POSITION DESCRIPTION

Position Title:         Postdoctoral Research Fellow
Organisation Unit:     School of Mechanical & Mining Engineering
Position Number:       3037005
Type of Employment:    Full time, Fixed term
Classification:        Research Focused Academic, Level A

THE UNIVERSITY OF QUEENSLAND

The University of Queensland (UQ) contributes positively to society by engaging in the creation, preservation, transfer and application of knowledge. UQ helps shape the future by bringing together and developing leaders in their fields to inspire the next generation and to advance ideas that benefit the world. UQ strives for the personal and professional success of its students, staff and alumni. For more than a century, we have educated and worked with outstanding people to deliver knowledge leadership for a better world.

UQ ranks in the world’s top universities, as measured by several key independent ranking, including the Performance Ranking of Scientific Papers for World Universities (45), the US News Best Global Universities Rankings (52), QS World University Rankings (51), Academic Ranking of World Universities (55), and the Times Higher Education World University Rankings (60). UQ again topped the nation in the prestigious Nature Index; and secured a greater share of Australian Research Council grants in 2016 ($24.5 million) than any other university nationally.

UQ has an outstanding reputation for the quality of its teachers, its educational programs and employment outcomes for its students. Our students remain at the heart of what we do. The UQ experience – the UQ Advantage – is distinguished by a research enriched curriculum, international collaborations, industry engagement and opportunities that nurture and develop future leaders. UQ has a strong focus on teaching excellence, winning more national teaching excellence awards than any other in the country and attracting the majority of Queensland's highest academic achievers, as well as top interstate and overseas students.

UQ is one of Australia’s Group of Eight, a charter member of edX and a founding member of Universitas 21, an international consortium of leading research-intensive universities.

Our 50,000-plus strong student community includes more than 13,000 postgraduate scholars and more than 12,000 international students from 144 countries, adding to its proud 230,000-plus alumni. The University has about 7,000 academic and professional staff and a $1.7 billion annual operating budget. Its major campuses are at St Lucia, Gatton and Herston, in addition to teaching and research sites around Queensland and Brisbane city. The University has six Faculties and four University-level Institutes. The Institutes, funded by government and industry grants, philanthropy and commercialisation activities, have built scale and focus in research areas in neuroscience, biomolecular and biomedical sciences, sustainable minerals, bioengineering and nanotechnology, as well as social science research.
UQ has an outstanding track-record in commercialisation of our innovation with major technologies employed across the globe and integral to gross product sales of $11billion+ (see http://uniqquest.com.au/our-track-record).

UQ has a rapidly growing record of attracting philanthropic support for its activities and will have further success in this area as an important strategic aim going forward.

Organisational Environment

The School of Mechanical and Mining Engineering is one of the largest Schools of this type in Australia with 75 full-time academic staff members who are widely published internationally and have extensive research backgrounds.

The UQ Rail Mechanics group lead by Prof Paul Meehan are designing, developing and testing new predictive models and maintenance/monitoring systems for railway bearings using mechanics based modelling. The algorithms will incorporate state of the art tribological and vibration mechanics for bearing phenomena that will be tested and tuned using UQ’s unique 2 disk rolling test rig. The present project involves the development and validation of such algorithms to detect and eliminate the occurrence of an interesting contact mechanics vibration phenomena known as false brinelling. The phenomena occurs during transportation of new trains and results in vibrations and rapid degradation of the bearings in service. Research will be performed in collaboration with a global railway industry partner.

Information about the Faculty and the School may be accessed on the Faculty’s web site at http://www.uq.edu.au/faculty-school.

Information for Prospective Staff

Information about life at UQ including staff benefits, relocation and UQ campuses is available at - http://www.uq.edu.au/current-staff/working-at-uq

The University of Queensland Enterprise Agreement outlines the position classification standards for Levels A to E.
DUTY STATEMENT

Primary Purpose of Position
The primary duties of the position are to perform project management and research including modelling, development and testing of new algorithms and reporting results to industry and academia in the area of Rail Mechanics.

Duties
Duties and responsibilities include, but are not limited to:

Teaching and Learning
- Contribute to the effective supervision of coursework and RHD student supervision.
- Effectively train staff and students in the safe and effective operations of equipment and research laboratories in accordance with University requirements.

Research
- Research and perform comprehensive literature reviews on specific topics in Railway Mechanics.
- Manage and develop mathematical and simulation models for false brinelling.
- Coordinate and assist with the design, development and installation of a false brinelling monitoring system for trains.
- Coordinate and assist with the design and build of required modifications to the test rig for this project.
- Commission and run laboratory tests on the test rig.
- Obtain and analyse test rig and field data using laboratory and field measurement equipment.
- Report on designs, modelling, lab and field results.
- Present regular research seminars within the group and within the School/Faculty and to external stakeholders.
- Conduct other research and publish scholarly papers in high quality outlets in rail mechanics.
- Any other duties as reasonably directed by your supervisor.

Service and Engagement
- Perform a range of administrative functions in the School including -
  - Act as laboratory manager in research and teaching laboratories as required.
  - Manage and report weekly work for the Rail Mechanics Group.
  - Prepare reports for key stakeholders such as the Rail Manufacturing CRC.
  - Effectively source and recommend the purchase of materials and equipment in accordance with University of Queensland policy.
- Contribute to the processes that enable the academic team to manage the work of the Rail Mechanics Group as directed by your supervisor.
- Foster the School’s relations with industry, government departments, professional bodies and the wider community.
- Ability to develop and contribute to an inclusive culture.
- Any other duties as reasonably directed by your supervisor.
Safety

- Conduct inductions, prepare risk assessments, and ensure users of laboratories and equipment have been thoroughly trained.
- Maintain laboratories and equipment in a safe and clean condition.
- Act as laboratory manager if required.

Other

Ensure you are aware of and comply with legislation and University policy relevant to the duties undertaken, including but not exclusive to:

- the University’s Code of Conduct
- requirements of the Queensland occupational health and safety (OH&S) legislation and related OH&S responsibilities and procedures developed by the University or Institute/School
- the adoption sustainable practices in all work activities and compliance with associated legislation and related University sustainability responsibilities and procedures
- requirements of the Education Services for Overseas Students Act 2000, the National Code 2007 and associated legislation, and related responsibilities and procedures developed by the University

Organisational Relationships

The position reports to Professor Paul Meehan.

SELECTION CRITERIA

Essential

- PhD or thesis submission in mechanical engineering or related field.
- High level of scientific rigour, accuracy and attention to detail.
- Demonstrated problem solving ability in the areas of railway/contact mechanics, or the ability to rapidly acquire this knowledge.
- Ability to develop mathematical models for mechanics problems.
- Ability to simulate mechanics phenomena using software tools.
- Ability to design and build modifications for a test rig.
- Ability to obtain and process laboratory and field measurements.
- Ability to report on designs, modelling, lab and field results.
- Ability to prioritise own workload, work independently and meet deadlines.
- Demonstrated effective interpersonal skills required for working with a team of academic and research staff with diverse interests and personalities.
- Demonstrated effective time management skills.

Desirable

- Experience in railway mechanics and/or industry.
Qualification Verification

An appointment to this position is subject to the verification of the highest academic qualification from the conferring institution.

The University of Queensland values diversity and inclusion.

Applications are particularly encouraged from Aboriginal and Torres Strait Islander peoples. For further information please contact our Australian Indigenous Employment Coordinator at: atsi_recruitment@uq.edu.au

Applications are also encouraged from women.

This role is a full-time position; however flexible working arrangements may be negotiated.