Mathematical sciences and statistics

From research at the forefront of modern applied mathematics and investigations to assist in the management of risk in electricity markets, to improvements in the design of randomised clinical trials and fundamental research in category theory and analysis, 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 dynamical systems, category theory, fluid mechanics and wave propagation, harmonic analysis and partial differential equations, and optimisation; and statistics – with strengths in biostatistics, epidemiology and medical statistics, image processing, stochastic finance and time series analysis.

Our researchers are engaged in numerous international collaborations, and the results of their research are regularly published in the prestigious peer-reviewed journals relevant to their particular areas of research.

We also undertake significant levels of collaborative research with partners, including national medical research institutes such as the Australian Signals Directorate, the Defence Science and Technology Group, the George Institute for Global Health, IBM, and the National Health and Medical Research Council Clinical Trials Centre.

Our researchers are widely recognised both in Australia and internationally as leaders in their fields. In the most recent Excellence in Research for Australia evaluation, our research in the discipline of mathematical sciences received a rating of performance above world standard, as did our research in the sub-discipline of computation theory and mathematics. Additionally, our research in the sub-discipline of pure mathematics received a rating of performance well above world standard.

As a higher degree research candidate at Macquarie, you'll have the opportunity to undertake research alongside some of the best academics and researchers not only in Australia but also the world.

MACQUARIE
University
SYDNEY·AUSTRALIA

AREAS OF SPECIALISATION

MATHEMATICAL SCIENCES
- Applied dynamical systems
- Category theory
- Computational mathematics
- Fluid mechanics
- Harmonic analysis
- Optimisation
- Partial differential equations
- Wave propagation

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

FACILITIES
- Macquarie runs a small supercomputer based on NVIDIA Tesla boards
- Computational resources are provided by a large-scale server
- Access to Australia's National Computational Infrastructure (NCI) facilities for computationally intensive research projects
- A full suite of mathematical and statistical software
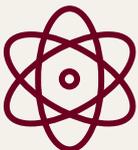
RESEARCH HUB
- Centre of Australian Category Theory

OUR RESEARCH PRIORITIES
We pursue excellence in a broad range of research areas. Our five interdisciplinary strategic research priorities – Healthy People, Resilient Societies, Prosperous Economies, Secure Planet and Innovative Technologies – respond to globally significant challenges and opportunities to improve the lives of millions. Together, these research priorities provide a focal point for research, with discoveries made under these priorities translating into real improvements in the lives of local, national and global communities.

JOINTLY SUPERVISED PHD PROGRAMS
Macquarie actively encourages cotutelles and joint degrees – shared supervision arrangements with universities whose research activity strongly aligns with ours. Under each model, you are enrolled at two universities with a principal supervisor at each and may be eligible for additional scholarship support.

mq.edu.au/cotutelle-and-joint-phd