## **CIVL 481: Transportation Engineering (3 Credits)**

This course focuses on the physical design of transportation facilities, traffic analysis and control for different modes, planning and demand analysis, environmental impacts of transportation systems and intelligent transportation systems. *(Prerequisite: CIVL 218)*

**Course Learning Outcomes:**

By the end of the course, students will be able to:

A1. Explain the role of transportation in today’s society and the community.

A2. Apply fundamental knowledge in the fields of transportation and highway engineering design.

A3. Develop traffic simulation solutions with software tool(s) for planning and operation of urban road infrastructure.

B1. Analyze transportation-related problems using methods that constitute standard practice.

B2. Demonstrate effective communication skills through both oral presentations and written reports.

C1. Work effectively on a pre-defined transportation related project in a team.

**Course Learning Materials:**

* Garber N., Traffic & Highway Engineering
* Wright P., Ashford N., Transportation Engineering planning and design
* Mannering F. L., Washburn S. S., Principles of Highway Engineering and Traffic Analysis, John Wiley & Sons.
* Fiorini M., Lin J.C., Clean Mobility and Intelligent Transport Systems, Institute of Engineering & Technology.
* Teodorovic D., Janic M., Transportation Engineering: Theory, Practice and Modeling, Butterworth-Heinemann.
* Kutz M., Handbook of Transportation Engineering, McGraw-Hill Professional.
* Banks J., Introduction to Transportation Engineering, McGraw Hill Higher Education
* Mannering F., Washburn S., Principles of Highway engineering and traffic analysis

**Course Content:**

1. Transportation Systems
2. Traffic and Transportation Analysis Techniques
3. Traffic Flow Theory
4. Capacity and Level of Service
5. Traffic Control
6. Public Transportation Systems
7. Transportation Demand Analysis
8. Freight Transportation and Logistics
9. Transport Economics
10. Transportation, Environment and Society