SWINBURNE UNIVERSITY OF TECHNOLOGY

CIVIL & CONSTRUCTION ENGINEERING

Civil and Construction Engineering at Swinburne focuses on a comprehensive range of infrastructure research projects topics.

Our research benefits from specialised research facilities and cross-disciplinary collaboration. Our expertise covers areas including 3D strong structures testing, advanced structural engineering, earthquake engineering, geopolymers, geotechnical engineering, infrastructure, road pavement systems, transportation systems engineering and water resource engineering.

AREAS OF RESEARCH FOCUS

- Construction materials
- Geopolymers
- Infrastructure monitoring and renewal
- Road pavement systems
- Intelligent transport systems
- Low carbon urban mobility
- Sustainable urban water systems
- 3D strong structures testing

RESEARCH CENTRE

The Centre for Sustainable Infrastructure (CSI) is the home of civil engineering research at Swinburne. Our researchers are making significant contributions to the development of more efficient infrastructure systems and safer buildings, bridges, offshore structures and mining structures.

RESEARCH FACILITIES

The $15 million **Smart Structures Laboratory** is paving the way for the next generation of structures and construction materials to be thoroughly tested and to provide industry and consumers with the necessary level of confidence in performance and safety. The laboratory's research outcomes are expected to lead to the development of more efficient infrastructure systems and safer buildings, bridges, offshore structures and mining structures.

Economic and social benefits should come from more resilient, robust and efficient infrastructure constructed with innovative materials designed to lower costs, improve energy efficiency, and reduce environmental impacts generally. All this has the potential to lift the international competitiveness of Australian construction and manufacturing industries.

The Geotechnical Laboratory is equipped with state-of-the-art, fully automated geotechnical engineering equipment that provides a national and international focus in geotechnical engineering and supports the research of Swinburne's Centre for Sustainable Infrastructure.

The Geotechnical Laboratory houses specialised and basic geotechnical laboratory equipment, including:

- multi-directional cyclic simple shear facility
- cyclic triaxial with local strain measurement
- repeated load triaxial
- four point beam fatigue
- static and dynamic indirect tensile strength
- shear wave velocity using bender elements
- unconfined compression strength
- static triaxial and stress path and K0 triaxial
- interface shear resistance for geosynthetics and soils (large and small)
- direct shear and residual shear (large and small)
- Rowe consolidation (large and small)
- one dimensional consolidation
- swell-shrinkage
- soil suction
- California Bearing Ratio
- Los Angeles abrasion
- all required basic geotechnical and pavement equipment.

Contacts

Name	Position	Contact Details
Prof Jay Sanjayan	Centre Director, Centre for Sustainable Infrastructure • Construction materials • Structural engineering	jsanjayan@swin.edu.au
A/Prof Hussein Dia	Chair, Department of Civil and Construction Engineering Deputy Director and Program Leader (Future Urban Mobility), Smart Cities Research Institute • Intelligent transport systems • Smart infrastructure	hdia@swin.edu.au
Prof Emad Gad	Dean, School of Engineering • Advanced structural engineering	egad@swin.edu.au
Prof Riadh Al-Mahaidi	Director, Smart Structures Laboratory • Structural engineering	ralmahaidi@swin.edu.au
Prof Arul Arulrajah	• Geotechnical engineering • Recycled and waste materials	aarulrajah@swin.edu.au
Prof Patrick Zou	• Sustainable building and construction • Safety management • Building energy modelling and analysis	pwzou@swin.edu.au
Prof Richard Manasseh	Program Leader (Future Urban Infrastructure), Smart Cities Research Institute • Fluid dynamics • Nonlinear wave interactions • Bubble acoustics	rmanasseh@swin.edu.au
Dr Alireza Mohammadinia	Research Fellow • Sustainability and recycling • Ground improvement techniques • Embankment dam design and construction	amohammadinia@swin.edu.au
Dr Scott Rayburg	• Sustainable urban water systems • Water resource engineering	srayburg@swin.edu.au
A/Prof Monzur Imteaz	• Water resources engineering • Water resource modelling	mimteaz@swin.edu.au
Dr Rayya Hassan	• Pavement performance modelling • Road asset management	rahassan@swin.edu.au