

Department of Civil and Architectural Engineering				
Course Name		Transportation Systems II (10601461)		
Total Credits: 2		Contact Credits: 2 Theoretical Hours per Week		
Type of Course: Major compulsory		Categorization of Credit: Engineering Topic		
Prerequisites		Transportation Systems I (10601360)		
Course Contents				
Traffic engineering studies, fundamentals of traffic flow, intersection design, capacity and level of service analyses for highway facilities, highway operation systems, traffic control devices, traffic signal design, and principles of planning for transportation systems.				
	Course Learning Outcomes (CLO's)	Student Outcomes (SO's)	Performance Indicators (PI's)	Contribution
i	Analyze and interpret traffic engineering studies data (speed, volume, travel time, and parking studies), and use engineering judgment to draw conclusions.	6	6.2	20%
ii	Identify traffic engineering problems (traffic flow, intersection control, capacity, and level of service) and use applicable theories and concepts.	1	1.1	15%
iii	Apply principles of engineering, science, and math to solve and evaluate traffic engineering problems (such as intersection controls, capacity, and level of service)	1	1.3	25%
iv	Identify traffic engineering design concepts and requirements related to intersections and traffic control.	2	2.1	10%
v	Produce traffic designs of intersections and traffic control considering societal and economic factors.	2	2.2	30%
Textbook and/or References				
1. Traffic and Highway Engineering, 5 <sup>th</sup> edition. By: N. Garber, CI-Engineering Publisher, 2019.				
2. Principles of Highway Engineering and Traffic Analysis. 6 <sup>th</sup> edition. By: F. Mannering and S. Washburn, 2017.				
3. Traffic Engineering. 5 <sup>th</sup> edition. By: R. Roess, E. Prassas, and W. McShane. 2018.				
4. Highway Capacity Manual. Transportation Research Board, 2014.				
5. Manual of Transportation Engineering Studies. By: Institute of Transportation Engineers, 1994.				
Assessment Criteria			Percent (%)	
Mid-Term Exams			20 %	
Quizzes/Assignments/Forum			20 %	
Project			20 %	
Final Exam			40 %	
Course Plan				
Week	Topic			
1	1.1 Introduction to Traffic Engineering and systems			
2	2.1 Spot Speed Studies 2.2 Volume Studies			

3	2.3 Travel Time and Delay Studies 2.4 Parking Studies 2.5 Inventory Studies
4	3.1 Traffic Flow Elements 3.2 Flow-Density Relationships
5	4.1 Types and Design of At Grade Intersections
6	4.2 Geometric Design Principles of At-Grade Intersections
7	5.1 Concepts of Traffic Control 5.2 Conflict Points at Intersections
8	5.3 Types of Intersection Control
9	5.4 Signal Timing (1)
10	5.4 Signal Timing (2)
11	6.1 Capacity and Level of Service Analysis of Multi-Lane Highways 6.2 Computer Applications
12	7.1 Capacity at Signalized Intersections
13	7.2 Level of Service at Signalized Intersections (1)
14	7.3 Level of Service at Signalized Intersections (2)
15	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)
16	Final Exam