

Full time PhD Scholarship under Royal Melbourne Institute of Technology (RMIT) - University of Peradeniya (UOP) Joint PhD Programme



Title: Experimental and numerical investigation of connection behaviour, progressive collapse resistance and fire performance of modular buildings

Brief Description:

Modular construction is an emerging building technology which offers significant advantages in construction quality, productivity, safety and sustainability through the factory-based manufacture and rapid on-site assembly of building modules. However, the structural performance of fully modular buildings depends strongly on inter-module connections, which introduce discontinuities in the load path and influence the strength, stiffness, ductility and overall stability of the assembled structure. Conventional connection systems can also present challenges in terms of accessibility, installation complexity and construction efficiency. Furthermore, the behaviour of fully modular buildings under extreme events, particularly progressive collapse and fire, remains insufficiently understood. This research will investigate inter-module connection behaviour and its influence on the global response of modular buildings, with a focus on developing practical and efficient connection solutions. The study will evaluate existing connection technologies, investigate the effects of connection stiffness using analytical and advanced numerical methods, develop and experimentally validate a feasible connection system, and assess progressive collapse mechanisms and fire performance through nonlinear numerical simulations. The outcomes of the research are expected to contribute to safer, more resilient and more constructible fully modular buildings and provide practical guidance for their structural design and implementation.

Supervisors:

- UOP supervisors: Dr.Sahan Bandara, Dr Supun Jayasinghe
- RMIT Supervisor: Dr.Thomas Loh, Prof. Kate Nguyen, Dr. Shanaka Baduge

Commencement date: May 2027

Features of the PhD:

- Duration of the PhD is 3-3.5 years on a full-time basis and the candidate will spend maximum period of one year at RMIT, Australia and the remaining time in Sri Lanka.
- The tuition fee is fully waived, and the selected applicant will be considered for the standard scholarships for living stipend during the stay in Sri Lanka and Australia.
- There will be at least one principal supervisor each from RMIT and UOP.
- Degree will be awarded from both institutions acknowledging the joint supervision. You will get two separate degree certificates, one each from RMIT and UOP.

Successful candidates should have the following:

1. BSc Engineering (Specializing in Civil Engineering) with Second Class Upper division or higher
2. IELTS overall band of 6.5 with each band above 6.0

We are looking for a dynamic candidate who meets the above qualifications.

If you are interested in this PhD research, apply via the following link on or before 25th September 2026

<https://forms.gle/M9AmbViH9343jJMe6>

Note: Only the shortlisted candidates will be called for the interview.

If you have any queries, contact Dr. Panduka Neluwala [Email: pandukaneluwala@eng.pdn.ac.lk]