MONASH University
Information Technology

MAT1830
Discrete mathematics for computer science

Unit Guide

Semester 1, 2012

Last updated: 05 Feb 2012

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MAT1830 Discrete mathematics for computer science - Semester 1, 2012

Topics fundamental to mathematics and computing including elementary number theory, sets, relations and functions; methods of logic and proof, especially proof by induction; recurrence relations and difference equations; trees and other graphs.

Mode of Delivery

- Clayton (Day)
- Sunway (Day)

Contact Hours

3 hrs lectures/wk, 1 hr tutorial/wk

Workload

You are expected to spend 12 hours per week on various activities including reading, communication with other students and unit lecturers, and preparation for learning tasks and formal assessments.

Unit Relationships

Prohibitions

MAT1077, MTH1112

Chief Examiner

Dr Daniel Horsley

Campus Lecturer

Clayton

Dr Daniel Horsley

Dr Douglas Stones

Sunway

Dr Lee-Kien Foo

Academic Overview

Outcomes

At the completion of this unit students will:

- have an understanding of sets, relations and functions and associated concepts and their uses in mathematics and computer science;
- be able to use basic methods of proof, particularly induction, to solve problems in graph theory, combinatorics and number theory;
- become familiar with simple first and second order recurrence relations;
- will understand the basic concepts and algorithms of number theory, such as the euclidean algorithm and its role in investigating divisors and primes.

Graduate Attributes

Monash prepares its graduates to be:

1. responsible and effective global citizens who:

a. engage in an internationalised world
b. exhibit cross-cultural competence
c. demonstrate ethical values

critical and creative scholars who:

a. produce innovative solutions to problems
b. apply research skills to a range of challenges
c. communicate perceptively and effectively

Assessment Summary

Examination (3 hours): 70%; In-semester assessment: 30%

Assessment Task	Value	Due Date
Assessed Coursework x 10	3% each - Total 30%	Each week (from Week 3 to Week 12).
Examination 1	70%	To be advised

Teaching Approach

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

Feedback

Our 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

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 SETU, Student Evaluation of Teacher and Unit. 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, and on student evaluations, see:
http://www.monash.edu.au/about/monash-directions/directions.html
http://www.policy.monash.edu/policy-bank/academic/education/quality/student-evaluation-policy.html

Previous Student Evaluations of this unit

Previous feedback on this unit has indicated that many students find the assignments and tutorial exercises to be valuable.

Student feedback has also informed the decision to make recordings of the lectures available online this semester.

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

Recommended Resources

The following textbooks are available at the library and may prove useful if you want additional resources beyond the course notes. It is not recommended that you buy them unless you find that you need your own copy.

"Discrete Mathematics" by Richard Johnsonbaugh.

"Discrete Mathematics for Computing" by Peter Grossman.

Unit Schedule

Week	Activities	Assessment
0		None
1	Arithmetic	None
2	Logic	None
3	Logic + Induction	Assessed coursework
4	Sets	Assessed coursework
5	Functions	Assessed coursework
6	Relations	Assessed coursework
7	Sums of Powers	Assessed coursework
8	Recurrence Relations	Assessed coursework
9	Graphs	Assessed coursework
10	Trees, Colourings	Assessed coursework
11	Congruences	Assessed coursework
12	Cryptosystems	Assessed coursework
	SWOT VAC	None
	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 MUSO (Blackboard or Moodle) learning system.

Assessment Requirements

Assessment Policy

Faculty Policy - Unit Assessment Hurdles
(http://www.infotech.monash.edu.au/resources/staff/edgov/policies/assessment-examinations/unit-assessment-hu

Assessment Tasks

Participation

- **Assessment task 1**

Title:
Assessed Coursework x 10
Description:
There are ten assessed coursework assignments to be completed, due one per week from Week 3 to Week 12.
Weighting:
3% each - Total 30%
Criteria for assessment:
Marks awarded both for the correctness of the answer, and for the clarity of the explanation.
Due date:
Each week (from Week 3 to Week 12).

Examinations

- **Examination 1**

Weighting:
70%
Length:
3 hours
Type (open/closed book):
Closed book
Electronic devices allowed in the exam:
None

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).

Online submission

If Electronic Submission has been approved for your unit, please submit your work via the VLE site for this unit, which you can access via links in the my.monash portal.

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.infotech.monash.edu.au/resources/student/equity/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.

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: http://policy.monash.edu.au/policy-bank/academic/education/index.html

Key educational policies include:

- Plagiarism (http://www.policy.monash.edu/policy-bank/academic/education/conduct/plagiarism-policy.html)
- Assessment (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.h
- 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/key-dates/);
- Orientation and Transition (http://www.infotech.monash.edu.au/resources/student/orientation/); and
- Academic and Administrative Complaints and Grievances Policy (http://www.policy.monash.edu/policy-bank/academic/education/management/complaints-grievance-policy.
- Codes of Practice for Teaching and Learning (http://www.policy.monash.edu.au/policy-bank/academic/education/conduct/suppdocs/code-of-practice-tea

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 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/

The Monash University Library provides a range of services and resources that enable you to save time and be more effective in your learning and research. Go to http://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/.

Academic support services may be available for students who have a disability or medical condition. Registration with the Disability Liaison Unit is required. Further information is available as follows:

- Website: http://monash.edu/equity-diversity/disability/index.html;
- Email: dlu@monash.edu
- Drop In: Equity and Diversity Centre, Level 1 Gallery Building (Building 55), Monash University, Clayton Campus, or Student Community Services Department, Level 2, Building 2, Monash University, Sunway Campus
- Telephone: 03 9905 5704, or contact the Student Advisor, Student Commuity Services at 03 55146018 at Sunway