STRENGTHENING STRUCTURES USING FRP MATERIALS
Continuing Professional Development 2-day course

ABOUT
The use of Fiber Reinforced Polymer (FRP) composites has gained widespread acceptance as an engineering solution for strengthening and retrofitting of buildings and civil infrastructure due to the high strength-to-weight and stiffness-to-weight ratios, corrosion resistance and high durability. These unique material properties allow significant increase in performance in terms of ductility and strength in the case of seismic loading, structural rehabilitation and retrofitting.

This course aims to cover the fundamental principles of structural strengthening using FRP Materials, strengthening options, installation and variety of case studies where FRP has been used to address and solve a specific engineering issue. In addition, this course includes a practical session where participants will actively involve in preparing and testing of FRP material samples and application of FRP to small-scale structural elements.

PARTICIPANTS
The course is particularly suitable for practicing engineers seeking to understand the fundamental principles, uses and installation procedure of FRP; authorities and government agencies involved in infrastructure development and management; property owners, developers and real estate managers; contractors and constructors.

LEARNING OBJECTIVES
The objectives of the course are as follows:

- Provide an understanding of FRP materials as alternatives to traditional retrofitting techniques such as steel plating and concrete jacketing
- Introduce strengthening detailing for structural elements (eg. beams and columns), including differences due to orientation of fibres
- Introduce installation, inspection and maintenance procedures for FRP systems, including evaluation criteria and Quality Control.
- Demonstrate the successful deployment of FRP material in both static and dynamic applications, through a series of case studies
- Provide participants with hands-on experience with a range of FRP materials, including mixing epoxies and applying FRPs to a small-scale structure to enhance shear and flexural capacity.
- Demonstrate through full-scale testing the effectiveness of FRP materials in enhancing the capacities of structural elements

When
Wed 17th & Thu 18th July 2018
9:00am - 5:00pm

Where
The University of Queensland
School of Civil Engineering
St Lucia, Building 14
(Sir Llew Edwards Building)
Level 6, Terrace Room

Materials
Suggested reference material:
ACI 440.2R – 17 Guide for the Design and Construction of Externally Bonded FRP Systems for Strengthening Concrete Structures

Registration
Interested participants should register & complete payment no later than July 3rd 2018.

Fees
Full rate: $800
Student rate: $300
Please enquire about discounted rates for UQ Staff.

All prices include GST.

CONTACT
Prof CM Wang
University of Queensland
School of Civil Engineering
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REGISTER
Er. Quek has over 20 years of extensive experience in design and use of FRP. She has initiated and led many research projects collaborating with local authorities and tertiary institutions relating to static, dynamic and blast applications of FRP. Er. Quek is credited with the successful use of FRP in iconic structures in Singapore such as the National Art Gallery, Changi International Airport, Marina Bay Sands, Mandarin Gallery and many more.

In addition to being a registered professional engineer in Singapore, she had held the position of Assistant Honorary Secretary of the Institute of Engineers of Singapore (IES) and Institution of the Joint Committee of Structural Engineers Singapore (IStructE). She was a member of the technical committee responsible for drafting the UK Technical Report 55 FRP Guidelines during its inception and held the position of Deputy Chairman of the Singapore FRP Society between 2003 and 2005. She was also conferred a special award by the Institute of Structural Engineers Singapore for her contributions to the engineering community in 2014.

### COURSE PROGRAMME

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<tr>
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<td>Overview of FRP Materials</td>
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<td>Strengthening Details using FRP Materials</td>
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<td>Installation Procedure, Inspection and Maintenance</td>
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<td>Application of FRP. Selected Case Studies</td>
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### KEY RESEARCH

- Design and use of Fibre Reinforced Polymer (FRP) materials
- Static, dynamic and blast applications of FRP