Course Syllabus

020PLCGS5 Plates and Shells.

1. **Course number and name:** 020PLCGS5 Plates and Shells.
2. **Credits and contact hours:** 4 credits, 3x1:15 course hours
3. **Instructor's or course coordinator's name:** Fouad KADDAH
4. **Textbook and other supplemental material:**
   - **a.** Traite de Génie Civil de l'Ecole Polytechnique Fédérale de Lausanne Volume 5 : Analyse des structures et milieux continus ; Coques ; Auteurs : Francois Frey et Marc Andre Studer
   - **b.** Modélisation des structures par éléments finis ; Volume 3 Coques ; Auteurs : Gouri Dhatt et Jean Louis Batoz
   - **c.** Modélisation des structures par elements finis; Volume 2, Poutres et plaques
   - **d.** Theory of plates and shells, second edition, Auteurs: S. Timoshenko and S. Woinowsky-Krieger; International Student Edition
   - **e.** Shell Structures in Civil and Mechanical Engineering; Auteur: Alphose Zingoni; Thomas Telford Publising 1997
   - **f.** Mécanique des structures Tome 1 2e edition: Solides elastiques et plaques et coques; Auteurs: S. Laroze et J.-J. Barrau ; Eyrolles Masson 1988
   - **g.** Instructor's Class Notes
5. **Specific course information**
   - **a. Catalog description:** Provide the theoretical elements to pre-dimension and analyze structural elements such as slabs, walls, roof, tanks and folded structures.
   - **b. Prerequisites:** None.
   - **c. Required/Elective/Selected Elective:** Required major course for Public Works and Transport Specialty students

6. **Specific goals for the course**
   - **a. Specific outcomes of instruction:**
     - Understand the path of stresses in plate and shell structures;
     - Development of simplified methods for stress analysis and design of plates and shells
     - Understand how to efficiently undertake numerical modeling of plates and shells by finite elements
   - **b. KPIs addressed by the course:**

KPI	a2	c1	e2	e3	k1	k2
Covered	x	x	x	x	x	x
Assessed						
Give Feedback						

7. **<u>Brief list of topics to be covered and approximate number of lectures</u>:**
   1. General introduction on plates and shells (3 hours)
   2. Kirchhoff's theory of plates (4 hours)
   3. Bending theory of rectangular plates (6 hours)
   4. Bending theory of circular plates (3 hours)
   5. Love's theory of shells (4 hours)
   6. Membrane theory of shells of revolution (6 hours)
   7. Bending theory of shells of revolution (6 hours)

8. Junction of shells of revolution (3 hours)