Summary
The first part of the course deals with the design of precast reinforced concrete structures. In the second part, some particular topics which are relevant for buildings (design of columns, detailing of reinforcement) and some advanced design methods for linear and planar members are presented.

Content
- Precast structures
  - General introduction for prefabrication in buildings
  - General introduction for prefabrication in bridges
  - Precast floors.
  - Precast connections
  - Precast production facilities
  - Imperfections in precast concrete
- Design of columns in buildings
- Anchorages and reinforcement’s detailing
- General design of linear members, Interaction shear-torsion Vy-Vz-My-Mz-T
- General design of planar members, interaction bending moments - membrane forces

Keywords
Structural concrete, precast structures, reinforcement's detailing, design, dimensioning methods

Learning Prerequisites
Required courses
CIVIL-234 « Structures en béton » (BA5) or similar

Recommended courses
CIVIL-525 « Structures en béton, chapitres choisis »
CIVIL-430 « Ponts en béton »

Important concepts to start the course
Design and dimensioning of reinforced concrete structures

Learning Outcomes
By the end of the course, the student must be able to:
• Design precast structures
• Dimension precast structures
• Dimension columns, linear elements and planar members subjected to complex internal forces
• Design detailing the reinforcement for typical reinforced concrete members

Teaching methods
ex cathedra

Expected student activities
Assessment of small project (conceptual design of a precast structure, dimensioning of some members, detailing of relevant parts and connections),

Assessment methods
continuous assessment during semester

Supervision
Office hours        Yes
Assistants         Yes
Forum              No

Resources
Bibliography
fib Bulletin 74. Planning and design handbook on precast building structure

Ressources en bibliothèque
• FIB bulletin 74