



The University of Southern Queensland

## Course specification

### Description: Discrete Mathematics for Computing

Subject	Cat-nbr	Class	Term	Mode	Units	Campus
MAT	1101	30341	1, 2004	ONC	1.00	TWMBA

<b>Academic group:</b>	FOSCI
<b>Academic org:</b>	FOS003
<b>Student contribution band:</b>	2
<b>ASCED code:</b>	010101

### STAFFING

Examiner: Sergey Suslov  
Moderator: Walter Spunde

### 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:

ALL textbooks and materials are available for purchase from USQ BOOKSHOP (unless otherwise stated). Orders may be placed via secure internet, free fax 1800642453, phone 07 46312742 (within Australia), or mail. Overseas students should fax +61 7 46311743, or phone +61 7 46312742. For costs, further details, and internet ordering, use the 'Textbook Search' facility at <http://bookshop.usq.edu.au> click 'Semester', then enter your 'Course Code' (no spaces).

Grossman, Peter 2002, *Discrete Mathematics for Computing*, 2nd edn, Palgrave MacMillan, South Melbourne.

Introductory Book 2004, *Course MAT1101 Discrete Mathematics for Computing*, USQ Distance Education Centre, Toowoomba.

Study Book 2004, *Course MAT1101 Discrete Mathematics for Computing*, USQ Distance Education Centre, Toowoomba.

## 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.

Epp, S 1995, *Discrete Mathematics with Applications*, 2nd edn, Brooks/Cole, California.

Gersting, JL 2003, *Mathematical Structures for Computer Science*, 5th edn, WH Freeman, New York.

Grimaldi, RP 2003, *Discrete and Combinatorial Mathematics: an applied introduction*, 5th edn, Addison-Wesley, Reading, Mass.

Ross, KA & Wright, CRB 2003, *Discrete Mathematics*, 5th edn, Prentice-Hall, Upper Saddle River, NJ.

## STUDENT WORKLOAD REQUIREMENTS:

ACTIVITY	HOURS
Assessment	30.00
Examinations	3.00
Lectures	26.00
Private Study	100.00
Tutorial	13.00

## ASSESSMENT DETAILS

Description	Marks out of	Wtg(%)	Due date
ASSIGNMENT 1	30.00	15.00	29 Mar 2004
ASSIGNMENT 2	30.00	15.00	17 May 2004
3 HOUR RESTRICTED EXAMINATION	70.00	70.00	END S1 (see note 1)

### NOTES:

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

## IMPORTANT ASSESSMENT INFORMATION

- 1 Attendance requirements:  
It is the students' responsibility to attend and participate appropriately in all activities (such as lectures, tutorials, laboratories and practical work) 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 Requirements for students to complete each assessment item satisfactorily:  
To complete each of the assessment items satisfactorily, students must obtain at least 50% of the marks available for each assessment item.
- 3 Penalties for late submission of required work:  
If students submit assignments after the due date without prior approval then a penalty of 10% of the total marks available for the assignment will apply for each working day late.
- 4 Requirements for student to be awarded a passing grade in the course:  
To be assured of receiving a passing grade a student must submit all summative assessment items and gain at least 50% of the marks available for each summative assessment item.
- 5 Method used to combine assessment results to attain final grade:  
The final grades for students will be assigned on the basis of the weighted aggregate of the marks obtained for each of the summative assessment items in the course.

- 6 Examination information:  
The only materials that candidates may use in the restricted examination for this course are: writing materials (non-electronic and free from material which could give the student an unfair advantage in the examination); calculators; One A4 sheet, written or typed on one or both sides with any material the student wishes to have. Translation dictionary. Students whose first language is not English, may, with the Examiner's approval, take an appropriate non- electronic translation dictionary into the examination. Students who wish to use a translation dictionary **MUST** request and receive written approval from the Examiner at least one week before the examination date. Translation dictionaries will be subject to perusal and may be removed from the candidate's possession until appropriate disciplinary action is completed if found to contain material that could give the candidate an unfair advantage.
- 7 Examination period when Deferred/Supplementary examinations will be held:  
Any Deferred or Supplementary examinations for this course will be held during the examination period at the end of the semester of the next offering of this course.
- 8 University Regulations:  
Students should read USQ Regulations 5.1 Definitions, 5.6. Assessment, and 5.10 Academic Misconduct for further information and to avoid actions which might contravene University Regulations. These regulations can be found at the URL <http://www.usq.edu.au/corporateservices/calendar/part5.htm> or in the current USQ Handbook.

## **ASSESSMENT NOTES**

- 9 Students must retain a copy of each assignment submitted for assessment. This should be despatched to USQ within 24 hours of receipt of a request from the Examiner.
- 10 Students who, for medical, family/personal, or employment-related reasons, are unable to complete an assignment or to sit for an examination at the scheduled time may apply to defer an assessment in this course. Such a request must be accompanied by appropriate supporting documentation. One of the following temporary grades may be awarded IDS (Incomplete - Deferred Examination; IDM (Incomplete Deferred Make-up); IDB (Incomplete - Both Deferred Examination and Deferred Make-up).
- 11 It is desirable for students to have access to e-mail and internet access to USQConnect for this course.