



**MONASH** University  
Information Technology

**MAT1830**  
**Discrete mathematics for computer science**

**Unit Guide**

**Semester 1, 2014**

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# **MAT1830 Discrete mathematics for computer science - Semester 1, 2014**

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)
- Malaysia (Day)

## **Workload Requirements**

Minimum total expected workload equals 12 hours per week comprising:

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

- Three hours of lectures
- One 1-hour tutorial

(b.) Additional requirements (all students):

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

## **Unit Relationships**

### **Prohibitions**

MAT1077, MTH1112

### **Chief Examiner**

Dr Daniel Horsley

### **Campus Lecturer**

#### **Clayton**

**Dr Daniel Horsley**

**A/Prof David Wood**

## Malaysia

Dr Lee Kien Foo

### 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 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>

## Academic Overview

### Learning 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.

## Unit Schedule

Week	Activities	Assessment
0		No formal assessment or activities are undertaken in week 0
1	Arithmetic	None
2	Logic	None
3	Logic + Induction	Assessed coursework
4	Sets	Assessed coursework
5	Functions	Assessed coursework
6	Relations	Assessed coursework
7	Recursion	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	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.

### Assessment Summary

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

Assessment Task	Value	Due Date
Assessed coursework x 10	30% total (3% each)	Each week (from Week 3 to Week 12)
Examination 1	70%	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

Students are strongly advised to participate in tutorials and lectures, but no participation marks are given.

#### • Assessment task 1

**Title:**

Assessed coursework x 10

**Description:**

There are ten assessed coursework assignments to be completed, one due per week from Week 3 to Week 12.

**Weighting:**

30% total (3% each)

**Criteria for assessment:**

Marks awarded both for the correctness of the answer, and for the clarity of the explanation.

**Hurdle requirements:**

Note that, in accordance with Faculty of Information Technology policy, you must receive a mark of 40% or more for the assessed coursework to pass the unit. If your total mark for the unit is 50% or more but your mark for the assessed coursework is less than 40%, then you will receive a mark of 49-N for the unit.

**Due date:**

Each week (from Week 3 to Week 12)

## Examinations

#### • Examination 1

**Weighting:**

70%

**Length:**

3 hours

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

Closed book

**Hurdle requirements:**

Note that, in accordance with Faculty of Information Technology policy, you must receive a mark of 40% or more for the exam to pass the unit. If your total mark for the unit is 50% or more but your mark for the exam is less than 40%, then you will receive a mark of 49-N for the unit.

**Electronic devices allowed in the exam:**

None

## Learning resources

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

<http://readinglists.lib.monash.edu/index.html>

Faculty of Information Technology [Style Guide](#)

## Feedback to you

Examination/other end-of-semester assessment feedback may take the form of feedback classes, provision of sample answers or other group feedback after official results have been published. Please check with your lecturer on the feedback provided and take advantage of this prior to requesting individual consultations with staff. If your unit has an examination, you may request to view your examination script booklet, see

<http://intranet.monash.edu.au/infotech/resources/students/procedures/request-to-view-exam-scripts.html>

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.

## Resubmission of assignments

No resubmission is allowed.

## Referencing requirements

Library guides for citing and referencing can be found at at

<http://guides.lib.monash.edu/content.php?pid=88267&sid=656564>



## 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 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.

Course notes booklet (available as a pdf from the course Moodle page and in hardcopy from the Clayton campus bookshop).

## Technological Requirements

Students should regularly check the course Moodle page for announcements. Students may bring whatever resources they wish to classes.

## 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.

## Field trips

None.

## Additional subject costs

None.

## **Examination material or equipment**

No calculators or other materials will be allowed in the final exam.

## 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)

Key educational policies include:

- Student Academic Integrity Policy and Student Academic Integrity: Managing Plagiarism and Collusion Procedures ;  
<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>

### 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