

# Prestressed concrete structure & bridges

 ECTS  
5 credits

 Component  
INSTITUT  
NATIONAL  
DES SCIENCES  
APPLIQUEES  
TOULOUSE

 Number of  
hours  
67h

## Presentation

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### Description

Programme (detailed contents):

Prestressed concrete structures

Design rules (EC2): minimum requirements towards cracking, stress limitation, minimum reinforcement and various layouts, calculation of the minimum prestress force, calculation of the prestress losses – Tensioning stages – Stress control – Calculation of the stresses in cracked cross-section under serviceability limit state – Calculation of the reinforcement areas.

Bridges

Terminology, bridge classification – Data for the project, design procedure – Technical regulation – Foundations: design and execution – Supports: piers and abutments – Superstructures: wearing surfaces, barrier walls, bearings, pavement joint, drainage, sidewalks – Concrete bridges: materials, field of use, pre-design, execution – Steel bridges: materials, field of use, joints, classification, pre-design, execution.

Organisation:

Lecture, tutorials project.

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## Objectives

At the end of this module, the student will have understood and be able to explain (main concepts):

- \* Technology, design and calculations of a prestressed concrete structure;
- \* Technology and design of metallic, concrete or composite bridges.

The student will be able to:

- \* State the required assumptions;
- \* Calculate a prestressed concrete structure;

Define the technical choices for designing a bridge.

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## Pre-requisites

Reinforced Concrete and prestressed concrete

Structural analysis and engineering

## Useful info

## Place

› Toulouse