


College of Engineering			
Department of Civil Engineering			
CE 430 Transportation Systems			
Credit and Contact hours	2 / 2 (Lectures), 1 (Tutorials), 0 (Laboratory)		
Required, or Elective	Required for a BSCE degree		
Course Description	This course provides students an introduction to analysis and design of the fundamental elements of transportation system, such as highways and traffic systems, transit system, elementary geometric design, capacity analysis and flow relations, urban transportation planning and traffic forecasting.		
Prerequisites or Co-requisites	STAT 150 Introduction to Statistics		
Course Learning Outcomes	Students completing this course successfully will be able to		
	Course Learning Outcomes		<i>Related Student Outcomes (SO)</i>
	CLO1. Identify the various effects of vehicle and driver characteristics on the design of various transportation systems on top of the basic components and concepts.		SO1
	CLO2. Identify fundamental relationships between traffic flow, speed, density and safety with its effect on the design of transportation links and nodes.		SO1
	CLO3. Determine the capacity and level of highway services, transit transportation, and pedestrian transportation		SO1
	CLO4. Develop signal phases, analyze cycle length and split green times in a signalized intersection.		SO6
	CLO5. Formulate the travel demand forecasting model in transportation planning and forecast future traffic considering the steps of urban transportation planning process.		SO1
Student Outcomes related to this Course	SO1. an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics and using modern engineering tools [ABET 1]		

	SO6. an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions. [ABET 6]	
Topics Covered	List of Topics	
	1. The transportation system, its classification and models disadvantages).	CLO1
	2. Transportation modes.	CLO1
	3. Equations of motion and human factors.	CLO1
	4. Traffic stream flow models.	CLO2
	5. Capacity and level of service analysis.	CLO3
	6. Intersections and traffic signal timing analysis.	CLO4
	7. Transportation planning process.	CLO5
	8. Travel demand forecasting models.	CLO5
Textbook(s) and Other Required Material	Papacostas, C. S. and P. D. Prevedouros, Transportation Engineering and Planning, Third Edition, Prentice Hall, 2000 (its SI unit version, 2005).	
Grading System	Two Mid-term exams	50 %
	Quizzes, Assignment	10%
	Final Exam:	40%
Instructors	Dr. Saif A. Alarifi (2A46), email; saaalarifi@ksu.edu.sa , Dr. Khalid F. Alkahtani (2A07), email: kkahtani@ksu.edu.sa .	
Date of Review	October, 2020	