



The University of Southern Queensland

## Course Specification

### Description: Discrete Mathematics for Computing

Subject	Cat-Nbr	Class	Term	Mode	Units	Campus
MAT	1101	18130	3, 2002	EXT	1.00	TWMBBA

<b>Academic Group:</b>	FOSCI
<b>Academic Org:</b>	FOS003
<b>HECS Band:</b>	2
<b>ASCED Code:</b>	010101

### STAFFING

Examiner: Walter Spunde  
Moderator: Charles Farrell

### RATIONALE

Discrete methods underlie the areas of data structures, computational complexity and the analysis of algorithms. Recent advances in technology - particularly in applications of computing - have enhanced the importance of discrete (or finite) mathematics as a basis for understanding the foundations of computing and for further studies in computer analysis and applications.

### SYNOPSIS

This course introduces the basic elements of discrete mathematics which provide a foundation for an understanding of algorithms and data structures used in computing. Topics covered include number systems, logic, relations, functions, induction, recursion, Boolean algebra and graph theory.

### OBJECTIVES

On successful completion of this course students will be able to:

- demonstrate an understanding of a wide range of discrete methods;
- demonstrate proficiency at an introductory level in a wide range of discrete techniques;
- demonstrate understanding and proficiency in basic algorithmic techniques;
- demonstrate proficiency in mathematical reasoning and construction of proofs.

## TOPICS

Description	Weighting (%)
1. Base Changes, Real Numbers and Computer Representation	15.00
2. Sets, Functions, Relations and Algorithms	20.00
3. Logic	15.00
4. Proof	15.00
5. Recursion	10.00
6. Boolean Algebra	10.00
7. Graphs and Trees	15.00

### **TEXT and MATERIALS required to be PURCHASED or ACCESSED:**

Books can be ordered by fax or telephone. For costs and further details use the 'Book Search' facility at <http://bookshop.usq.edu.au> by entering the author or title of the text.

Grossman, P. 1995, *Discrete Mathematics for Computing*, Macmillan, South Melbourne.

### **REFERENCE MATERIALS**

Reference materials are materials that, if accessed by students, may improve their knowledge and understanding of the material in the course and enrich their learning experience.

Althoen, S.C. & Bumcrot, R.J. 1998, *Introduction to Discrete Mathematics*, PWS-Kent, Boston.

Dossey, J.A. et al 1987, *Discrete Mathematics*, Scott Foresman, Glenview.

Epp, S. 1995, *Discrete Mathematics with Applications*, 2nd edition, Brooks/Cole, Pacific Grove.

Gersting, J.L. 1993, *Mathematical Structures for Computer Science*, 4th edition, W.H. Freeman, New York.

Grimaldi, R.P. 1994, *Discrete and Combinatorial Mathematics*, 3rd edition, Addison-Wesley, Reading.

Hirschfelder, R. & Hirschfelder, J. 1991, *Introduction to Discrete Mathematics*, Wadsworth, Belmont.

Molluzzo, J.C. & Buckley, F. 1986, *A First Course in Discrete Mathematics*, Wadsworth, Belmont.

Ross, K.A. & Wright, C.R.B. 1992, *Discrete Mathematics*, 4th edition, Prentice-Hall, Upper-Saddle River.

## STUDENT WORKLOAD REQUIREMENTS

ACTIVITY	HOURS
Assessment	15
Examinations	3
Private Study	147

## ASSESSMENT DETAILS

Description	Marks Out of	Wtg(%)	Required	Due Date
ASSIGNMENT 1	30.00	15.00	Y	13 Dec 2002
ASSIGNMENT 2	30.00	15.00	Y	10 Jan 2003
3 HOUR RESTRICTED EXAMINATION	70.00	70.00	Y	END S3 (see note )

### NOTES:

- . Examination dates will be available during the semester. Please refer to the examination timetable when published.

## OTHER REQUIREMENTS

- 1 Attendance Requirements: It is the students' responsibility to actively participate in all classes scheduled for them, and to study all material provided to them or required to be accessed by them to maximise their chance of meeting the objectives of the course and to be informed of course-related activities and administration.
- 2 Minimum Requirements to Pass the Course: Students who obtain over 50% of the marks on every item of assessment are assured of passing the course. However, an overall mark of over 50% may also qualify the student for a pass provided all assignments have been submitted whether too late for credit or not.
- 3 Assignments: Assignments must be posted on or before the due date. In cases where it is likely that an assignment might not be received by the examiner within five working days of the due date, students should send a faxed copy of the assignment to the examiner of MAT1101, Department of Mathematics and Computing (07 4631 5550) on or before the due date or provide other proof of timely dispatch. In accordance with the University's Policy on Assignments (Regulation 5.6.1), the examiner of a course may grant an extension of the due date of an assignment in extenuating circumstances. This policy may be found in the USQ Handbook, the Distance Education Student Guide and the Faculty of Sciences' Orientation Handbook for new on-campus students. All students are advised to study and follow the guidelines associated with this policy. Applications for extension of assignment deadlines with adequate reason may be made on the assignment cover sheet. If in doubt about the adequacy of reasons for extension, application for extension should be made before the due date. No extension will be granted for a period exceeding ten (10) working days and normally not exceeding five (5) working days. Assignments submitted after the due date without valid reasons for extension will

be penalized 20% of the assigned marks for each day that the assignment is late. Assignments submitted in excess of ten (10) working days after the due date will not be received and will be recorded as "not submitted".

- 4 Supplementary and Deferred Examinations: Students unable to attend the examination for valid reasons must apply to the Faculty Administration Manager for a deferred examination, no later than ten (10) calendar days after the due date for the scheduled examination (see University policy on Deferred Examinations). Students who have not submitted all assignments will not be granted a deferred examination. Students who have submitted all assignments but have not obtained either 50% of the marks on the final examination or 50% of the overall marks may, at the discretion of the examiner, be granted a supplementary examination. All supplementary and deferred examinations will be the same as the examination set for the next offering of the course (semester 1, 2003) and take place at the same time as this examination.
  - 5 Examinations: The examination for this course is a restricted examination. A restricted examination is an examination where only those materials specified in the examination paper are permitted during the examination. Students may bring with them (i) any writing or drawing implements; (ii) any computational device that does not require mains powers, that does not operate in a noisy manner or in any manner that might disturb other students and that does not have communications capabilities; (iii) one single sheet of A4 paper on which may be written any notes or other information.
  - 6 Grading: Final grades for students will be determined by the addition of the marks obtained in each assessment item, weighted as in the Assessment Details.
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