

■ Why this course?

Offering high strength, light weight and excellent durability characteristics, in combination with ease of application, FRP (Fibre Reinforced Polymer) reinforcement has become a technique of increased popularity in the construction sector. Since the early 1990's commercial applications of strengthening with bonded FRP reinforcement and of FRP reinforced and prestressed concrete structures have been growing numerous. With a share of 17%, composites in construction have become one of the main sectors in the global composites market. Furthermore, FRP as non-traditional reinforcement has reached a broad status of recognition in the previous years and is entering mainstream design codes, such as fib Model Code 2010.

This course gives an excellent exposure on the design and application of FRP reinforcement in new construction and rehabilitation and is taught by international experts in this field. The aim of the course is to train participants with specific knowledge and skills, allowing them to consider, design and apply FRP reinforcement in a systematic way.

www.frpcourse.eu

Scientific coordination

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Organized by



With the support of



 **FRP**
TRAINING COURSE



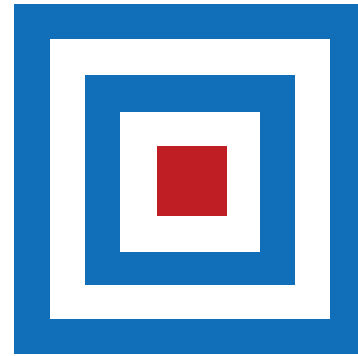
Reinforcing and strengthening of structures with FRP reinforcement

Theory / Design / Lab experience

STRENGTHENING

REINFORCING

STRUCTURES



TRAINING COURSE

25-29 January 2016 — Ghent University

SECOND EDITION



■ What to expect?

In this 5 days training course you will obtain theoretical and hands-on knowledge on the use of FRP reinforcement in construction. FRPs are non-metallic reinforcements with excellent engineering properties, to reinforce and prestress concrete elements or to strengthen existing structures. Their use as a sustainable and cost efficient solution has increased considerably over the years. The course is complemented with an introductory module on experimental mechanics.

■ Who should attend?

This training course is intended for all industry and research professionals involved in FRP reinforcement for reinforcing concrete structures or for strengthening of existing structures.

- Engineers and designers in the public or private sector, involved in the design of concrete structures and/or the design of repair and strengthening (including seismic rehabilitation) of existing structures.
- Engineers at construction companies, material suppliers or research institutes with special interest into sustainable construction.
- Technical advisors of construction companies and control organisms.
- Professionals interested in the field of developing and applying advanced composites, and more specifically FRP reinforcement, in the construction sector.
- PhD students, scientists and teachers seeking specialist knowledge on the use and design of FRP reinforcement.

■ Teachers

Prof. Valter **Carvelli**, Politecnico di Milano, Italy
Dr. Christoph **Czaderski**, Empa, Switzerland
Prof. György **Balazs**, Budapest University of Technology and Economics, Hungary
Prof. Joaquim **Barros**, University of Minho, Portugal
Dr. Maurizio **Guadagnini**, University of Sheffield, United Kingdom
Prof. Renata **Kotynia**, University of Lodz, Poland
Prof. Stijn **Matthys**, Ghent University, Belgium
Prof. Lluís **Torres**, University of Girona, Spain
Prof. Thanasis **Triantafillou**, University of Patras, Greece

■ Practical information

Venue

The training school is taking place at the Magnel Laboratory for Concrete Research of Ghent University, Belgium.

Certificate of continued education

Participants attending the complete course and successfully completing the assignment, will receive an UGent certificate.

Course material

Hand-outs of the presentations during the course will be provided both in paper and digital format, along with other useful information. A dedicated web-based training course learning environment is available for the course participants.

E-learning

This training course will be video captured for e-learning purpose. Course participants will have full access to the e-learning modules.

MORE DETAILED INFORMATION & REGISTRATION: www.frpcourse.eu



■ Programme

Module 0 – Training on Experimental Mechanics

As a preceding module to the course, training on experimental mechanics is offered for research engineers. During this module, several deformation measurement techniques will be introduced (e.g., strain gauge and digital image correlation). Furthermore, participants will have the opportunity to obtain hands-on experience with FRP materials. Laboratory work will be organized handling FRP and adhesive materials.

Teachers: Christoph Czaderski, Valter Carvelli and Maurizio Guadagnini
Date: 25 January 2016

Module 1 – Training on FRP materials and FRP for Prestressed Concrete

In this module FRP reinforcement will be discussed in terms of constituent materials, micromechanical behaviour, systems and industrial applications. During this module focus will also be given to use of FRP for prestressed concrete structures, both in new construction or in the framework of repair and strengthening.

Teachers: Stijn Matthys, György Balazs, Christoph Czaderski and Renata Kotynia
Date: 26 January 2016

Module 2 – Training on strengthening with FRP

Most applications of FRP reinforcement deal with the repair and strengthening of existing structures, eg. by means of externally bonded reinforcement. This is covered in this module in terms of flexural and shear strengthening and its design aspects, as well as confinement and seismic rehabilitation. As part of the teaching, cases or design examples will be given.

Teachers: Stijn Matthys, Joaquim Barros and Thanasis Triantafillou
Date: 27 January 2016

Module 3 – Training on internal FRP reinforcement

This module focusses on the use and design of FRP reinforcement for reinforced concrete structures. Amongst other, the serviceability and ultimate limit state of concrete is discussed. Similar to module 2, cases or design example will be given as part of the teaching.

Teachers: Lluís Torres, Maurizio Guadagnini and Valter Carvelli
Date: 28 January 2016

Module 4 – Hands-on training on FRP behaviour

Participants will be able to verify their predictions by means of experimental tests. In addition a site visit will be organized.

Teachers: Stijn Matthys and Brenda Debbaut
Date: 29 January 2016

■ Registration

Registration is mandatory through the course website. The registration fee includes hand-outs, lunches, coffee breaks, e-learning platform access and evening activities.

The number of participants is limited to 40.

Registration fee	Before 25 December	After 25 December
Participants	600 EUR	720 EUR
PhD students	420 EUR	540 EUR

If you are only interested in Module 0, please contact the course secretariat

Endure/COST TU1207 members and UGent PhD students obtain a discount of 75 EUR on the above prices. Financial support will be available for a limited number of participants through COST TU1207. Endure researchers attending the course are supported by their project budget. Financial support may also be offered by the doctoral school of your university. For further info on this and on cancellation conditions please see the course website.

MORE DETAILED INFORMATION & REGISTRATION: www.frpcourse.eu