



A.D. 1308

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DIPARTIMENTO  
DI INGEGNERIA  
CIVILE E AMBIENTALE

# CIVIL AND ENVIRONMENTAL ENGINEERING

## DOCTORAL PROGRAM 2024-2025



Liberato Ferrara is full professor of Structural Analysis and Design at Politecnico di Milano, Italy, where he also serves as Rector's Delegate for relations with Latin America and Scientific Director of the Laboratory for Testing Materials, Buildings and Structures. He has been Fulbright visiting scholar at the Center for Advanced Cement Based Materials,

Northwestern University, IL, USA. He coordinates an international research group, also including two MSCA PFs, conducting research on forefront topics in the domains of material concept, characterization and structural applications of cement based materials with advanced functionalities, including self-healing and self-sensing, development of structural design methodologies for applications in aggressive and extreme scenarios, including fatigue sensitive structures, sustainability and circular economy in concrete construction and automated and additive manufacturing/construction and structural repairing technologies, also through a newly installed 3DConcrete Printing laboratory.

He has been coordinator of the H2020 project ReSHEALience (GA 760824): Rethinking coastal defence and green energy service infrastructures through enhanced durability high-performance fiber reinforced cement based materials; deputy coordinator of the MSCA ITN SMARTINCS (GA 86006): Self-healing multifunctional advanced repair technologies in cementitious systems and co-PI in the RFCS project MINRESCUE (GA 899518): From mining waste to valuable resource: new concepts for a circular economy, and HEurope project SINCERE (GA 101123293): The second life of modern architecture: Resilient and adaptive renovation towards net-zero carbon heritage buildings.

# ADVANCED FIBRE REINFORCED CEMENT BASED MATERIALS. Concept, performance measurement and structural design methodologies and applications

Lecturer: prof. Liberato Ferrara

Department of Civil and Environmental  
Engineering, Politecnico di Milano, Italy

### Schedule

**Day 1: November 25th 9.00-13.00**

**Room: Auletta**

Fundamentals of fracture mechanics in plain, reinforced and fibre reinforced cementitious composites. Concept of Fibre Reinforced Concrete and Ultra High Performance Concrete Mechanical properties of FRC and UHPC

**Day 2: Tuesday November 26th 9.00-13.00**

**Room: Auletta**

Design parameters for FRC/UHPC structural design: experimental identification  
Design methodologies for FRC/UHPC structural applications: the fib Model Code 2010/2020, Eurocode 2 and ACI 544 approaches

**Day 3: Wednesday November 27th 9.00-13.00**

**Room: Auletta**

Design methodologies for FRC/UHPC structural applications: examples  
Advanced technologies in FRC/UHPC



Scan the code or click [here](#) to join the course.

