College of Engineering
Department of Civil Engineering

CE 553 Design and Performance of Airport Pavement

Credit and Contact Hours	3 / 3 (Lectures), 0 (Tutorials), 0 (Laboratory)
Required or Elective	Elective
Course Description	Composites: Pavement types and materials, aircraft traffic considerations, and loading analysis, as well as design procedures for flexible and rigid airport pavements. methods of classifying load ratings of aircraft and bearing strengths of airfield pavements, pavement thickness requirements, overlay design, evaluation, and performance of airport pavements.
Prerequisites or Co-requisites	None
Course Learning Outcomes	Students completing this course successfully will be able to:

Course Learning Outcomes (CLOs)	***Related Studen Outcomes (SO)***
CLO1. Course Description and Introduction of Composites. K1	**SO1**
CLO2. Characteristics of aircraft as they affect pavement. S1	**SO2**
CLO3. Pavement types and Wheel loads configuration in pavement design. S2	**SO3**
CLO4. Evaluation and performance of airport pavement. S3	**SO4**
CLO5. Airport flexible and rigid Pavement structural design and Layered system concept. V2	**SO7**

Student Outcomes related to this Course

1 Recognize advanced engineering knowledge, concepts, and techniques to identify, interpret, and analyze complex and real-life engineering problems.
2 Provide solutions for complex and real-life engineering problems through critical thinking and the use of modern engineering tools, and identify their impact on social, global, cultural, environmental, safety, and economic factors.
3 Investigate scientific research problems independently or through teamwork using critical thinking, appropriate techniques, advanced tools, and management principles.
4 Criticize and discuss scientific research reports /papers related to Civil Engineering issues with a high level of ethics proficiency and communication skills, independently or as a team.
7 Effectively manage specialized tasks and activities in coursework, projects, assignments, and research work, individually or in groups, with a high level of autonomy and responsibility.

Topics Covered

List of Topics	**Related CLOs**
1. Course Description and Introduction of Composites	CLO 1
2. Characteristics of aircraft as they affect pavement	CLO 1
3. Pavement types and Wheel loads configuration in pavement design	CLO 2
4. Stresses in flexible and rigid airport pavement	CLO 3
5. Airport flexible and rigid Pavement structural design and Layered system concept	CLO 3

	6. Evaluation of airport pavement	CLO 4
	7. Economical evaluation of airport maintenance strategies. Maintenance service life, life cycle cost analysis	CLO 5
Textbook(s) and Other Required Material	• Norman Ashford "Airport Engineering", 2nd Edition • Yoder E. "Principle of Pavement design "2nd Edition • Airport Pavement Design and Evaluation, AC No: 150/5320-6G, U.S. Department of Transportation Federal Aviation Administration • Students are encouraged to read different journal papers concerning pavement maintenance management systems. • Saudi Highway Code.	
Grading System	Assignments 10% Lecture attendance ----- Seminar presentation 5% Case/ Field Study 5% Overview (literature review) paper 5% Project - report and oral presentation 10% Mid-term exam 25% Final Exam 40%	
Instructors	Prof. Abdullah Al-Mansour	
Date of Review	April, 2025	