simulation techniques;
- concepts of different types of forecasting;
- common optimisation methods for business applications;
- methodology to solve typical network problems using network flow models.

Developed attitudes that enable them to:

- recognise the potential 0f efficiency and productivity gains through the use of technologies;
- develop interest and expertise in formulation of real world problems and solving them by computer models.

Developed the skills in:

- the application of spreadsheets such as EXCEL in formulation and solving common business problems;
- use of advanced software such as Excel QM, TreePlan, CrystalBall program;

sensitivity analysis by use of computer models.Demonstrated the communication skills necessary to:

- meet peer students and professionals with variety of business expertise;
- participate in group discussion and team work solutions to business problems.

Unit Schedule

Week	Activities	Assessment
0		No formal assessment or activities are undertaken in week 0
1	Introduction and Breakeven Analysis (Ref: Study Guide Part 1; Ch. 1 of Text Book)	
2	Linear Programming (Ref: Study Guide Part 2; Ch. 2 of Text book)	
3	Linear Programming: Computer Solution and Sensitivity Analysis (Ref: Study Guide Part 3; Ch. 3 & 4 of Text book)	
4	Integer Programming (Ref: Study Guide Part 4; Ch. 5 of Text book)	
5	Transportation and Assignment Problems (Ref: Study Guide Part 5; Ch. 6 of Text book)	
6	Network Problems (Ref: Study Guide Part 6; Ch. 7 of Text book)	Assignment 1 due Week 6
7	Multicriteria Decision Making (Ref: Study Guide Part 7; Ch. 9 of Text book)	
8	Decision Making Theory (Ref: Study Guide Part 8; Ch. 11 & 12 of Text book)	
9	Decision Trees (Ref: Study Guide Part 9; Ch. 11 & 12 of Text book)	
10	Queuing Analysis (Ref: Study Guide Part 10; Ch. 13 of Text book)	
11	Monte Carlo Simulation (Ref: Study Guide Part 11; Ch. 14 of Text book)	Assignment 2 due Week 11
12	Forecasting (Ref: Study Guide Part 12; Ch. 15 of Text book)	
	SWOT VAC	No formal assessment is undertaken in SWOT VAC
	Examination period	LINK to Assessment Policy: http://policy.monash.edu.au/policy-bank/academic/education/assessment/assessment-in-coursework-policy.html

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

Assessment Summary

Examination (3 hours): 60%; In-semester assessment: 40%

Assessment Task	Value	Due Date
Assignment 1	20%	Week 6

Assignment 2	20%	Week 11
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.

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:
  Assignment 1
  Description:
  Assessment of Study Guides 1 - 6. This assignment will consist of a number of business problems.
  Weighting:
  20%
  Criteria for assessment:
  The solution to each problem will be assessed according to the following criteria:

  - How well the business problem has been understood
  - How well the given business problem has been formulated into a mathematical model
  - The accuracy with which the mathematical model has been coded up as a spreadsheet model
  - The clarity and neatness of the presentation of the spreadsheet model
  - The degree to which the spreadsheet model implements good design techniques
  - The degree to which the model constructed is an accurate reflection of the given business problem
  - The effective and accurate use of appropriate solution techniques to solve the resultant spreadsheet model
  - The clarity and quality of presentation of the final solution, and the degree to which it solves the initial business problem

  Due date:
  Week 6

- **Assessment task 2**

  Title:
  Assignment 2
  Description:
  Assessment of Study Guides 7 - 12. This assignment will consist of a number of business problems.
  Weighting:
  20%
  Criteria for assessment:

The solution to each problem will be assessed according to the following criteria:

- How well the business problem has been understood
- How well the given business problem has been formulated into a mathematical model
- The accuracy with which the mathematical model has been coded up as a spreadsheet model
- The clarity and neatness of the presentation of the spreadsheet model
- The degree to which the spreadsheet model implements good design techniques
- The degree to which the model constructed is an accurate reflection of the given business problem
- The effective and accurate use of appropriate solution techniques to solve the resultant spreadsheet model
- The clarity and quality of presentation of the final solution, and the degree to which it solves the initial business problem

Due date:
Week 11

Examinations

- **Examination 1**

Weighting:
60%
Length:
3 hours
Type (open/closed book):
Closed book
Electronic devices allowed in the exam:
Calculators

Learning resources

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.

Required Resources

Please check with your lecturer before purchasing any Required Resources. Limited copies of prescribed texts are available for you to borrow in the library, and prescribed software is available in student labs.

On-campus students, and those studying at supported study locations 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 5 hours per week in some weeks for use of a computer, including time for newsgroup access and discussion groups.

Students studying off-campus are required to have the minimum system configuration specified by the Faculty as a condition of accepting admission, and regular internet access.

Prescribed text(s)

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

Taylor, B.W. III. (2012). *Introduction to Management Science*. (11th Edition) Prentice Hall (ISBN: 10: 0273766406 or 13: 978-0273766407).

Recommended Resources

The three Excel based software packages: Excel QM, Crystal Ball and TreePlan are included in the prescribed text book.

Recommended text(s)

D. R. Anderson, D. J. Sweeney and T. A. Williams. (2005). *An Introduction to Management Science*. () Thomson Learning.

W. L. Winston, S. C. Albright and M. Broadie. (2001). *Practical Management Science*. (2nd Edition) Duxbury Press.

J. A. Lawrence Jr. and B. A. Pasternack. (1998). *Applied Management Science*. () John Wiley & Sons Inc.

Examination material or equipment

Refer to the FIT2033 unit on Moodle for any additional details.

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:

- Aademic integrity; http://www.policy.monash.edu/policy-bank/academic/education/conduct/student-academic-integrity-policy.h
- Assessment in Coursework Programs; http://www.policy.monash.edu/policy-bank/academic/education/assessment/assessment-in-coursework-po
- Special Consideration; http://www.policy.monash.edu/policy-bank/academic/education/assessment/special-consideration-policy.ht
- 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/
- Academic and Administrative Complaints and Grievances Policy; http://www.policy.monash.edu/policy-bank/academic/education/management/complaints-grievance-policy.h
- Code of Practice for Teaching and Learning; http://www.policy.monash.edu.au/policy-bank/academic/education/conduct/suppdocs/code-of-practice-teac

Graduate Attributes Policy

http://www.policy.monash.edu/policy-bank/academic/education/management/monash-graduate-attributes-policy.ht

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.htmlTelephone: 03 9905 5704 to book an appointment with a DLO; or contact the Student Advisor, Student Commuity Services at 03 55146018 at SunwayEmail: dlu@monash.eduDrop 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

Taking into account previous student feedback a new unit book consisting of 12 Study Guides was created, replacing the previous version of 7 Study Guides.

If you wish to view how previous students rated this unit, please go to
https://emuapps.monash.edu.au/unitevaluations/index.jsp

Other

Study resources provided:

- A online Unit Book containing 12 Study Guides.
- This Unit Guide outlining the administrative information for the unit.
- The FIT2033 website on Moodle, where lecture slides, weekly tutorial requirements, assignment specifications and sample solutions will be posted.
- Newsgroups that can be linked to from the Unit website.
- Access to past exam papers.