

Macquarie University, Sydney, Australia

RESEARCH OPPORTUNITIES

Macquarie University is committed to being a leader in research. We are recruiting strongly to build on our existing strengths in our Concentrations of Research Excellence (COREs).

A world class university

Ranked among the top nine universities in Australia (Shanghai Jiao Tong University Rankings, 2008), Macquarie University is a research-intensive university. Our goal is to open students' minds to the challenges of research and to life-long enquiry.

Macquarie's international reputation rests on distinct research areas of the highest quality. We are expanding this through our unique concentration and research recruitment strategy which will add about 100 highly performing researchers to our staff by the end of 2009.

Macquarie University has invested in a unique plan to secure our position as a world-class research institution in areas of international significance and benefit to Australia.

Our strategy

Macquarie University is home to some of the world's pre-eminent researchers who attract significant research funding to the University.

Our research is also supported by partnerships and collaborations with leading Australian and global experts, allowing academic staff to develop critical research skills that, in turn, enable them to contribute to the creation of knowledge of national and global importance.

"Put simply, our strategy is to recruit around our strengths because top-quality researchers will almost always want to work with other top-quality researchers" says Deputy Vice-Chancellor (Research), Professor Jim Piper (pictured).

"Each time we recruit more world-class researchers, the reputation and quality of our research will rise, and the educational experience for our students - undergraduate and postgraduate - will be enhanced."



Recent research highlights

- Eighteen Concentrations of Research Excellence (COREs) have been established (see overleaf for further details) to attract major external funding while building international profiles.
- Macquarie facilitates joint PhD programs with other research-intensive international universities. In 2008 there were 47 cotutelle agreements with over 30 leading universities in 19 countries.
- International PhD applications are accepted all year round, allowing greater flexibility for potential applicants.
- The Macquarie Research Excellence Scholarship (MQRES) budget was increased to AU\$16.3 million in 2009.
- Twelve internal research grant funding schemes for research staff and students were created with a total budget of AU\$22 million in 2009.
- The University Library provides specific support to researchers and higher degree research students, including dedicated research areas within the new Library building, to be opened in 2010.
- Macquarie's research capacity will soon be enhanced by major infrastructure developments, including the AU\$180 million Macquarie University Hospital and the AU\$140 million Hearing Hub.

DID YOU KNOW?

Macquarie has the first lab in the world to house two magnetoencephalography (MEG) systems in the same location.

Read about Macquarie's Cognitive Science research inside.

Concentrations of Research Excellence (COREs)

Macquarie's international reputation rests on distinct research areas of the highest quality. Currently, there are 18 COREs:

Ancient Cultures

The breadth of coverage and the integration of source studies with historical research makes Ancient Cultures at Macquarie unique. Our projects advance each of our key areas – excavation (Egypt), inscriptions, numismatics, prosopography (Rome), papyrology (Early Christianity), and editing and translation (Late Antiquity and Silk Road).

Animal Behaviour

Our research combines insights from sensory, physiological and cognitive processes with genetic and comparative analyses. The goal of this uniquely integrative approach is to understand animal behaviour at all levels, from mechanism to evolution.

Astronomy and Astrophysics

Macquarie University is a highly active centre of astronomical research excellence and is in close proximity to both the Anglo-Australian Observatory and the Australia Telescope National Facility. Our research strengths include wide-field astronomy, optical, infrared and radio studies of planetary nebulae and supernova remnants, stellar proper motions, theoretical studies of shock-waves, star formation and black holes.

Biomolecular Frontiers

We undertake world-class research in proteomics, glycomics, genomics, biotechnology and chemical biology related to cell biology, human disease biomarker discovery, agri-food quality trait discovery, microbial physiology & pathogenicity, gene transfer systems, protein post-translational modifications and expression, and bioinformatics. The Biomolecular Frontiers team is underpinned by the state-of-the-art research infrastructure provided by the Australian Proteome Analysis Facility.

Climate Risk

We are a multi-disciplinary group with expertise in climatology, water, coastal processes, geomorphology, ecology, economics, law and governance, social policy, planning and risk analysis. Our strategy is to use science and impact assessment infused by and packaged within a framework of economic, financial and legal risk.

Cognitive Science

We study basic processes of cognition – language acquisition, reading and spelling, understanding and producing spoken language, face recognition, thinking, memory and attention – using our results to achieve greater understanding of cognitive disorders such as schizophrenia, autism, dyslexia, aphasia, specific language impairment in children and prosopagnosia.

Earth and Planetary Evolution

By integrating information across traditional discipline boundaries including geochemistry, geophysics, geodynamics and tectonics, Macquarie is now a world leader in mapping the Earth in four dimensions. Our cutting-edge isotope, geochemical and experimental instrumentation and strong industry collaborations attract leading local and international geoscientists.

Ecology and Evolution

Working under the slogan 'genes to geoscience', we are a coalition of research groups and individual researchers, who believe that exceptionally interesting and important science over coming decades will arise through bridging from molecular technologies and biological detail, up to world-scales in space and geology-scales in time.

Emotional Health

We focus on understanding, treating and preventing emotional distress, as well as promoting positive emotional health. Research interests of team members focus on emotional difficulties across the lifespan. The team has developed novel interventions through its research clinic.

Financial Risk

We focus on the financial implications of risk arising out of global capital market fluctuations, climate change, foreign exchange, longevity, retirement, and regulatory risk. Our key research agenda is to better understand, integrate, manage and price financial risk to allow their efficient and equitable distribution within our economic system.

Language Sciences

We bring a combination of theoretical, experimental and computational approaches to the investigation of live issues in the production and comprehension of languages across the human life span. Central issues include how human language is processed in the brain, how language develops in normal children and the nature of language disorders in children and adults.

Lasers and Photonics

In Macquarie University's Photonics Research Centre, our internationally-leading researchers pursue a broad range of experimental and theoretical studies in lasers, optics, photonics and optoelectronics. We aim to address fundamental questions and develop new optical technologies for applications such as medical diagnosis and therapy, high-resolution imaging and sensing, and microfabrication.

Legal Governance

We research legal governance and regulatory problems facing governments, businesses, and communities, including global and national governance, environmental sustainability, corporate social responsibility, and the medico-legal challenges of human health.

Neuroscience, Vascular Sciences and Surgery

We research the effects of the brain on cardiovascular and respiratory systems; as well as the effects of the cardiovascular system on the brain. Our research group includes leading scientists and clinicians, with a strong emphasis on the neurosciences; particularly how the central nervous system controls blood pressure and breathing, blood flow in large arteries and pathology of the cerebral vasculature.

Quantum Information Science and Security

With experts in optics, condensed matter physics, theoretical physics, computer science, statistics and chemistry, we forge discoveries in quantum science and technology. Quantum information science drives a wide range of new technologies such as quantum computers, quantum materials, quantum cryptography, quantum simulations and quantum algorithms. The addition of experimental expertise opens new routes for interdisciplinary research.

Social, Cultural and Political Change

We are a cross-disciplinary group with expertise in the history of media, culture and politics. We focus on the history of the press, radio and film; the representations of history in various media; feminist and postcolonial studies; culturally constructed notions of gender and sexuality; literary history and critical theory; and historically informed accounts of political culture, citizenship and public opinion.

Social Inclusion

At the Centre for Research on Social Inclusion, our scholars engage in philosophical, social and cultural inquiry and collaborate in interdisciplinary research on key issues such as work reform, globalisation, cities, migration, multiculturalism, racism and welfare. A distinctive feature of the Centre is its commitment to research that is both socially relevant and theoretically innovative.

Wireless Communications

We undertake complementary research activities related to wireless communications, ranging from transistor circuits for radios, to telecommunications networking and transmission via optical and radio propagation. The specialist expertise within the team provides a niche capability in the understanding of the interplay between components in telecommunications systems.

For more information about Macquarie's COREs, visit www.research.mq.edu.au/excellence

Further areas of study

In addition to these COREs, individual academics in all Faculties can supervise students whose interests fall outside these areas.

Faculty of Arts

Ancient History; Anthropology; English; Indigenous Studies; International Studies; Media, Music & Cultural Studies; Modern History, Politics, International Relations and Security; Philosophy; Sociology; Law

Faculty of Business & Economics

Applied Finance; Accounting & Finance; Actuarial Studies; Business; Business Law; Economics; Macquarie Graduate School of Management (MGSM)

Faculty of Human Sciences

Australian School of Advanced Medicine (ASAM); Education; Linguistics; Psychology; Early Childhood; Human Cognition & Brain Science

Faculty of Sciences

Biological Sciences; Brain Behaviour & Evolution; Chemistry & Biomolecular Sciences; Chiropractic; Computing; Environment & Geography; Mathematics; Physics & Engineering; Statistics

Macquarie University Hospital

When it opens its doors to patients in 2010, the Macquarie University Hospital will establish a new era in health care. As the first private teaching hospital to be located on a university campus in Australia, it will combine excellence in clinical care, medical education and research.

The hospital, a \$150 million joint venture between Macquarie University and Dalcross Private Hospital, will complement teaching and research services already offered at the University. The hospital will accommodate the University's medical school, the Australian School of Advanced Medicine (ASAM).

ASAM aims to improve medicine by offering a new dimension in medical education. As the only Australian medical school providing post-fellowship training in sub-specialties of surgery, doctors are able to receive formal university recognition for post-fellowship training, in partnership with the Royal Australasian College of Surgeons.

The current teaching hospital of the ASAM is Dalcross Private Hospital, which has a highly regarded reputation for the treatment of complex neurosurgical and spinal conditions.



Doctor of Philosophy (PhD) at a glance

Entry into the Macquarie PhD program is competitive. Full details of entry criteria can be found at www.research.mq.edu.au/students

Admission Requirements

- Bachelor Honours (Class 2 Division 1 minimum); or
- Master by Coursework (25 per cent research, credit minimum); or
- Master by Research (credit minimum); or
- Equivalent Research Experience (eg. Research papers); or
- Bachelor or Master by Coursework degree, with no research component plus either a Postgraduate Certificate* (100 per cent research and credit minimum); or
- Postgraduate Diploma* (50 per cent research, credit minimum)

plus

- English language proficiency (IELTS minimum 6.5)
- Research proposal
- Referee reports if applying for a scholarship

* These 'pathway' programs are coursework programs which may not be available in all departments. Students should seek advice with their Faculty/Department academic advisors before applying.

Application and commencement

You can apply and commence at anytime. To apply for a PhD at Macquarie University, email hdrfuture@mq.edu.au or visit www.research.mq.edu.au/students

Coursework

Normally less than one semester (full time)

Duration

Normally 3.5 years

Annual Fees*

Approximately AU\$21,000 - \$28,000 for international students

Scholarships

Very competitive, eligible candidates will receive a full fee scholarship and a living allowance of around AU\$20,000 per year. For scholarship rating criteria see: www.research.mq.edu.au/students/scholarships

Supervision

At least two academics and chief supervisor will be a full-time permanent faculty member

Thesis

- Maximum word count varies (usually less than 90,000)
- Preference for published papers to be included.
- Generally in English, other languages subject to approval.

Thesis examination

Three external, independent examiners' reports reviewed by university central committee. No oral defence.

* Unless otherwise specified, all international students are required to pay tuition fees. New students are advised of the required tuition fees to be paid in their letter offering candidature. Tuition fees for all commencing students are indexed annually. For further details visit www.research.mq.edu.au/students/current_students/



Joint PhD Supervision/Cotutelle - Gain double recognition!

In addition to the usual direct entry PhD, Macquarie University encourages joint PhD enrolment (known as “Cotutelle” in France) with research active overseas universities.

Simultaneous enrolment at Macquarie and one of our partner universities will enable students to submit one thesis for joint recognition. About half of the student’s time will be spent at each university and travel funds are provided. Students will be supervised by researchers at the two universities and meet all the requirements to graduate at both of them.

Eligible cotutelle students are entitled to the MQRES (Macquarie University Research Excellence Scholarship) which provides full tuition payment and a living allowance/stipend of around AU\$20,000 per year. The following are some examples of our existing cotutelle agreements:

HOST UNIVERSITY	DEGREE
University of Massachusetts, Amherst, USA	PhD – Animal Behaviour
Frankfurt University, Germany	PhD – International Studies
University Montpellier 2, France	PhD - Earth and Planetary Sciences
Linköping University, Sweden	PhD – Education
Tsinghua University, China	PhD - International Communications
University of Sao Paulo, Brazil	PhD – Advanced Medicine
University of Trento, Italy	PhD – Cognitive Science

To view a list of partner universities participating in joint PhD programs visit www.international.mq.edu.au/research.

Because of the nature of joint PhD programs, a legally binding Joint PhD Supervision Agreement between the two universities is required before a student commences his/her joint enrolment (a sample Agreement can be found at www.international.mq.edu.au/research).

Enquiries and further information

The HDR Marketing & Development Team at Macquarie International (MI HDR) facilitates all matters related to joint PhD agreements. To contact the MI HDR team, email MI_HDR@mq.edu.au.



XIANG (ROBINSON) DEBAO, CHINA COTUTELLE PHD IN INTERNATIONAL COMMUNICATION

“Macquarie University and Tsinghua University have a long friendship. I met my supervisor Professor Naren Chitty at the Graduate Workshop in Tsinghua in 2005.

Professor Chitty’s academic achievement impressed me, and he encouraged me to complete my thesis with a cotutelle program.

It is a wonderful opportunity for me. It broadens my perspective and allows me to publish in English and Chinese, and to obtain two degrees from leading universities.

I hope that my research will help people understand more about China and promote a more balanced picture.”