AREAS OF SPECIALISATION

Mathematical sciences
- Analysis
- Applied mathematics
- Category theory
- Number theory

Statistics
- Biostatistics
- Computational statistics
- Financial modelling
- Signal and image processing

FACILITIES
- Macquarie runs a small supercomputer based on Nvidia Tesla boards

RESEARCH HUB
- Centre of Australian Category Theory

From research into the security of e-passport systems and the design of randomised clinical trials to arithmetical properties of musical rhythms and risk management in electricity markets, Macquarie’s mathematical sciences and statistics researchers are uniquely positioned to help shape the complex issues that define the future of humanity.

Mathematical sciences and statistics research at Macquarie is undertaken in pure and applied mathematics – with strengths in applied mathematics, category theory, harmonic analysis and number theory – and statistics – with strengths in biostatistics, epidemiology and medical statistics, image processing, stochastic finance and time series analysis.


Collaborative research is also significant, with partners including national medical research institutes such as the NHMRC Clinical Trials Centre and George Institute for Global Health, and Defence Science and Technology Organisation, Australian Signals Directorate and IBM.

Our researchers also enjoy an international reputation as leaders in their fields. In the most recent Excellence in Research for Australia (ERA) evaluation, our research in the sub-discipline of computation theory and mathematics received a rating of ‘performance above world standard’ and our research in the sub-discipline of pure mathematics received a rating of ‘performance at world standard.’

As a higher degree research candidate at Macquarie, you will have the opportunity to research alongside some of the best academics and researchers in not just Australia but the world.
Highlights

• Macquarie is home to an ARC Australian Professorial Fellow, a Fellow of the Australian Academy of Science and an Australian Mathematical Society Medallist.

• Several researchers sit on the editorial boards of leading journals such as Advances in Mathematics; Australian & New Zealand Journal of Statistics; Designs, Codes and Cryptography; IEEE Transactions on Antennas and Propagation; Journal of Global Optimization; Journal of Time Series Analysis; Mathematics of Computation; SIAM Journal on Computing; Statistical Methods in Medical Research; and Statistics in Medicine.

Support

You will be provided with individualised support, as well as a range of opportunities, at all stages of your research degree, including:

• higher degree research learning skills advisers who provide valuable training options such as workshops in research communication, presentation skills, academic writing skills, thesis planning and more

• inspirational supervision and mentoring

• a candidature management plan that closely supports progress, commencement programs, work-in-progress reviews, and presentations providing opportunities for feedback from a panel of academics

• real-world engagement with opportunities for cotutelle and joint degrees

• financial support for a range of research-related activities

• world-class facilities

• a transformative research experience that fosters cross-disciplinary collaboration.

RESEARCH LEADERS

Meet some of our internationally renowned researchers.

Professor Ian Marschner is one of Australia's leading biostatisticians. He has made many contributions to the development of new methodology for the design and analysis of health research studies, and has strong collaborations with medical researchers, particularly at the NHMRC Clinical Trials Centre. He has extensive research and development experience in the pharmaceutical industry.

Professor Barry Quinn works across the boundaries of statistics and electrical engineering, specifically in time series problems in signal processing. He has held chairs at the Universities of London and Manchester, and is an associate editor of the Journal of Time Series Analysis.

Professor Vladimir Gaitsgory is a leading applied mathematician with broad areas of interest in control, optimisation, dynamical systems and games theories, and their applications. He has attracted significant ARC funding to support his research, as well as an ARC Discovery Outstanding Researcher Award.

Professor Xuan Duong is recognised internationally for having made several important breakthroughs in harmonic analysis, specifically in estimates on singular integrals and function spaces. He has published in prestigious journals and is an associate editor of Communications in Mathematical Analysis.