



MATH2210

Pure Mathematics II

Session 2, In person-scheduled-weekday, North Ryde 2023

School of Mathematical and Physical Sciences

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General Information

Unit convenor and teaching staff

Professor

Xuan Duong

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Contact via E-mail

12 Wally's Walk, Room 729

Tuesday 11 am - 12 noon

Senior Lecturer

Paul Bryan

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Credit points

10

Prerequisites

MATH2010 or MATH235

Corequisites

Co-badged status

Unit description

This unit will introduce students to the abstract approach to mathematics, which offers great benefits in terms of simplicity, rigour, and generality. The key components of this are the careful definition of the objects of interest, the development of intuition allowing consequences of these definitions to be found, and the rigorous proof of these consequences. As such, it represents an important stepping stone towards many later mathematics units, as well as being valuable in its own right. This introduction will be taught in the context of different areas of mathematics, including: analysis, which concerns limits and convergence in many contexts; algebra, which concerns the nature and properties of mathematical operations; and discrete mathematics, which involves topics such as logic and counting.

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: Demonstrate an understanding of the abstract approach to mathematics, including its benefits with regards to simplicity, rigour, and generality.

ULO2: Construct formal proofs of simple statements in the subject areas of the unit.

ULO4: Demonstrate an understanding of the breadth of the discipline, its role in other fields, and the way other fields contribute to the development of the mathematical sciences.

ULO3: Formulate problems in mathematical terms using a variety of methods from analysis, algebra, and discrete mathematics.

ULO5: Appropriately interpret information communicated in mathematical form.

ULO6: Appropriately present information, reasoning and conclusions in a variety of modes to diverse audiences (expert and non-expert).

ULO7: Demonstrate an understanding of ethical issues relating to professional mathematical work, identify and address ethical issues arising in such professional work and make ethical decisions while collecting and analysing data and reporting findings.

ULO8: Work effectively, responsibly and safely in an individual or team context.

General Assessment Information

Late Assessment Submission Penalty

Unless a Special Consideration request has been submitted and approved, a 5% penalty (of the total possible mark of the task) will be applied for each day a written report or presentation assessment is not submitted, up until the 7th day (including weekends). After the 7th day, a grade of '0' will be awarded even if the assessment is submitted. The submission time for all uploaded assessments is **11:55 pm**. A 1-hour grace period will be provided to students who experience a technical concern.

For any late submission of time-sensitive tasks, such as scheduled tests/exams, performance assessments/presentations, and/or scheduled practical assessments/labs, please apply for [Special Consideration](#).

Late Assessment Submission

Late assessments are not accepted in this unit unless a [Special Consideration](#) has been submitted and approved.

Assessment Tasks

Name	Weighting	Hurdle	Due
Collaboration in SGTAs	0%	Yes	Weekly

Name	Weighting	Hurdle	Due
Assignment 1	20%	No	Week 7
Final Exam	40%	No	Exam period
Assignment 2	20%	No	Week 12
Report	20%	No	Week 13

Collaboration in SGTAs

Assessment Type ¹: Participatory task

Indicative Time on Task ²: 0 hours

Due: **Weekly**

Weighting: **0%**

This is a hurdle assessment task (see [assessment policy](#) for more information on hurdle assessment tasks)

Students will be required to work in the SGTAs in a collaborative, professional, and ethical manner.

On successful completion you will be able to:

- Appropriately present information, reasoning and conclusions in a variety of modes to diverse audiences (expert and non-expert).
- Demonstrate an understanding of ethical issues relating to professional mathematical work, identify and address ethical issues arising in such professional work and make ethical decisions while collecting and analysing data and reporting findings.
- Work effectively, responsibly and safely in an individual or team context.

Assignment 1

Assessment Type ¹: Problem set

Indicative Time on Task ²: 5 hours

Due: **Week 7**

Weighting: **20%**

Set of questions with short answers involving proofs, calculations, and written responses.

On successful completion you will be able to:

- Demonstrate an understanding of the abstract approach to mathematics, including its benefits with regards to simplicity, rigour, and generality.
- Construct formal proofs of simple statements in the subject areas of the unit.
- Demonstrate an understanding of the breadth of the discipline, its role in other fields, and the way other fields contribute to the development of the mathematical sciences.
- Formulate problems in mathematical terms using a variety of methods from analysis, algebra, and discrete mathematics.
- Appropriately interpret information communicated in mathematical form.
- Appropriately present information, reasoning and conclusions in a variety of modes to diverse audiences (expert and non-expert).

Final Exam

Assessment Type ¹: Examination

Indicative Time on Task ²: 13 hours

Due: **Exam period**

Weighting: **40%**

This will be a summative examination conducted during the final examination period.

On successful completion you will be able to:

- Demonstrate an understanding of the abstract approach to mathematics, including its benefits with regards to simplicity, rigour, and generality.
- Construct formal proofs of simple statements in the subject areas of the unit.
- Demonstrate an understanding of the breadth of the discipline, its role in other fields, and the way other fields contribute to the development of the mathematical sciences.
- Formulate problems in mathematical terms using a variety of methods from analysis, algebra, and discrete mathematics.
- Appropriately interpret information communicated in mathematical form.

Assignment 2

Assessment Type ¹: Problem set

Indicative Time on Task ²: 5 hours

Due: **Week 12**

Weighting: **20%**

Set of questions with short answers involving proofs, calculations, and written responses.

On successful completion you will be able to:

- Demonstrate an understanding of the abstract approach to mathematics, including its benefits with regards to simplicity, rigour, and generality.
- Construct formal proofs of simple statements in the subject areas of the unit.
- Demonstrate an understanding of the breadth of the discipline, its role in other fields, and the way other fields contribute to the development of the mathematical sciences.
- Formulate problems in mathematical terms using a variety of methods from analysis, algebra, and discrete mathematics.
- Appropriately interpret information communicated in mathematical form.
- Appropriately present information, reasoning and conclusions in a variety of modes to diverse audiences (expert and non-expert).

Report

Assessment Type ¹: Report

Indicative Time on Task ²: 10 hours

Due: **Week 13**

Weighting: **20%**

Report building on one of the topics covered in lectures.

On successful completion you will be able to:

- Demonstrate an understanding of the abstract approach to mathematics, including its benefits with regards to simplicity, rigour, and generality.
- Construct formal proofs of simple statements in the subject areas of the unit.
- Demonstrate an understanding of the breadth of the discipline, its role in other fields, and the way other fields contribute to the development of the mathematical sciences.
- Formulate problems in mathematical terms using a variety of methods from analysis, algebra, and discrete mathematics.
- Appropriately interpret information communicated in mathematical form.
- Appropriately present information, reasoning and conclusions in a variety of modes to diverse audiences (expert and non-expert).

¹ 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.

² 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

Welcome to MATH2210: Pure Maths II. We're very excited to be bringing you this recently created unit, and are looking forward to giving you a glimpse of the world that is modern pure mathematics.

You can see our pictures and contact details to the right. Unlike some of your other maths units, this one has a single stream, but two lecturers, one for the first half and one for the second.

In the early parts of the term, Paul Bryan will be running Lectures and SGTAs, with details appearing in the Lectures and SGTA Times section below.

In the second half of term, Xuan Duong will be uploading recorded lectures for references, and then giving Lectures and SGTAs.

Policies and Procedures

Macquarie University policies and procedures are accessible from [Policy Central \(https://policies.mq.edu.au\)](https://policies.mq.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 or if you are a Global MBA student contact 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/.

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.