



# MATH7900

## Research Frontiers in Mathematics

Session 1, In person-scheduled-weekday, North Ryde 2024

*School of Mathematical and Physical Sciences*

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#### Disclaimer

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## General Information

Unit convenor and teaching staff Adam Sikora <a href="mailto:adam.sikora@mq.edu.au">adam.sikora@mq.edu.au</a>
Credit points 10
Prerequisites Admission to MRes
Corequisites
Co-badged status
Unit description <p>This unit is designed to engage students with current research in Mathematics. It will introduce students to a number of the current open research questions across the range of the broad discipline. It is the first of a pair of such units, with the second appearing in the second year of the MRes program. This unit addresses research across the breadth of the discipline, while the second unit will focus on more particular issues related to the student's project area.</p> <p>Activities may include such things as seminar attendance, directed reading of research papers, the discussion and critiquing of research topics and introduction to new practical techniques with preparatory reading, hands-on experience and a final report. Presentation of a seminar and a written report based on the topics examined are required for completion of this unit.</p>

## Important Academic Dates

Information about important academic dates including deadlines for withdrawing from units are available at <https://www.mq.edu.au/study/calendar-of-dates>

## Learning Outcomes

On successful completion of this unit, you will be able to:

- ULO1:** Search for current literature in your field, and reference your findings appropriately.
- ULO2:** Typeset mathematics using LaTeX and BibTeX systems.
- ULO3:** Write academic mathematics in a clear and logical manner.
- ULO4:** Present research in your field so that non-experts can understand the work.

**ULO5:** Critically reflect on your current knowledge and transferability of these in relation to your career aspirations inside and/or outside academia

## Assessment Tasks

Name	Weighting	Hurdle	Due
<u>Presentation</u>	20%	No	Week 11
<u>Seminar/Colloquium Attendance</u>	10%	No	end of semester
<u>Literature review</u>	40%	No	Week 12
<u>Career Development Plan</u>	10%	No	end of semester
<u>Assignment</u>	20%	No	Week 5

### Presentation

Assessment Type <sup>1</sup>: Presentation

Indicative Time on Task <sup>2</sup>: 20 hours

Due: **Week 11**

Weighting: **20%**

Present current research in your field, based on your directed reading.

On successful completion you will be able to:

- Search for current literature in your field, and reference your findings appropriately.
- Typeset mathematics using LaTeX and BibTeX systems.
- Present research in your field so that non-experts can understand the work.
- Critically reflect on your current knowledge and transferability of these in relation to your career aspirations inside and/or outside academia

### Seminar/Colloquium Attendance

Assessment Type <sup>1</sup>: Participatory task

Indicative Time on Task <sup>2</sup>: 10 hours

Due: **end of semester**

Weighting: **10%**

Attend the department colloquium throughout the semester and ask the speakers relevant

questions.

On successful completion you will be able to:

- Present research in your field so that non-experts can understand the work.

## Literature review

Assessment Type **1**: Literature review

Indicative Time on Task **2**: 35 hours

Due: **Week 12**

Weighting: **40%**

Write a review of current literature in your field of research, based on your directed reading.

On successful completion you will be able to:

- Search for current literature in your field, and reference your findings appropriately.
- Typeset mathematics using LaTeX and BibTeX systems.
- Write academic mathematics in a clear and logical manner.
- Critically reflect on your current knowledge and transferability of these in relation to your career aspirations inside and/or outside academia

## Career Development Plan

Assessment Type **1**: Plan

Indicative Time on Task **2**: 7 hours

Due: **end of semester**

Weighting: **10%**

You will develop a professional development plan based on the career goals and aspirations you have identified in the goals and needs assessment.

On successful completion you will be able to:

- Critically reflect on your current knowledge and transferability of these in relation to your career aspirations inside and/or outside academia

## Assignment

Assessment Type <sup>1</sup>: Problem set

Indicative Time on Task <sup>2</sup>: 30 hours

Due: **Week 5**

Weighting: **20%**

Written solutions to exercises based on lecture material, including typesetting examples.

On successful completion you will be able to:

- Typeset mathematics using LaTeX and BibTeX systems.

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<sup>1</sup> 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 [Writing Centre](#) for academic skills support.

<sup>2</sup> 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

### Classes

Lectures (beginning in Week 1): There is a one-hour lecture each week. Students are required to establish overleaf account.

### Suggested textbooks

The following textbook is useful as supplementary resources, for additional questions and explanations. It is available (in pdf format) from the Macquarie University library:

- Gratzer, George, More math into LaTeX. 4th ed., New York, Springer, 2007

### Communication

We will communicate with you via your university email.

## Policies and Procedures

Macquarie University policies and procedures are accessible from [Policy Central](https://policies.smq.edu.au) (<https://policies.smq.edu.au>). 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](#)
- [Assessment Procedure](#)
- [Complaints Resolution Procedure for Students and Members of the Public](#)
- [Special Consideration Policy](#)

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

To find other policies relating to Teaching and Learning, visit [Policy Central](https://policies.mq.edu.au) (<https://policies.mq.edu.au>) and use the [search tool](#).

## 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>

## Results

Results published on platform other than [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](#). For more information visit [ask.mq.edu.au](https://ask.mq.edu.au) or if you are a Global MBA student contact [globalmba.support@mq.edu.au](mailto:globalmba.support@mq.edu.au)

## Academic Integrity

At Macquarie, we believe [academic integrity](#) – honesty, respect, trust, responsibility, fairness and courage – is at the core of learning, teaching and research. We recognise that meeting the expectations required to complete your assessments can be challenging. So, we offer you a range of resources and services to help you reach your potential, including free [online writing and maths support](#), [academic skills development](#) and [wellbeing consultations](#).

## Student Support

Macquarie University provides a range of support services for students. For details, visit <http://students.mq.edu.au/support/>

## The Writing Centre

[The Writing Centre](#) provides resources to develop your English language proficiency, academic writing, and communication skills.

- [Workshops](#)
- [Chat with a WriteWISE peer writing leader](#)

- [Access StudyWISE](#)
- [Upload an assignment to Studiosity](#)
- [Complete the 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 Services and Support

Macquarie University offers a range of [Student Support Services](#) including:

- [IT Support](#)
- [Accessibility and disability support](#) with study
- Mental health [support](#)
- [Safety support](#) to respond to bullying, harassment, sexual harassment and sexual assault
- [Social support](#) including information about finances, tenancy and legal issues
- [Student Advocacy](#) provides independent advice on MQ policies, procedures, and processes

## Student Enquiries

Got a question? Ask us via [AskMQ](#), or contact [Service Connect](#).

## 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](#). The policy applies to all who connect to the MQ network including students.

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Unit information based on version 2024.02 of the [Handbook](#)