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**MAT1830 Discrete mathematics for computer science - Semester 1, 2011**

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MAT1830 Discrete mathematics for computer science - Semester 1, 2011

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

For on campus students, workload commitments are:

- 36 one hour lectures in total
- 12 tutorial classes in total
- a minimum of 4-5 hours personal study a week, including assignments

Unit Relationships

Prohibitions

MAT1077, MTH1112

Chief Examiner

Daniel Delbourgo

Campus Lecturer

Clayton

Daniel Delbourgo

Contact hours: Monday 9 -11 am

Daniel Horsley
Learning Objectives

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%

<table>
<thead>
<tr>
<th>Assessment Task</th>
<th>Value</th>
<th>Due Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assessed Courseworks x 10</td>
<td>3% each - Total 30%</td>
<td>At the end of each week, in the support class</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.
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.policy.monash.edu/policy-bank/academic/education/quality/student-evaluation-policy.html

Previous Student Evaluations of this unit

If you wish to view how previous students rated this unit, please go to

Unit Schedule

<table>
<thead>
<tr>
<th>Week</th>
<th>Date*</th>
<th>Activities</th>
<th>Assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>21/02/11</td>
<td>No formal assessment or activities are undertaken in week 0</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>28/02/11</td>
<td>Arithmetic</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>07/03/11</td>
<td>Logic</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>14/03/11</td>
<td>Logic + Induction</td>
<td>Assessed coursework</td>
</tr>
<tr>
<td>4</td>
<td>21/03/11</td>
<td>Sets</td>
<td>Assessed coursework</td>
</tr>
<tr>
<td>5</td>
<td>28/03/11</td>
<td>Functions</td>
<td>Assessed coursework</td>
</tr>
<tr>
<td>6</td>
<td>04/04/11</td>
<td>Relations</td>
<td>Assessed coursework</td>
</tr>
<tr>
<td>7</td>
<td>11/04/11</td>
<td>Sums of Powers</td>
<td>Assessed coursework</td>
</tr>
<tr>
<td>8</td>
<td>18/04/11</td>
<td>Recurrence Relations</td>
<td>Assessed coursework</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Mid semester break</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>02/05/11</td>
<td>Graphs</td>
<td>Assessed coursework</td>
</tr>
<tr>
<td>10</td>
<td>09/05/11</td>
<td>Trees, Colourings</td>
<td>Assessed coursework</td>
</tr>
<tr>
<td>11</td>
<td>16/05/11</td>
<td>Congruences</td>
<td>Assessed coursework</td>
</tr>
</tbody>
</table>
Assessment Policy

To pass a unit which includes an examination as part of the assessment a student must obtain:

- 40% or more in the unit's examination, and
- 40% or more in the unit's total non-examination assessment, and
- an overall unit mark of 50% or more.

If a student does not achieve 40% or more in the unit examination or the unit non-examination total assessment, and the total mark for the unit is greater than 50% then a mark of no greater than 49-N will be recorded for the unit.

Assessment Tasks

Participation

- Assessment task 1
  
  **Title:**
  
  Assessed Courseworks x 10
  
  **Description:**
  
  There are ten assessed courseworks to be completed, due one per week from Week 3 onwards.
  
  **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:**
  
  At the end of each week, in the support class

Examinations

- Examination 1
  
  **Weighting:**
  
  70%
  
  **Length:**
  
  3 hours
  
  **Type (open/closed book):**
  
  Closed book
  
  **Electronic devices allowed in the exam:**
Assignment submission

Assignment coversheets are available via "Student Forms" on the Faculty website:
http://www.infotech.monash.edu.au/resources/student/forms/
You MUST submit a completed coversheet with all assignments, ensuring that the plagiarism declaration section is signed.

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

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
- 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/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.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 www.monash.edu.au/students. 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. 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://adm.monash.edu/sss/equity-diversity/disability-liaison/index.html;
- Telephone: 03 9905 5704 to book an appointment with a DLO;
- Email: dlu@monash.edu
- Drop In: Equity and Diversity Centre, Level 1 Gallery Building (Building 55), Monash University, Clayton Campus.

Recommended Reading