

**FIT2033**  
**Computer models for business decisions**

**Unit Guide**

**Semester 2, 2015**

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# **FIT2033 Computer models for business decisions - Semester 2, 2015**

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**

South Africa (Day)

## **Workload Requirements**

Minimum total expected workload equals 12 hours per week comprising:

(a.) Contact hours for on-campus students:

- Two hours of lectures
- One 2-hour laboratory

(b.) Study schedule for off-campus students:

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

(c.) Additional requirements (all students):

- A minimum of 8 hours independent study per week for completing lab and project work, private study and revision

See also Unit timetable information

## **Unit Relationships**

### **Prohibitions**

FIT2017, ETC2480, GCO2802

### **Prerequisites**

One of FIT1006, ETW1102 or MAT1097 or equivalent

## **Chief Examiner**

**Mr Neil Manson**

## **Campus Lecturer**

### **South Africa**

**Neil Manson**

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

## **Tutors**

### **South Africa**

**Neil Manson**

## **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/](http://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](http://www.policy.monash.edu/policy-bank/academic/education/quality/student-evaluation-policy.html)

## **Previous Student Evaluations of this Unit**

Previous student feedback has shown that students find this unit to be intellectually stimulating. This semester we will be introducing some techniques from the Peer Instruction method, with the aim of improving student engagement.

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

# Academic Overview

## Learning Outcomes

On successful completion of this unit students should be able to:

- identify and apply principles of computer modelling to various business problems;
- formulate models of a range of real-world business problems, including static and probabilistic problems, and implement them using spreadsheets and other software;
- apply and analyse sensitivity analyses of computer models;
- interpret the results obtained from computer models and sensitivity analyses, and communicate these results to business and technical audiences;
- apply various decision analysis models to enhance individual, business and group decision making;
- explain, apply and be able to differentiate between various forecasting techniques with appropriate data.

## 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: <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 learning system.

## Teaching Approach

- **Lecture and tutorials or problem classes**

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

- **Peer assisted learning**

This approach aims to engage students through pre-class and in-class activities that require students to understand and explain core concepts in small groups.

## Assessment Summary

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

<b>Assessment Task</b>	<b>Value</b>	<b>Due Date</b>
Assignment 1	20%	Week 6
Assignment 2	20%	Week 11
Examination 1	60%	To be advised

# Assessment Requirements

## Assessment Policy

Faculty Policy - Unit Assessment Hurdles

(<http://intranet.monash.edu.au/infotech/resources/staff/edgov/policies/assessment-examinations/assessment-hurdles>)

Academic Integrity - Please see resources and tutorials at

<http://www.monash.edu/library/skills/resources/tutorials/academic-integrity/>

## 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

**Remarks:**

This assignment will require students to demonstrate mastery of learning outcomes 1, 2, 3 & 4.

#### • Assessment task 2

**Title:**

Assignment 2

**Description:**

Assessment of Study Guides 7 - 12. This assignment will consist of a number of business problems.



## Assessment Requirements

### 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

### Remarks:

This assignment will require students to demonstrate mastery of learning outcomes 1, 2, 5 & 6.

## Examinations

### • Examination 1

#### Weighting:

60%

#### Length:

3 hours

#### Type (open/closed book):

Closed book

#### Electronic devices allowed in the exam:

Calculators

#### Remarks:

Students are permitted to bring a formula sheet into the exam. This may be hand written or typed, but may not be more than one (1) A4 sheet of paper with writing on both sides.

## Learning resources

Monash Library Unit Reading List (if applicable to the unit)

<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/student-academic-integrity-managing-pla>) 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 electronic submission). Please note that it is your responsibility to retain copies of your assessments.

## Online submission

All assignments for this unit must be submitted electronically through the Moodle site for this unit. This can be accessed via the links in your [my.monash.edu](http://my.monash.edu) portal. Assignment coversheets will take the form of an online quiz. You will need to complete the quiz before you can submit the assignment.

## 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](http://www.policy.monash.edu.au/policy-bank/academic/education/index.html)

### Faculty resources and policies

Important student resources including Faculty policies are located at

<http://intranet.monash.edu.au/infotech/resources/students/>

### Graduate Attributes Policy

<http://www.policy.monash.edu/policy-bank/academic/education/management/monash-graduate-attributes-policy.h>

### Student Charter

[www.opq.monash.edu.au/ep/student-charter/monash-university-student-charter.html](http://www.opq.monash.edu.au/ep/student-charter/monash-university-student-charter.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 Malaysia 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](http://www.lib.monash.edu.au) or the library tab in [my.monash](#) portal for more information. At Malaysia, 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 Malaysia
- Email: [dlu@monash.edu](mailto: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, Malaysia Campus

## **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.