MATH3907
Algebra IIIA
Session 1, Special circumstances 2021
Department of Mathematics and Statistics

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Notice
As part of Phase 3 of our return to campus plan, most units will now run tutorials, seminars and other small group activities on campus, and most will keep an online version available to those students unable to return or those who choose to continue their studies online.

To check the availability of face-to-face activities for your unit, please go to timetable viewer. To check detailed information on unit assessments visit your unit's iLearn space or consult your unit convenor.
## General Information

### Unit convenor and teaching staff

**Lecturer**  
Steve Lack  
steve.lack@mq.edu.au  
Contact via email  
12 Wally’s Walk 730  
see iLearn

**Lecturer**  
Richard Garner  
richard.garner@mq.edu.au  
Contact via email  
12 Wally’s Walk 718  
see iLearn

### Credit points
10

### Prerequisites
130cp including (MATH2010 or MATH235)

### Corequisites
MATH3900 or MATH3901 or MATH3905 or MATH300 or MATH331 or MATH335

### Co-badged status

### Unit description
This unit develops the basic ideas of modern abstract algebra by concentrating on the many facets of group theory and its applications. Groups are used to describe symmetries of physical and mathematical objects. The course begins by introducing their basic theory, including generators and relations, Lagrange’s theorem, and quotient groups. These ideas are applied to topics such as geometry and the possibility or impossibility of solving polynomial equations.

## Important Academic Dates

Information about important academic dates including deadlines for withdrawing from units are available at [https://students.mq.edu.au/important-dates](https://students.mq.edu.au/important-dates)

## Learning Outcomes

On successful completion of this unit, you will be able to:
ULO1: Demonstrate a well-developed knowledge of algebraic principles, concepts and calculation techniques as occur within Group Theory.
ULO2: Apply relevant knowledge to problems in group theory and other fields in which group theory is used; through sustained logic, with clearly presented and justified mathematical arguments.
ULO3: Synthesize multiple ideas and techniques of group theory in order to solve a larger scale problem.
ULO4: Present mathematical ideas, arguments and findings in a professional manner as appropriate to the intended audience.

General Assessment Information

ATTENDANCE and PARTICIPATION: Please contact the unit convenor as soon as possible if you have difficulty attending and participating in any classes. There may be alternatives available to make up the work. If there are circumstances that mean you will miss a class, you can apply for Special Consideration via ask.mq.edu.au.

ASSIGNMENT SUBMISSION: Assignment submission will be online through the iLearn page.

Submit assignments online via the appropriate assignment link on the iLearn page. A personalised cover sheet is not required with online submissions. Read the submission statement carefully before accepting it as there are substantial penalties for making a false declaration.

- Assignment submission is via iLearn. You should upload this as a single scanned PDF file.
- Please note the quick guide on how to upload your assignments provided on the iLearn page.
- Please make sure that each page in your uploaded assignment corresponds to only one A4 page (do not upload an A3 page worth of content as an A4 page in landscape). If you are using an app like Clear Scanner, please make sure that the photos you are using are clear and shadow-free.
- It is your responsibility to make sure your assignment submission is legible.
- If there are technical obstructions to your submitting online, please email us to let us know.

You may submit as often as required prior to the due date/time. Please note that each submission will completely replace any previous submissions. It is in your interests to make frequent submissions of your partially completed work as insurance against technical or other problems near the submission deadline.

LATE SUBMISSION OF WORK: All assessment tasks must be submitted by the official due date and time. In the case of a late submission for a non-timed assessment (e.g. an assignment),
if special consideration has NOT been granted, 20% of the earned mark will be deducted for each 24-hour period (or part thereof) that the submission is late for the first 2 days (including weekends and/or public holidays). For example, if an assignment is submitted 25 hours late, its mark will attract a penalty equal to 40% of the earned mark. After 2 days (including weekends and public holidays) a mark of 0% will be awarded. Timed assessment tasks (e.g. tests, examinations) do not fall under these rules.

**FINAL EXAM POLICY:** It is Macquarie University policy not to set early examinations for individuals or groups of students. All students are expected to ensure that they are available until the end of the teaching semester, that is, the final day of the official examination period. The only excuse for not sitting an examination at the designated time is because of documented illness or unavoidable disruption. In these special circumstances, you may apply for special consideration via ask.mq.edu.au.

If you receive special consideration for the final exam, a supplementary exam will be scheduled in the interval between the regular exam period and the start of the next session. By making a special consideration application for the final exam you are declaring yourself available for a resit during this supplementary examination period and will not be eligible for a second special consideration approval based on pre-existing commitments. Please ensure you are familiar with the policy prior to submitting an application.

You can check the supplementary exam information page on FSE101 in iLearn (bit.ly/FSESupp) for dates, and approved applicants will receive an individual notification one week prior to the exam with the exact date and time of their supplementary examination.

### Assessment Tasks

<table>
<thead>
<tr>
<th>Name</th>
<th>Weighting</th>
<th>Hurdle</th>
<th>Due</th>
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</thead>
<tbody>
<tr>
<td>Assignment 1</td>
<td>15%</td>
<td>No</td>
<td>Week 5</td>
</tr>
<tr>
<td>Assignment 2</td>
<td>15%</td>
<td>No</td>
<td>Week 11</td>
</tr>
<tr>
<td>Final Exam</td>
<td>50%</td>
<td>No</td>
<td>Final Examination Period</td>
</tr>
<tr>
<td>Project</td>
<td>20%</td>
<td>No</td>
<td>Week 13</td>
</tr>
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**Assignment 1**

Assessment Type 1: Problem set  
Indicative Time on Task 2: 12 hours  
Due: **Week 5**  
Weighting: **15%**

A collection of problems relevant to the material taught during weeks 1–5 of the teaching session.
On successful completion you will be able to:

• Demonstrate a well-developed knowledge of algebraic principles, concepts and calculation techniques as occur within Group Theory.

• Apply relevant knowledge to problems in group theory and other fields in which group theory is used; through sustained logic, with clearly presented and justified mathematical arguments.

• Present mathematical ideas, arguments and findings in a professional manner as appropriate to the intended audience.

Assignment 2
Assessment Type 1: Problem set
Indicative Time on Task 2: 12 hours
Due: Week 11
Weighting: 15%

A collection of problems relevant to the material taught during weeks 5–10 of the teaching session.

On successful completion you will be able to:

• Demonstrate a well-developed knowledge of algebraic principles, concepts and calculation techniques as occur within Group Theory.

• Apply relevant knowledge to problems in group theory and other fields in which group theory is used; through sustained logic, with clearly presented and justified mathematical arguments.

• Present mathematical ideas, arguments and findings in a professional manner as appropriate to the intended audience.

Final Exam
Assessment Type 1: Examination
Indicative Time on Task 2: 15 hours
Due: Final Examination Period
Weighting: 50%

This will be an invigilated exam, held during the final exam period.
On successful completion you will be able to:

- Demonstrate a well-developed knowledge of algebraic principles, concepts and calculation techniques as occur within Group Theory.
- Apply relevant knowledge to problems in group theory and other fields in which group theory is used; through sustained logic, with clearly presented and justified mathematical arguments.
- Present mathematical ideas, arguments and findings in a professional manner as appropriate to the intended audience.

**Project**

**Assessment Type**: Project

**Indicative Time on Task**: 20 hours

**Due**: Week 13

**Weighting**: 20%

This project gives students the opportunity to apply the knowledge gained in the unit to a larger scale mathematical problem than the short questions typical in assignments.

On successful completion you will be able to:

- Demonstrate a well-developed knowledge of algebraic principles, concepts and calculation techniques as occur within Group Theory.
- Apply relevant knowledge to problems in group theory and other fields in which group theory is used; through sustained logic, with clearly presented and justified mathematical arguments.
- Synthesize multiple ideas and techniques of group theory in order to solve a larger scale problem.
- Present mathematical ideas, arguments and findings in a professional manner as appropriate to the intended audience.

If you need help with your assignment, please contact:

- the academic teaching staff in your unit for guidance in understanding or completing this type of assessment
- the [Learning Skills Unit](https://unitguides.mq.edu.au/unit_offerings/139249/unit_guide/print) for academic skills support.
Indicative time-on-task is an estimate of the time required for completion of the assessment task and is subject to individual variation.

**Delivery and Resources**

**Lectures (online):** There are two hours of lecture content per week. The lectures will be used to introduce and discuss new content.

**Small group teaching activity:** Students should also register and participate in one one-hour SGTA class per week. Students will discuss problems related to the previous week’s lecture content, and work through similar questions.

**Policies and Procedures**

Macquarie University policies and procedures are accessible from [Policy Central](https://staff.mq.edu.au/work/strategy-planning-and-governance/university-policies-and-procedures/policy-central). Students should be aware of the following policies in particular with regard to Learning and Teaching:

- Academic Appeals Policy
- Academic Integrity Policy
- Academic Progression Policy
- Assessment Policy
- Fitness to Practice Procedure
- Grade Appeal Policy
- Complaint Management Procedure for Students and Members of the Public
- Special Consideration Policy *(Note: The Special Consideration Policy is effective from 4 December 2017 and replaces the Disruption to Studies Policy.)*

Students seeking more policy resources can visit the [Student Policy Gateway](https://students.mq.edu.au/support/study/student-policy-gateway). It is your one-stop-shop for the key policies you need to know about throughout your undergraduate student journey.

If you would like to see all the policies relevant to Learning and Teaching visit [Policy Central](https://staff.mq.edu.au/work/strategy-planning-and-governance/university-policies-and-procedures/policy-central).

**Student Code of Conduct**

Macquarie University students have a responsibility to be familiar with the Student Code of Conduct: [https://students.mq.edu.au/admin/other-resources/student-conduct](https://students.mq.edu.au/admin/other-resources/student-conduct)

**Results**

Results published on platform other than [eStudent](https://eStudent), (eg. iLearn, Coursera etc.) or released directly by your Unit Convenor, are not confirmed as they are subject to final approval by the University. Once approved, final results will be sent to your student email address and will be made available in [eStudent](https://eStudent). For more information visit [ask.mq.edu.au](https://ask.mq.edu.au) or if you are a Global MBA
Macquarie University provides a range of support services for students. For details, visit [http://students.mq.edu.au/support/](http://students.mq.edu.au/support/)

### Learning Skills

Learning Skills ([mq.edu.au/learningskills](http://mq.edu.au/learningskills)) provides academic writing resources and study strategies to help you improve your marks and take control of your study.

- Getting help with your assignment
- Workshops
- StudyWise
- Academic Integrity Module

The Library provides online and face to face support to help you find and use relevant information resources.

- Subject and Research Guides
- Ask a Librarian

### Student Enquiry Service

For all student enquiries, visit Student Connect at [ask.mq.edu.au](http://ask.mq.edu.au)

If you are a Global MBA student contact [globalmba.support@mq.edu.au](mailto:globalmba.support@mq.edu.au)

### Equity Support

Students with a disability are encouraged to contact the Disability Service who can provide appropriate help with any issues that arise during their studies.

### IT Help

For help with University computer systems and technology, visit [http://www.mq.edu.au/about_us/offices_and_units/information_technology/help/](http://www.mq.edu.au/about_us/offices_and_units/information_technology/help/).

When using the University's IT, you must adhere to the [Acceptable Use of IT Resources Policy](http://www.mq.edu.au/about_us/offices_and_units/information_technology/help/).

The policy applies to all who connect to the MQ network including students.