



UNSW SCIENCE
School of Maths and Statistics

Course outline

MATH5735
Modules and Representations

Term 1, 2023

algebra and group theory, and forms a basis for later graduate-level work in algebra.

Course Description

Performing linear algebra over a ring of scalars instead of a field leads to the notion of a module. The theory of modules is surprisingly subtle and has many applications, not only to other parts of mathematics but also to mathematical physics. This course focuses on the theory of modules over principal ideal domains and over semi simple rings. The first has applications to linear algebra. The second has applications to first order differential equations.

- Apply the fundamentals (e.g., structure of f.g. modules over a PID, orthogonality relations) of modern algebra to appropriate (e.g., linear algebra, character) problems.
- Develop problem solving and analytical skills and demonstrate improved conceptual thinking.
- Communicate mathematics effectively in written (and oral) form.

Course Schedule

The course will include material taken from some of the following topics. This is should only serve as a guide as it is not an extensive list of the material to be covered and the timings are approximate. The course content is ultimately defined by the material covered in lectures.

Reog39 (5-)0.6 (r)4 98i-tT4039 (5-)0.6 (r)4 98i-turse

attendance, assessment, plagiarism, cheating, special consideration etc. These are in addition to the Policies of The University of New South Wales. Individual courses may also adopt other policies in addition to or replacing some of the School ones. These will be clearly notified in the Course Initial Handout and on the Course Home Pages on the Maths Stats web site.

Students in courses run by the School of Mathematics and Statistics should be aware of the School and Course policies by reading the appropriate pages on the Maths Stats web site starting at: <https://www.maths.unsw.edu.au/currentstudents/assessment-policies>

The School of Mathematics and Statistics will assume that all its students have read and understood the School policies on the above pages and any individual course policies on the Course Initial Handout and Course Home Page. Lack of knowledge about a policy will not be an excuse for failing to follow the procedure in it.

Academic Integrity and Plagiarism

UNSW has an ongoing commitment to fostering a culture of learning informed by academic integrity. All UNSW staff and students have a responsibility to adhere to this principle of academic integrity. Plagiarism undermines academic integrity and is not tolerated at UNSW. Plagiarism at UNSW is defined as using the words or ideas of others and passing them off as your own.

The **UNSW Student Code** provides a framework for the standard of conduct expected of UNSW students with respect to their academic integrity and behaviour. It outlines the primary obligations of students and directs staff and students to the Code and related procedures.

In addition, it is important that students understand that it is not permissible to buy essay/writing services from third parties as the use of such services constitutes plagiarism because it involves using the words or ideas of others and passing them off as your own. Nor is it permissible to sell copies of lecture or tutorial notes as students do not own the rights to this intellectual property.

If a student breaches the Student Code with respect to academic integrity, the University may take disciplinary action under the **Student Misconduct Procedure**.

The UNSW Student Code and the Student Misconduct Procedure can be found at: <https://student.unsw.edu.au/plagiarism>

An online Module "[Working with Academic Integrity](https://student.unsw.edu.au/aim)" (<https://student.unsw.edu.au/aim>) is a six

an overview of how you can avoid plagiarism can be found
<https://student.unsw.edu.au/plagiarism>.

Additional Support

ELISE (Enabling Library and Information Skills for Everyone)

ELISE is designed to introduce new students to studying at UNSW.

Completing the ELISE tutorial and quiz will enable you to:

- f* analyse topics, plan responses and organise research for academic writing and other assessment tasks
- f* effectively and efficiently find appropriate information sources and evaluate relevance to your needs
- f* use and manage information effectively to accomplish a specific purpose
- f* better manage your time
- f* understand your rights and responsibilities as a student at UNSW
- f* be aware of plagiarism, copyright, UNSW Student Code of Conduct and Acceptable Use of UNSW ICT Resources Policy
- f* be aware of the standards of behaviour expected of everyone in the UNSW community
- f* locate services and information about UNSW and UNSW Library

Some of these areas will be familiar to you, others will be new. Gaining a solid understanding of all the related aspects of ELISE will help you make the most of your studies at UNSW.

The ELISE training webpages:

<https://subjectguides.library.unsw.edu.au/elise/aboutelise>

Equitable Learning Services (ELS)

If you suffer from a chronic or ongoing illness that has, or is likely to, put you at a serious disadvantage, then you should contact the Equitable Learning Services (previously known as SEADU) who provide confidential support and advice.

They assist students:

- living with disabilities
- with long- or short-term health concerns and/or mental health issues
- who are primary carers
- from low SES backgrounds
- of diverse genders, sexes and sexualities
- from refugee and refugee-like backgrounds
- from rural and remote backgrounds
- who are the first in their family to undertake a bachelor-level degree.

Their web site is: <https://student.unsw.edu.au/els/services>

