# Pre-stressed Concrete

1. **Course number and name:** 020BEPGS5 Pre-stressed Concrete

2. **Credits and contact hours:** 4 ECTS credits, 2x1.25 hours

3. **Name(s) of instructor(s) or course coordinator(s):** Georges ABOU SLEIMAN

4. **Instructional Materials:**

   a. Class notes and Exercises.
   b. Eurocode 2.

5. **Specific course information**
   a. **Catalog description:** Provide the necessary elements to understand and design the Prestressed Concrete Structure: Historical, different Procedures of execution and dimensioning and calculation of pre-tensioning and post-tensioning structure.

   b. **Prerequisites or co-requisites:** 020BEAGS3 Reinforced Concrete.

   c. **Required:** Required major for Public Works and Transport Specialty students.

6. **Educational objectives for the course**
   a. **Specific outcomes of instruction:**
      - Historical View of Prestressed Concrete.
      - Different Procedures of Prestressed.
      - Losses Calculation of Prestressed cables.
      - Flexure in Service and Ultimate Design of Prestressed Concrete.
      - Shear Design.
      - Material characteristically and behavior.
      - Composite Beams design.
      - Hyperstatical system: Continuous beams and Post-Tensioning bridges exercises.

   b. **PI addressed by the course:**

| **PI** | 1.2 | 1.3 | 2.1 | 2.2 |
|---|---|---|---|---|
| **Covered** | yes | yes | yes | yes |
| **Assessed** | | | | |

7. **Brief list of topics to be covered:**
   - Continuity in pre-stressed concrete beams definition and design (1.5 hours).
   - Exercise on a composite post-tensioning girders bridge (4.5 hours).
   - Exercise on Post-tensioning continuous deck bridge design (12 hours)