Curtin PhD Scholarships

Status: **Closed**
Applications open: 14/02/2019
Applications close: 31/12/2019

About this scholarship

Description/Applicant information

Theme 1: Masonry structures against earthquake loading
Keywords: masonry; brick; earthquake

Theme 2: Improved analysis method for structures against impact and impulsive loading
Keywords: analysis method; SDOF; structural dynamics; impact and blast

Theme 3: Development of dynamic material models
Keywords: dynamic material properties; hydro-code; LS-DYNA

Student type

- Future Students

Faculty

- Faculty of Science & Engineering

Course type

- Higher Degree by Research

Citizenship

- Australian Citizen
- Australian Permanent Resident
- New Zealand Citizen
- Permanent Humanitarian Visa
- International Student

Scholarship base

- Merit Based

Value

Living allowance of $27,596 AUD per annum with potential of top-ups

Scholarship Details

Maximum number awarded

5

Eligible courses

PhD programs

How to apply

Application process

Please provide a CV reflecting your academic background in the area of study, GPA, relevant research and working experience, publications, etc, as well as English competence proof (IELTS/TOFEL), reference letters.

Contact email address: Xihong.zhang@curtin.edu.au

Need more information?

Enquiries

Please contact Dr Xihong Zhang for details

Email address: Xihong.zhang@curtin.edu.au

Further information

Theme 1: Masonry structures against earthquake loading
Project details:
Using conventional bricks in masonry construction requires skilled labour to connect bricks with mortar. Development of interlocking bricks for mortarless connection has been attracting great interest because easy alignment improves construction efficiency and quality. Interlocking also leads to better mechanical performance of constructed structures. This project develops optimised interlocking shear keys to minimise stress concentration and increase load-carrying capacities. Experimental and numerical studies will be carried out to
determine the best performing interlocking bricks in masonry structures. Analytical methods and design guides will be developed for practical designs of such structures to resist static and earthquake loads.

Theme 2: Improved analysis method for structures against impact and impulsive loading
Project details:
Current practice normally uses equivalent single-degree-of-freedom (SDOF) model in analysis of structures subjected to blast and impact loads because of its simplicity. However many experimental tests and high fidelity numerical simulations have revealed the SDOF analysis does not always lead to accurate structural response predictions. This project performs theoretical derivations, numerical simulations and laboratory tests to improve the accuracy of the method by taking into consideration large deformation and the time-dependent deflections in deriving the equivalent SDOF model. The improved approach keeps the simplicity of the method but greatly improves the prediction accuracy, which will lead to safer and economic structure designs.

Theme 3: Development of dynamic material models
Project details:
This project intends to further investigate the dynamic material properties for concrete and cementous materials under complex stress conditions, and discover the true dynamic material properties. Based on existing dynamic material models such as KCC model, RHT model, JHC model etc, an improved dynamic material model will be developed through user subroutine.
Comprehensive understanding of solid mechanics and experience using user-subroutine for LS-DYNA, Abaqus will be ideal.