



Izmir Institute of Technology

CE522 HIGHWAY and AIRPORT PAVEMENT DESIGN

2026-27 Spring Semester

Instructor: Volkan Emre UZ, PhD

Contact Details

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Lecture Hours & Class Location: **Tuesday 09:45– 12:30 on CZ14**

Office Hours: **by appointment**

Textbooks:

Rajib B. Mallick and Tahar El-Korchi “Pavement Engineering Principles and Practice” 2nd Ed., 2013, CRC Press, ISBN-13: 978-1-4398-7036-5

A. T. Papagiannakis and E. A. “Pavement Design and Materials” 2008, John Wiley & Sons, Inc., ISBN-13: 978-0-471--21461-8

You can also benefit any other Pavement Engineering book

Catalog Description:

Introduction to Pavement Engineering (Types of Pavements, Advantage and Disadvantage of Flexible and Rigid Pavements); Factors Affecting to the Pavement Design (Traffic, Subgrade Bearing Capacity, Material Properties, Climate); Characterization of Pavement Subgrade (Physical Properties of Soils, Classifications of Soils, Compaction, Evaluation of Bearing Capacity; Soil Testing in the Lab and at the Field); Aggregates (Physical and Mechanical Properties of Aggregates, Material Specifications, Testing of Aggregates); Asphalt Materials (Sources of Asphalt, Production of Asphalt, Types of Asphaltic Materials, Asphalt Grading Systems, Testing of Asphalt Materials); Mix Design Concept (Volumetric Relations of the Mixture, Determination of Optimum Bitumen Content with Marshall Test, Other Methods Used in Mix Design); Structural Design of Pavements (Thickness Design Concepts, Empirical and Mechanistic Approaches); Pavement Construction (Construction Equipment, Field Q_C & Q_A); Pavement Distress and Pavement Maintenance & Repair.

Course Conduct:

*You will take **ONE** mid-term exam* and **the final exam*** will be taken at the end of the semester.*

**The exact dates of mid-term and final exams will be announced by faculty student relations later in the semester.*



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Grade and Attendance Policy:

Effect of Mid-Term and Final exams on total success score will be 30% and 50%, respectively. The rest, 20%, will be in-class student presentations. Your overall success will be evaluated according to the IYTE student relations catalogue.

Students are expected to attend at least 70% of overall theoretical lecture hours. Students are strongly recommended to answer questions asked during the class and asking questions about the subject not fully understood.

Tentative Course Outline:

Week 1	Introduction to Pavement Engineering
Week 2	Factors Affecting to the Pavement Design
Week 3	Characterization of Pavement Subgrade
Week 4	Aggregates
Week 5	Aggregates Cont.
Week 6	Asphalt Materials
Week 7	Asphalt Materials Cont.
Week 8	Mid-Term Exam (Exam Date will be Announced)
Week 9	Mix Design Concept
Week 10	Mix Design Concept Cont.
Week 11	Structural Design of Pavements
Week 12	Structural Design of Pavements Cont.
Week 13	Pavement Construction
Week 14	Pavement Distress and Pavement Maintenance & Repair