

Department of Civil Engineering			
Transportation Systems Engineering II (61463)			
Total Credits		2	
major compulsory			
Prerequisites		P1 : Transportation Systems Eng'g I (61360)	
Course Contents			
Traffic engineering studies; fundamentals of traffic flow; capacities and level of service analyses for highway facilities, highway operation systems; traffic control devices; traffic signal design; principles of planning for transportation systems; and basic steps of travel demand forecasting.			
Intended Learning Outcomes (ILO's)			Student Outcomes (SO's)
Contribution			
1	an ability to apply knowledge of mathematics, science, and engineering in traffic engineering studies, intersection geometry, traffic systems, and transportation planning	A	25 %
2	an ability to design and conduct traffic engineering experiments (studies) and to analyze and interpret the data	B	15 %
3	an ability to design traffic systems and components (intersections, traffic controls, roadway segments) to meet desired needs within realistic constraints such as economic, environmental, social, political, safety, and sustainability reflecting the professional and ethical responsibility	C	30 %
4	an ability to identify, formulate, and solve traffic engineering problems such as intersection controls, capacity and level of service, and transportation planning, and understand contemporary issues in traffic systems	E	30 %
Textbook and/ or References			
1. Traffic and Highway Engineering, 4th edition. By: N. Garber, CI-Engineering Publisher, 2010. 2. Principles of Highway Engineering and Traffic Analysis. 4th edition. By: F. Mannering, 2008. 3. Highway Capacity Manual. Transportation Research Board, 2004. 4. Manual of Transportation Engineering Studies. By: Institute of Transportation Engineers, 1994. 5. Transportation Engineering, 2nd edition. By: C. Khisty and B. Lall, 2002			
Assessment Criteria		Percent (%)	
First Exam		20 %	
Second Exam		20 %	
Homeworks		10 %	
Final Exam		50 %	
Course Plan			
Week	Topic		
1	1. Introduction to Traffic Eng. Introduction		
2, 3 & 4	2. Traffic Engineering Studies 2.1 Spot Speed Studies 2.2 Volume Studies 2.3 Travel Time and Delay Studies 2.4 Parking Studies 2.5 Inventory Studies		
5 & 6	3. Fundamental Principles of Traffic Flow 3.1 Traffic Flow Elements 3.2 Flow-Density Relationships		
7 & 8	4. Intersection Design 4.1 Types and Design of At Grade Intersections 4.2 Geometric Design Principles of At-Grade Intersections		
9, 10 & 11	5. Intersection Control 5.1 Concepts of Traffic Control 5.2 Conflict Points at Intersections 5.3 Types of Intersection Control 5.4 Signal Timing		

12	6. Capacity and Multi-Lane Highways and Freeway Sections 6.1 Multi-Lane Highways 6.2 Elements of Freeway Sections 6.3 Computer Applications
13 &14	7. Capacity and Level of Service at Signalized Intersections 7.1 Capacity at Signalized Intersections 7.2 Level of Service at Signalized Intersections 7.3 Operation and Planning Analysis 7.4 Computer Applications
15	8. The Transportation Planning Process and Travel Demand Forecasting 8.1 Basic Elements of Transportation Planning 8.2 Urban Transportation Planning 8.3 Forecasting Travel (Trip Generation, Trip Distribution, Mode Choice, and Traffic Assignment)