CE 460 – PAVEMENT MAINTENANCE AND REHABILITATION

2019-2020 SPRING SEMESTER

Instructor: Dr. Ayhan Öner Yücel **Email:** aoyucel@adu.edu.tr

Course website: https://akademik.adu.edu.tr/fakulte/muhendislik/personel/aoyucel/dersler

Course Schedule: Tuesday 13:30 - 16:15 (MA106)

Office Hours: Wednesday 13:30 – 15:30

Objectives of the Course: To understand the process of pavement maintenance and rehabilitation techniques in logical sequence involving existing pavement structural evaluation and condition assessment, distress mechanisms, assignment of feasible alternatives and overall design.

Course Content: Introduction and definitions. Pavement condition surveys, materials, structural, and traffic data evaluations. Flexible pavement rehabilitation techniques: crack sealing, surface rehabilitation, hot mix asphalt overlays. Rigid pavement rehabilitation techniques: joint sealing, pressure relief joints, partial and full-depth repairs, slab stabilization and jacking, load transfer rehabilitation, rigid pavement overlay design. Identification of feasible alternatives. Selection of the preferred alternative.

Attendance: Minimum **70%** lecture attendance is mandatory. In order to be eligible for the final exam, it is expected to continue at least **70%** of the lectures.

Course Assessment:

Midterm Examination……40%
Term project/homework…..…...20%
Final Examination……..……40%

Reference Books:

1) Pavement Maintenance and Rehabilitation, National Highway Institute. Federal Highway Administration Report NHI-97-024, July 1998.

2) Haas, R., W. R. Hudson, and J. P. Zaniewski (1994), Modern Pavement Management, Krieger Publishing Company. Malabar, Florida.

3) Shahin, M.Y. (1994), Pavement Management for Airports, Roads and Parking Lots, Chapman & Hall, New York.

4) Huang, H. Yang (2004), Pavement Analysis and Design, Prentice Hall, Upper Saddle River, NJ.

Course Learning Outcomes:

1. Identify types of pavements and their layer structures in relation to structural performance
2. Classify fundamental types of distresses and their mechanisms in flexible and rigid pavements
3. Define steps in condition surveys and data collection procedures for pavement maintenance and rehabilitation
4. Describe the importance of non-destructive testing and laboratory characterization of pavement materials
5. Identify feasible maintenance and rehabilitation methods for flexible and rigid pavements
6. Prepare design project based on feasible alternatives of maintenance and rehabilitation for flexible pavements

TENTATIVE COURSE SCHEDULE

Week	Subjects
1	Introduction and Definitions
2	Pavement Types, Pavement Performance and Distress Surveys
3	Subgrade and Materials Evaluation, Structural Evaluation
4	Roughness and Friction Surveys and Evaluations, Traffic Evaluation and Drainage Evaluation
5	Overall Project Evaluation, Partial and Full-Depth Concrete Repairs
6	Joint and Crack Sealing, Pressure Relief Joints, Slab Stabilization and Slab Jacking, Load Transfer Restoration
7	Diamond-Grinding and Grooving, Subdrainage Design
8	**Midterm week**
9	
10	Recycling of Concrete Pavements, Shoulder Rehabilitation, Rigid Pavement Overlay Thickness Design
11	Rigid Pavement Overlay Thickness Design, Identification of Feasible Alternatives (Rigid)
12	Joint and Crack Sealing, Patching with Bituminous Mixtures, Cold Milling
13	Surface Rehabilitation Techniques, In-Place Recycling
14	Central Plant Recycling, Flexible Pavement Overlay Thickness Design
15	Flexible Pavement Overlay Thickness Design, Identification of Feasible Alternatives, Selection of Rehabilitation Techniques