CIVIL-709 **New Concretes for Structures**

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Cursus	Sem.	Type
Civil & Environmental Engineering		Obl.

Language of teaching	English
Credits	2
Session	
Exam	Oral
Workload	60h
Hours	**28**
Courses	21
Exercises	7
Number of positions	

Frequency

Every year

Remark

Next time fall 2020, Minimum 6

Summary

This course provides an in depth coverage of mechanical and physical properties of Ultra High Performance Fibre Reinforced Concretes (UHPFRC), in the framework of new cementitious composites for structures. The structural applications and environmental assessment of construction systems with UHPFR

Content

Basic components,binders,admixtures and adjunctions.
- Rheology of fresh cementitious materials.
- Bases of Fibre Reinforced Concretes.
- Formulation of UHPFRC.
- Hydration, heat transport, moisture transport.
- Mechanics of strain hardening fibre reinforced concretes and combination with rebars.
- Time dependent behaviour of UHPFRC - creep and shrinkage, response under restraint.
- Applications on new and existing structures - case studies.
- Ways towards conceptual design of innovative structures with UHPFRC.

Keywords

Cementitious Composites, Fibres, UHPFRC, Strain hardening, Creep, Shrinkage, Formulation, Rheology. Modelling

Learning Prerequisites

Required courses

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Recommended courses

Basic course on Building Materials, Continuum Mechanics, Structural Mechanics, Physics and Chemistry

Resources

Websites

- http://mcs.epfl.ch