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**MAT1830 Discrete mathematics for computer science - Semester 1, 2013**

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MAT1830 Discrete mathematics for computer science - Semester 1, 2013

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 requirements

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 Heiko Dietrich

Sunway

Dr Lee-Kien Foo
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

<table>
<thead>
<tr>
<th>Week</th>
<th>Activities</th>
<th>Assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td></td>
<td>No formal assessment or activities are undertaken in week 0</td>
</tr>
<tr>
<td>1</td>
<td>Arithmetic</td>
<td>None</td>
</tr>
<tr>
<td>2</td>
<td>Logic</td>
<td>None</td>
</tr>
<tr>
<td>3</td>
<td>Logic + Induction</td>
<td>Assessed coursework</td>
</tr>
<tr>
<td>4</td>
<td>Sets</td>
<td>Assessed coursework</td>
</tr>
<tr>
<td>5</td>
<td>Functions</td>
<td>Assessed coursework</td>
</tr>
<tr>
<td>6</td>
<td>Relations</td>
<td>Assessed coursework</td>
</tr>
<tr>
<td>7</td>
<td>Recursion</td>
<td>Assessed coursework</td>
</tr>
<tr>
<td>8</td>
<td>Recurrence Relations</td>
<td>Assessed coursework</td>
</tr>
<tr>
<td>9</td>
<td>Graphs</td>
<td>Assessed coursework</td>
</tr>
<tr>
<td>10</td>
<td>Trees, Colourings</td>
<td>Assessed coursework</td>
</tr>
<tr>
<td>11</td>
<td>Congruences</td>
<td>Assessed coursework</td>
</tr>
<tr>
<td>12</td>
<td>Cryptosystems</td>
<td>Assessed coursework</td>
</tr>
<tr>
<td>SWOT VAC</td>
<td></td>
<td>No formal assessment is undertaken in SWOT VAC</td>
</tr>
</tbody>
</table>

*Unit Schedule details will be maintained and communicated to you via your learning system.

## Assessment Summary

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

<table>
<thead>
<tr>
<th>Assessment Task</th>
<th>Value</th>
<th>Due Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assessed coursework x 10</td>
<td>30% total (3% each)</td>
<td>Each week (from Week 3 to Week 12)</td>
</tr>
<tr>
<td>Examination 1</td>
<td>70%</td>
<td>To be advised</td>
</tr>
</tbody>
</table>

## Teaching Approach

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

Assessment Policy

Faculty Policy - Unit Assessment Hurdles

Academic Integrity - Please see the Demystifying Citing and Referencing tutorial at
http://lib.monash.edu/tutorials/citing/

Assessment Tasks

Participation

• 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
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:

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/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 learning system for this unit, which you can access via links in the my.monash portal.

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.
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:


Key educational policies include:

- Plagiarism;  
  http://www.policy.monash.edu/policy-bank/academic/education/conduct/plagiarism-policy.html
- Assessment in Coursework Programs;  
- Special Consideration;  
  http://www.policy.monash.edu/policy-bank/academic/education/assessment/special-consideration-policy.html
- 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.html
- Code of Practice for Teaching and Learning;  
- Graduate Attributes Policy
  http://www.policy.monash.edu/policy-bank/academic/education/management/monash-graduate-attributes-policy.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 Sunway 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 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/.
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 Sunway
Email: 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, Sunway Campus

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 and on student evaluations, see:
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