

## **Road and Pavement Engineering**

- 1. Course number and name:** 020ROUGS4 Road and Pavement Engineering
- 2. Credits and contact hours:** 4 ECTS credits, 2x1.25 hours
- 3. Name(s) of instructor(s) or course coordinator(s):** Farah HOMSI
- 4. Instructional Materials:**
  - a. Principles of Highway Engineering and Traffic Analysis; F.L. Mannering, S. S. Washburn 5th Edition – Metric (Textbook)
  - b. A Policy on Geometric Design of Highways and Streets; AASHTO, 6th Edition, 2011.
  - c. Traffic and Highway Engineering, 4th Edition, Nicholas Garber, Lester Hoel, 2009.
  - d. The Handbook of Highway Engineering, edited by T.F. Fwa, 2006.
- 5. Specific course information**
  - a. **Catalog description:** This course aims at learning how to draw a road and the dimension of its roadway. Topics include: Vehicle movement - Plan drawing - Longitudinal profile - Cross section - Road equipment - Safety devices - Signage - Night traffic, lighting - Drainage devices, drainage - City roads - Crossroads - Calculation of cubicles - Initiation to the layout on computer. - Road geotechnics - Surface qualities of pavement - Pavement design, calculation of thicknesses - Basic materials - Aggregates - Binders - Surface layers, asphalt mix - Road construction - Pavements - Superficial coatings - Rigid pavements, cement concrete pavements. - CBR test - Softening test - Penetration test - Ductility test - Accelerated polishing test and friction pendulum.
  - b. **Prerequisites or co-requisites:** None
  - c. **Required:** Required for Public Works Specialty students.
- 6. Educational objectives for the course**
  - a. **Specific outcomes of instruction:**
    - Introduce the students to the concepts of the roads geometrical design and its criteria
    - Develop all the theoretical background needed for analyzing movement of vehicles
    - Present to the students the three components of a road

- Expose the students to the methods of establishing the plan view and the longitudinal section of a road
- Expose the students to the different transversal sections
- Familiarize students with necessary soil tests needed for the design, their interpretation and the use of results
- Give to the students to methods of calculation of the thickness of the pavements
- Expose the students to the material used in road construction

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

<b>PI</b>	1.1	1.4	2.1	2.2	3.1	4.2
<b>Covered</b>	yes	yes	yes	yes	yes	yes
<b>Assessed</b>						

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

Chapter #	Title	Nb of sessions
1	Introduction	0
2	Road Vehicle Performance	6
3	Geometric Design Highways	11
4	Local Roads and Streets	1
5	Collector Roads and Streets	
6	Soil Engineering for Highway Design	1
7	Pavement Design	5
8	Highway Materials	1
9	Highway Drainage	1
10	Highway Earthwork	2
Total		28