

Basis of Structural Design – Structural Load Calculations

1. **Course number and name:** 020ACTGS2 Basis of Structural Design – Structural Load Calculations
2. **Credits and contact hours:** 4 ECTS credits, 2x1.25 hours
3. **Name(s) of instructor(s) or course coordinator(s):** Wassim RAPHAEL, Maria HABIB
4. **Instructional Materials:**
 - a. Eurocode 0: Bases de calcul des structures - 2001
 - b. Dimensionnement des structures en béton – traité de génie civil de l’Ecole Polytechnique fédérale de Lausanne – Vol. 7, Presses Polytechniques
 - c. Romandes (R. Walther, M. Miehlabradt)- 1990
 - d. Le projet de construction avec les Eurocodes (Jean-Armand Calgaro) - 2004
 - e. Instructor’s Class Notes

5. **Specific course information**

- a. **Catalog description:** Study and analyze the basis of structural design. Evaluate and analyze the effects of vertical loads, snow and wind on structures as well as the appropriate consideration of different combinations of actions.
- b. **Prerequisites or co-requisites:** None
- c. **Required:** Required major course for Civil Engineering students

6. **Educational objectives for the course**

- a. **Specific outcomes of instruction:**
 - Study and analyze the basis of structural design
 - Study and analyze the classification of actions and their combinations
 - Analyze the various scenarios of snow vertical actions on structures.
 - Identify the accurate wind profile to consider in design with the appropriate wind factors applied internally and externally on both walls and roofs of the buildings.
 - Calculate and analyze the aerodynamic forces generated on buildings
- a. **PI addressed by the course:**

PI	1.1	1.2	3.1	6.1
Covered	yes	yes	yes	yes
Assessed				

7. **Brief list of topics to be covered:**

- Introduction (1.25 hours)

- Verification by the partial factor method (2.5 hours)
- Serviceability and Ultimate limit states (2.5 hours)
- Classification of Actions (3.75 hours)
- Combination of Actions (5 hours)
- Snow (8 hours)
- Wind (12 hours)