Summary
The course deals with the design of precast reinforced concrete structures, both for bridges and for buildings. The course is focused in learning by projects supplemented by some lectures by the teachers. The students will work in groups to design a precast structure.

Content
- Precast bridge
- Industrial building
- Office or commercial building
- Parking garage
The evaluation of the course will be by project.
In the evaluation will be considered the:
- Design notes of the structure, of each element and of the connections
- Drawings. General drawings of the structure, detailed drawings with reinforcement of the elements and detailed drawings of the connections
- Presentation of the project to the rest of the students and the teachers
Given lectures by the teachers:
- General introduction for prefabrication in buildings
- General introduction for prefabrication in bridges
- Connections and detailing in precast structures
Design by project of precast structures:
- Design:
  - General dimensioning of the structure
  - Detailed design of the elements
  - Detailing of reinforcement
  - Design of the connections
  - Detailing of the connections
  - Sketches (simplified drawings)
  - General drawing of the structure
  - Detailed drawings of the elements
  - Detailed drawings of the connections
  - Presentation of the project

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 connections of precast structures
• Design detailing the reinforcement for typical reinforced or prestressed concrete members
• Produce sketches for precast structures
• Present a project to the audience

Teaching methods
by projects and ex cathedra

Expected student activities
Assessment of a 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 29
• fib bulletin 43
• fib bulletin 29
• fib bulletin 74
• fib bulletin 78
• fib bulletin 84

Ressources en bibliothèque

• FiB bulletin 29
• FIB bulletin 78
• FIB bulletin 43
• FIB bulletin 74
• FIB bulletin 84
• PCI Design Handbook MNL-120-10 - on order at the library
• Precast concrete structures. Kim S. Elliot. 2017