

Victoria University of Wellington
School of Mathematics, Statistics & Operations Research

MATH 211 Foundations of Algebra, Analysis and Topology First trimester, 2013

Course coordinator and lecturer:

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Tutor: Ben Clark, Cotton 433, email ben.clark@vuw.ac.nz

Lectures: There will be 30 fifty-minute lectures in the course. They will be held in Hugh Mackenzie LT104, 2:10 – 3:00, on Mondays, Thursdays, and Fridays.

Tutorials: There are two tutorials at the following times.

Wednesday 9:00–9:50 AM106

Wednesday 2:10–3:00 CO228.

Website: http://msor.victoria.ac.nz/Courses/MATH211_2013T1/ The course website will contain a variety of course material, including class notes, slides from lectures, assignments, and model solutions.

Course topics and objectives: This course has two parts:

- **Introduction to group theory:** Topics covered include: the definition of an abstract group, permutation groups, matrix groups, subgroups, cosets, and groups of symmetries.
- **Introduction to metric spaces:** Topics covered include: sequences and limits, the completeness of the Euclidean spaces, open sets, closed sets, compactness, and properties of continuous functions.

Assignments Assignments are set weekly and distributed at the Friday lecture; there will be 10 assignments. They are to be completed and handed in before 5pm on the Friday of the following week by putting them in the box labelled MATH 211 in the main East-West Corridor, Level 3, Cotton Building. The assignment sheet should be used as a cover sheet for your handed-in material—with your name and student number on the top.

Spare assignment sheets are put in the perspex slots outside the MSOR office. If these are empty, report the fact to the lecturer (email works well). A copy is also available on the course website.

Pages must be stapled together; there is a stapler outside the office for this purpose. The marked assignments may be obtained from the school office—you must have ID to pick up your assignment.

On average you can expect an assignment to take about five hours to complete.

Assignments are a crucial part of the learning process in any mathematics course. We do not expect you to have demonstrated mastery of the material when you do assignments, rather we expect you to show that you have put significant effort into attempting to complete your assignment. To reflect this, as well as getting a mark, each assignment will be given a grade of S, for *satisfactory*, or U, for *unsatisfactory*. An assignment with a good mark will generally be regarded as satisfactory, but an assignment with a poor mark may also be awarded an S if the marker believes that you made a genuinely serious attempt to understand the material and complete that assignment. It is the number of satisfactory assignments that you do that contributes to your final grade, not your assignment marks. *Late assignments are not satisfactory.*

Terms Tests There will be two one-hour terms tests in the lecture times on the following dates:

- Monday 8 April,
- Monday 27 May.

Assessment Your final course mark is obtained as the maximum of the following. Either

- *10% Assignments* This is the number of satisfactory assignments that you complete.
- *30% Terms tests* Each terms test is worth 15%.
- *60% Final exam*

or 100% final exam.

Mandatory Course Requirements To meet mandatory course requirements you need to

- do at least six satisfactory assignments;
- attempt both terms tests; and
- obtain at least 40% on the final exam.

Course materials: Class notes, assignments, and solutions will be posted on the website, which will be updated frequently. There is no set textbook for the course, the materials provided should be self-contained. However, the following books are recommended for those looking for some supplementary reading.

Recommended books:

- John R. Fraleigh 'A first course in abstract algebra', (any edition).
- W. Wade 'An introduction to analysis', (any edition).

The following classic texts also include the content of the analytic part of this course as well as more advanced materials:

- H. Royden, Real analysis, (any edition).
- W. Rudin, Principal of mathematical analysis, (any edition).

Workload: The expected workload is 10 hours a week. This includes time spent attending lectures and tutorials and completing assignments. You should also expect to spend a considerable amount of time thinking about the course material. Mathematical concepts take time to digest. Inevitably, you will find that you struggle with some of these concepts. When you do, make sure you seek some assistance: sometimes even a small amount of extra explanation can make things much easier to understand, and there is no point frustrating yourself with unsuccessful attempts to grasp the material.

Statutes and policies: Students should familiarise themselves with the University's policies and statutes, particularly the Assessment Statute, the Personal Courses of Study Statute, and the Statute on Student Conduct. These, and other resources, are accessible from the course website.