
Organisation

The MA12002 module runs for 11 teaching weeks in the first semester. The module leader is

Dr Niall Dodds,
Room G5,
Mathematics Division,
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.

In order to take this course you must have at least a B pass at Higher, or equivalent qualification.

This module involves 170 hours of student effort, including 55 contact hours (approximately 26 lectures, 27 workshops and 2 tests).

Timetable

A typical week will include 2-3 lectures and the remaining classes will be workshops. You will be asked to do homework exercises three times during the semester and there will be two class tests during the semester.

Your Commitment

You should attend all lectures and workshops, except on medical grounds or with the special permission of the lecturer concerned. Medical certificates should be submitted to your School Office.

About 13 hours per week of your study time, including timetabled hours, should be devoted to this module.

Study Support

If you are having difficulty with the course work you are encouraged to seek help at an early stage at the Workshops.
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 based on the components shown in the Table below.

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
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<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>
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To pass this module in December it is necessary to gain at least 40% in the overall assessment and gain a mark of at least 30% for the exam.
For those who fail the module in December, there will be a two-hour examination paper at the August Examination diet. To pass this module in August it is usually necessary to gain at least 40% in the August examination.

Approved Calculators

The only types of calculators have been approved for utilisation in the school of Engineering, Physics and Mathematics degree examinations are the Casio FX83 and Casio FX85.

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.

- Open University M100 Mathematics Foundation Course Unit 11: *Logic I - Boolean Algebra*, Open University, Bletchley 1971. **Section 11.1**.

**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., *Fundamentals of Number Theory*, Addison Wesley, 1977. **Chapters 1 and 2.**

• 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.**

• Hunter J. and Monk D., *Algebra and Number Systems*, Scottish Mathematics Group, 1971. **Chapter 6**
