

College of Engineering

Department of Civil Engineering

جامعة
الملك سعود
King Saud University



CE 532 Advanced Transportation Planning

**Credit and
Contact hours**

3/ 3 (Lectures), 0 (Tutorials), 0 (Laboratory)

**Required, or
Elective**

Required for a MSCE degree

**Course
Description**

This course offers a detailed treatment of the long-term strategic planning aspects of transport systems. The course provides a broad overview of the concepts, issues, techniques, and possible solutions involved in transport planning and evaluation, including environmental and economic considerations. The course focuses on the issues of assessing sustainable development and its relevance in transport, and the problems it poses to transport planning in developing a sustainable transport system.

**Prerequisites or
Co-requisites**

None

**Course Learning
Outcomes**

Students completing this course successfully will be able to

Course Learning Outcomes	Related Program Outcomes
CLO1: Describe the relationships between Land Use, Transport and the Environment.	K1
CLO2: Recognize and understand the importance of transport systems within the framework of sustainable development.	K1
CLO3: Recognize and describe the importance of transport systems within the framework of sustainable development, and the concepts for the purpose of transport infrastructure	K1
CLO4: Apply computational methods related to various stages of transportation planning and travel demand forecasting model, including trip generation, trip distribution, mode choice, and traffic assignment.	S1
CLO5: Illustrate transport system equilibrium with simple examples of land use and transport interaction.	S1
CLO6: Apply computational methods for the planning of public transport systems and urban planning concepts for the purpose of transport infrastructure.	S1
CLO7: Evaluate transport system conditions based on demand forecasts in real-life projects.	C2

	CLO8: Evaluate real-life transport projects through a variety of economic analysis methodologies (e.g. cost-benefit analysis, multi-criteria analysis)	C2
Student Outcomes related to this Course	<p>K1. Recognize advanced engineering knowledge, concepts and techniques to identify, interpret and analyze complex and real-life engineering problems.</p> <p>S1. Provide solution for complex and real-life engineering problems through critical thinking and using modern engineering tools and identify its impact on social and ethical issues.</p> <p>C2. Design novel advanced Civil Engineering systems and evaluate its performance and effectiveness for engineering practice and its impact on society.</p>	
Topics Covered	List of Topics	Related CLOs
	1. Course introduction, project assignment	CLO1
	2. Transport Modes and Traffic characteristics	CLO2
	3. Framework of sustainable development and transport infrastructure	CLO3
	4. Transport demand and trip generation	CLO4
	5. Trip Distribution	CLO4
	6. Mode Choice modelling	CLO4
	7. Traffic Assignment concepts, model types	CLO4
	8. Transport System Equilibrium	CLO5
	9. Economic evaluation of transport projects	CLO8
	10. Public transport systems, Fleet size calculations	CLO6
	11. Public transport demand forecast	CLO6
	12. Environmental impacts and sustainable transport	CLO7
	13. Revision/Project Presentations	CLO8
Textbook(s) and Other Required Material	<ul style="list-style-type: none"> <i>Modelling Transport, 4th Edition, Juan de Dios Ortuzar, Luis G. Willumsen, ISBN: 978-0-470-76039-0</i> 	
Grading System	Assignments	10%
	Project Work	30%
	Midterm Exam	20%
	Final Exam	40%
Instructors	Dr. Khalid F. Alkahtani (2A7), e-mail: kkahtani@ksu.edu.sa	
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