



CE 424 – Pavement Engineering

Code and Name: CE 424 – Pavement Engineering

Credit Hours: 3 (Lecture: 3, Tutorial: 1)

Textbook:

- Pavement Analysis and Design by Yang H. Huang, 2nd Edition, 2003

Other References:

- *Course handouts: distributed on a regular basis to provide more information on the topic.*

Course Description:

Design approaches, new pavement and rehabilitation design, failure mechanisms, effects of materials and construction on pavement performance. Emphasis on understanding of fundamental issues of pavement engineering, approaches to evaluation and design for new pavements and maintenance and rehabilitation design, practical lab experience with asphalt concrete materials and tools used for evaluation of pavements, understanding of construction issues.

Pre-requisites: CE421 Transportation Facility Design

Co-requisites: None

Course Learning Outcomes:

With relation to ABET Student Outcomes (From Fall 2019-SOs: 1-7)

1. Analyze and design flexible and rigid pavements (2).
2. Recognize the factors for consideration in the design of flexible and rigid pavements (4)
3. Analyze flexible and rigid pavement systems using various analytical methods (6)
4. Determine pavement design input parameters, including traffic, material properties, failure criteria and serviceability (1)
5. Design flexible pavement systems in accordance with AASHTO design procedures (2)
6. Understand the basics of the mechanistic-empirical (M-E) design approach (4)
7. Recognize the advantages and limitations of various design approaches and methods (4)

Topics to be covered:

- Introduction to Structural Design of Pavements.
- Characterization of Roadbed Soils and Material Properties.
- Structural Analysis of Pavements
- Flexible and Rigid Pavement Design.
- Pavement Performance and Distresses.
- Asphaltic Concrete (AC) Overlay of Asphalt Pavements: Pavement Failure Criteria.
- AC Overlay: Types and Design Methodologies.
- Pavement Maintenance & Rehabilitation Alternatives

Grading Policy:

The grading for the course is: 60% coursework and 40% Final Exam. The course work consists of two Midterm Exams, where each midterm exam is worth 20%. It also includes quizzes, and homework for the remaining 20% that is modified by the course instructor.

