THE UNIVERSITY OF MELBOURNE

School of Mathematics & Statistics

MSc and Graduate Diploma (Advanced) in Mathematics and Statistics

Coordinator: James Osborne (Me).

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Director of Graduate Teaching: Jack Hall.

Deputy director: Matthew Tam.

Academic Support Officer: Tina Soundias (+ rest of M&S ASO team)

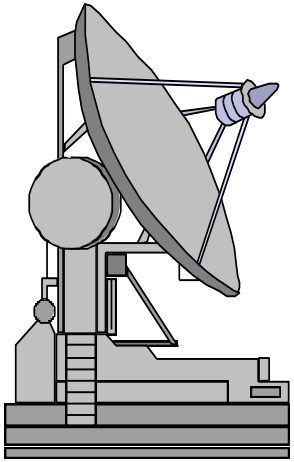
Career outcomes

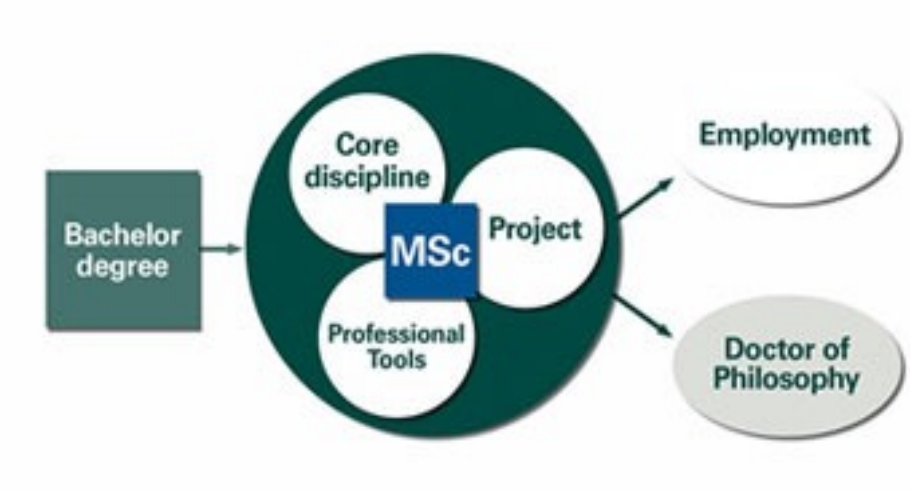
Qualified mathematicians and statisticians are in demand. There is a national shortage. Graduates of higher-level degrees in these areas often attract headhunters and above average salaries. As a graduate from this program, you can enjoy rewarding careers in fields such as:

Quantitative analysis	**Strategic management**
Equities analysis	**Financial services and fund management**
Statistics	**Biostatistics**
Operations management	**Business development**
Epidemiology	**Software development**
Consulting	**…**
Data services	

… and of course, academia.

"Why an MSc or a GDA?"





MSc/GDA graduates acquire skills keenly sought after by employers

- In-depth knowledge of Mathematics and/or Statistics.
- Strong skillset for problem solving.
- Facility to learn new, advanced topics and techniques.
- Rigorous training in meeting strict deadlines, clearly and professionally explaining and reporting on new technical results, and (for the MSc) managing a multicomponent project.

Key information sources

The Uni Handbook entries for:

- MC-SCIMAT for MSc (Mathematics and Statistics)
- GDA-SCI Graduate Diploma in Science (Advanced)

School of Maths & Stats MSc & GDA Guide:

- Available online (from the Maths & Stats website).

READ THE GUIDE!!!

MSc/GDA in the School of Mathematics and Statistics

- Provides flexible course structure.
- Excellent work facilities (MSc students will *eventually* get a desk with a dedicated PC or Mac!).
- Participation in original research, particularly in MSc degree (no research component in GDA).
- Intensive project supervision by excellent academics.
- Interaction with other highly motivated postgraduate students with similar interests. Postgraduate students learn a lot from continuous discussions with each other.

The MSc is a postgraduate degree

- Two years full-time (or longer, part-time).
- CSPs are available. Please contact the Faculty of Science for details.
- Scholarships! (Will talk about that a bit later.)
- 11 discipline subjects + 1 “toolkit subject” + a 50-point research project (thesis + talk).
- Flexible course structure: up to 2 discipline subjects can be replaced with undergraduate Maths and Stats subjects, and up to 2 MSc **approved** relevant subjects from another school.
- Broad and rigorous preparation for a PhD.

Requirements for MSc

- An undergraduate degree with a major in Mathematics, Statistics or Mathematical Physics, with at least an H3 (65%) in the major, or equivalent. Approximate benchmarks are:

AustFee: 65-69%

CSP: at least 70%.

MSc specialisations

- AMMB - Applied Mathematics & Mathematical Biology
- MPPC - Mathematical Physics & Physical Combinatorics
- ORIO - Operations Research & Industrial Optimisation
- PURE - Pure Mathematics
- SASP- Statistics and Stochastic Processes

MSc subject structure

- Discipline subjects (12.5 points each, 170h per subject):

  11 Maths and Stats master's-level discipline subjects.
  - Specialisation: 2 core and 3 elective subjects
  - Add 2 subjects from a single specialisation different to the one you've selected.
  - Add 4 further Master's level units from *any* specialisation (including up to 2 approved subjects from other schools).
  - Of these further discipline subjects, at most 2 may be replaced by approved *undergraduate* subjects.

- Professional Skills Subject (12.5 points)

MSc research project

Research Project: 50 points over THREE consecutive semesters (**800 hours** of work!). Requires writing a thesis and giving two talks (about 30 minutes each):

1. A presentation on a topic relevant to the thesis.
2. A final presentation on the topic of the thesis.

There are also hurdles (in Semesters 1& 2 of the RP).

Research and presentations are carried out in regular consultation with your academic supervisor.

MSc thesis supervisors

- https://www.ms.unimelb.edu.au/study/supervisors-list
- Very approachable. They don't bite!

MSc Course Structure - AMMB
Applied Mathematics & Mathematical Biology

2024, 2026, ...	
Advanced Methods: Transforms	Mathematical Biology
Advanced Biological Modelling: Dynamics	Bayesian Statistical Learning
Computational Differential Equations	
Random Matrix Theory	
2023, 2025, ...	
Advanced Methods: Differential Equations	Bayesian Statistical Learning
Mathematical Statistical Mechanics	Continuum Mechanics
	Infectious Disease Dynamics

MSc Course Structure - MPPC
Mathematical Physics & Physical Combinatorics

2024, 2026, ...	
Advanced Methods: Transforms	Enumerative Combinatorics
Random Matrix Theory	Introduction to String Theory
2023, 2025, ...	
Mathematical Statistical Mechanics	**Advanced Discrete Mathematics**
Advanced Methods: Differential Equations	Exactly Solvable Models
Lie Algebras	

MSc Course Structure - ORIO
Operations Research & Industrial Optimisation

2024, 2026, ...	
Optimisation for Industry	**Approximation, Algorithms and Heuristics**
Advanced Nonlinear Programming	Network Optimisation
2023, 2025, ...	
Optimisation for Industry	**Approximation, Algorithms and Heuristics**
Mathematical Game Theory	Scheduling and Optimisation

MSc Course Structure - PURE
Pure Mathematics

2024, 2026, ...	
Algebraic Topology	Algebraic Geometry
Algebraic Number Theory	Differential Geometry
Functional Analysis	Groups, Categories & Homological Algebra
2023, 2025, ...	
Measure Theory	Partial Differential Equations
Differential Topology	Representation Theory
Lie Algebras	Riemann Surfaces & Complex Analysis

MSc Course Structure - SASP
Statistics and Stochastic Processes

All years...	
Mathematical Statistics	**Advanced Probability**
Inference for Spatio-temporal Processes	Bayesian Statistical Learning
Random Processes	Computational Stats & Data Science
Statistical Modelling	Multivariate Stats for Data Science
2024, 2026, … only	
Adv. Topics in Stochastic Models	Advanced Statistical Modelling
	Mathematics of Risk
	Practice of Stats & Data Science
2023, 2025, … only	
Stochastic Calculus with Applications	

Graduate Diploma - Advanced

- One year, full-time.
- Entry requirements are similar to the MSc. Needs undergraduate degree in Maths, Stats or Math Physics: at least an H3 (65%) mark for the major.
- 8 master's-level Maths & Stats discipline subjects and no research component. Up to 4 may be replaced by 3rd-year Maths & Stats subjects.
- Can transition into MSc with credit awarded for completed postgraduate subjects.

Scholarships

First, check the University's scholarships webpage:
https://scholarships.unimelb.edu.au/

Of particular note:

- Helen Freeman Scholarship: One $20k scholarship per year for a female student entering the MSc (Maths and Stats).
- M Belz Scholarships: Up to three $7K scholarships to students enrolled in the MSc doing Statistics, Applied Probability, Stochastic Processes or Operations Research.
- School MSc Scholarships: $2K per semester, if you do well (≥80% average).

Prizes

Wyselaskie Scholarship: Best student in Mathematics and Statistics.

Dwight Prize: Best student in Statistics.

Nanson/Wilson Prizes: Best original thesis in Pure or Applied.

Urquhart Prize: Best student overall, thesis as well as coursework.

When to apply

- Apply online here:

  https://study.unimelb.edu.au

  Beware of the deadline: **30 November.**

  *Mid-year entry is also possible for our postgraduate degrees. Deadline is usually **31 May**.*

Thank you

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