University of Dundee

Mathematics Division


Organisation

The MA12002 module runs for 11 teaching weeks in the first semester, and is worth 20 SCQF credits (equal to 10 ECTS points).

All organisation and teaching will be carried out by

Dr Niall Dodds
Mathematics Division
Room G5,
Fulton Building
Tel: 01382 384470
email: ndodds@maths.dundee.ac.uk

You should make an appointment to see Dr Dodds if you have a problem regarding the course. You may also bring matters of concern about the course to the attention of the Mathematics Division Staff/Student Committee, which meets once each semester. A volunteer from Level 1 Mathematics will act as class representative to sit on the Staff–Student Committee; their name will be posted on BlackBoard.

This module involves 200 hours of student effort, including 55 contact hours.

Timetable

The weekly timetable for the module consists of five 50 minute classes, typically 2 lectures, 2 workshops and 1 presentation class.

Pre-requisite

In order to take this course you must have a B at higher mathematics, or an equivalent qualification.

Syllabus

Logic (approximately 1 week)
Propositions, negation, conjunction, disjunction, implication, equivalence. Truth tables

Group Theory (approximately 3 weeks)
Basic definitions and examples, commutative (Abelian) groups, Cayley tables, order of a group. Permutations and Cycles. Cyclic groups and generators. Subgroups.

Proof (approximately 4 weeks)
Constructive Proof, Disproof by Counterexample, Proof by Contradiction, Proof by Contrapositive, Proof by Induction,
Number Theory (approximately 3 weeks)


Assessment

The overall assessment will be weighted 50% for Coursework and 50% for a two-hour unseen Degree Examination. The exam will be held in the December examination diet. The Coursework will consist of 2 class tests and 3 homeworks. The assessment weightings are shown in the table below:

<table>
<thead>
<tr>
<th>Assignment</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 Homeworks</td>
<td>25%</td>
</tr>
<tr>
<td>2 Tests</td>
<td>25%</td>
</tr>
<tr>
<td>2 hour exam</td>
<td>50%</td>
</tr>
</tbody>
</table>

Assignment deadlines as well as Class Test dates will be posted on MyDundee and announcements made in the class hours.

To pass this module in December it is necessary to gain at least 40% in the overall assessment and obtain at least 30% in the Degree Examination. and obtain at least 30% overall in the coursework.

For those who fail the module due to a low exam mark in December there will be a two-hour resit examination paper at the July Examination diet. To pass this module in July it is usually necessary to gain at least 40% in the July Examination.

Your Commitment

You should attend all classes except on medical grounds or with the special permission of the lecturer concerned. If you are unable to attend the degree examination or complete elements of the coursework on time then you should inform the Module Leader and submit a medical certificate. Medical certificates should be submitted to your School Office as soon as possible after the absence. You must also submit a Mitigating Circumstances form to explain which aspects of assessment have been affected by your absences. A Medical Certificate will not be taken into account unless a Mitigating Circumstances form that refers to the medical certificate has also been completed.

Approved Calculators

The only types of calculators that have been approved for use in assessments in the School of Engineering, Physics and Mathematics are the Casio FX83 and the Casio FX85.

Study Support

If you are having difficulty with the course you are encouraged to seek help at an early stage by making an appointment to see your lecturer. You may also obtain additional help from the Maths Base (see BlackBoard for details).
Feedback

At the end of each section of the module you will be asked to complete a confidential questionnaire regarding the content and presentation of the module. This is an important element in the University’s Academic Standards procedures.

Recommended Books

Logic  The following books can all be found in the university library. They are listed in order of preference, with the best at the top of the list.


Group Theory  The following books can all be found in the university library. They are listed in order of preference, with the best at the top of the list.


Proof  The following books can all be found in the university library. They are listed in order of preference, with the best at the top of the list.

Number Theory The following books can all be found in the university library. They are listed in order of preference, with the best at the top of the list.

- Stark H.M, *An Introduction to Number Theory*, Markham Publishing Co., Chicago, 1970. **Chapters 1, 2, 3 and 5.**
- LeVeque W.J., *Topics in Number Theory Vol. 1*, Addison Wesley, 1958. **Chapters 2 and 3.**
- Nagell T., *Introduction to Number Theory*, 1951. **Chapter 1 sections 1-6 and 10.**