

King Saud University

1st Semester 1443/1444

College of Engineering

Civil Engineering

CE 430 Transportation Systems

- **Credit hours:** 2 hrs (2 hours for lectures and 1 hour for tutorial)
- **Level:** Seventh level
- **Prerequisites:** STAT 324 (Engineering Probability and Statistics)
- **Name of faculty member:** Dr. Khalid Al-Kahtani and Dr. Mohammed Almannaa
- **Course Objectives:**

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, air transportation, elementary geometric design, capacity analysis and flow relations, urban transportation planning and traffic forecasting.

Upon completion of this course, students should be able to

- Explain and discuss the components and concepts of transportation systems
 - Define and discuss the main types of transport modes
 - Describe how vehicle and driver characteristics influence the design of various transportation systems.
 - Explain the fundamental relationships between traffic flow, speed and density and safety considerations, and relate it to the design of transportation links and nodes.
 - Determine highway capacity and level of service.
 - Determine travel demand and forecast future traffic
- **Course Grading**

The final grade for the class will be determined as follows:

Item	Grade (%)
Tutorials: weekly quiz and/or HW	10
Exam 1 (Date:TBD by the college)	25
Exam 2 (Date:TBD by the college)	25
Final Exam	40

Note: Your grades will be uploaded to LMS once they're available.

- **Course web page:**

The University's LMS system (lms.ksu.edu.sa) will be used to distribute the class materials: previous recorded lectures, your grades, lecture notes, and course announcements.

- **Course Syllabus**

Week No.	Topics	Section
1	<i>Transportation system, its classification, modes, and models</i>	1.2.1-1.2.2
2	<i>Equations of motion and human factors</i>	2.2.1-2.2.4, 2.3.1
3	<i>Equations of motion and human factors "continue"</i>	2.3.3, 2.4.1-2.4.13
4	<i>Traffic stream flow models</i>	3.1-3.3
5	<i>Traffic stream flow models "continue"</i>	3.4-3.5
	<i>Midterm Exam 1</i>	
6	<i>Capacity and level of service analysis</i>	4.1-4.5
7	<i>Capacity and level of service analysis "continue"</i>	4.1-4.5
8	<i>Intersections and traffic signal timing</i>	4.6.1-4.6.5
9	<i>Public Transportation Fundamentals</i>	External handouts
10	<i>Public Transportation Fundamentals "continue"</i>	External handouts
11	<i>Air Transportation Fundamentals</i>	External handouts
	<i>Midterm Exam 2</i>	
12	<i>Transportation planning process</i>	7.1,7.4,7.5
13	<i>Travel demand forecasting models</i>	8.1,8.2,8.3
14	<i>Travel demand forecasting models "continue"</i>	8.4,8.5
	<i>Final Exam</i>	

- **Textbook:**

Papacostas, C. S. and P. D. Prevedouros, Transportation Engineering and Planning, Third Edition, Prentice Hall, 2000 (its SI unit version, 2005).

- **Other References:**

1. Robert M. Horonjeff and Francis X. McKelvey. McGraw Hill Professional, " Planning and Design of Airports, "Fifth Edition. ISBN 978-0-07-144641-9
2. Teodorović, D. and M. Janić, Transportation Engineering: Theory, Practice and Modeling, Elsevier, 2017
3. Vuchic, V. R. (2007). Urban transit systems and technology. John Wiley & Sons.
4. Highway Capacity Manual, 2016
5. J.H. Banks, "Introduction to Transportation Engineering", 3rd edition, McGraw-Hill, 2010.
6. D.M. Meyer, E.J. Miller, "Urban Transportation Planning – A Decision-Oriented Approach", 2nd edition, McGraw-Hill, 2001.

The term **Cheating** includes but is not limited to:

7. Use of any unauthorized assistance in taking quizzes, test or examinations;
8. Dependence upon the aid of sources beyond those authorized by the instructor in solving problems;
9. Acquisition or possession without permission of tests or other academic materials belonging to a member of the University faculty or staff;
10. Knowingly providing any unauthorized assistance to another student on quizzes, tests, or examinations.

- **Class attendance**

Attendance will be taken every class, from the first week until the last day of the semester. Coming late will be counted as half attendance (Note: you will be absent if you're late by more than 15 min). The absence percentage will be reported electronically (lectures + tutorials) to the Vice dean as it is. Only absence with an excuse will be excluded on the condition of fulfilling the following:

- Has a valid reason. If medical, then it has to be registered on **Seha platform**.
- The excuse is given to the instructor within one weeks from the absent day.

Note: The previous two conditions will be also required for missing the exam.

- **Tutorials:**

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