

**CE 5351 (CRN 27212) Mechanistic Pavement Design and Analysis**  
**TR 6:00 pm - 7:20 pm**  
**E 217**

**Course description:** This course will provide a discussion on analysis and design concepts for flexible and rigid pavements for highways and airports. The materials will cover fundamental principles, and different design methods such as AASHTO empirical design, and the AASHTOWare Mechanistic Empirical (ME) Pavement Design methods. Students will be provided the opportunity to use the latest ME software for the design of pavements.

**Course Objectives:** The student is expected to learn:

- the basic characteristics of pavement structures
- the modes of failure for flexible and rigid pavements
- fundamental principles of mechanistic analysis and design
- to analyze stress-distribution throughout multilayer pavements systems
- to calculate traffic loads for highway design
- material characterization required for pavement design
- pavement drainage requirements
- to design flexible/rigid pavement by using empirical and mechanistic-empirical procedures

**Instructors:** Dr. Rajib B. Mallick, Engineering Building 216, phone: 915-747-8699,  
[rbmallick@utep.edu](mailto:rbmallick@utep.edu)

Please feel free to drop me an email if you want to meet/ask questions regarding the course.

**Textbook:** Pavement Engineering: Principles and Practice, by Rajib B. Mallick and Tahar El-Korchi; CRC Press. 4<sup>th</sup> Edition (2022)

**References:** Huang, Y., Pavement Analysis and Design, Second Edition (2004) Pearson Prentice Hall, NCHRP reports, TRB publications

**Course Activities:** Two Homework (dates to be announced), Two Examinations (dates to be announced) and One Design Project (due by the last day of the class)

### **GRADING**

Grades for this course will be determined on the basis of 100 points as follows:

HW 1: 10 points

HW 2: 10 points

Exam 1: 20 points

Exam 2: 20 points

Design Project: 40 points

Final grades will be based on the following (curve grades):

A 100 - 90  
B 89 - 80  
C 79 - 70  
D 69 - 60  
F < 60

In accordance with University regulations, students who miss examinations will receive grades of zero. Exceptions to this rule will be made only on a carefully considered individual basis and only if the student contacts the instructor before the exam. If you know in advance that you are going to miss an exam, it is your responsibility to inform the instructor before the exam.

### **HOMEWORK ASSIGNMENTS**

The student must submit the homework by the assigned day/time. Beyond the specified time you get a maximum of 50% of the total grade. Homework will not be accepted after one week.

### **ATTENDANCE**

Students are expected to attend all class periods. Those who fail to attend class regularly are inviting scholastic difficulty and, with the approval of the Dean of the College of Engineering, may be dropped from the course with a grade of F for repeated (4 or more) unexcused absences.

**If you have a disability and need classroom accommodations, please contact The Center for Accommodations and Support Services (CASS) at (915) 747-5148, or by email to [cass@utep.edu](mailto:cass@utep.edu), or visit their office located in UTEP Union East, Room 106. For additional information, please visit the CASS website at <https://www.utep.edu/student-affairs/cass/>.**

### **POLICY ON CHEATING**

Students are expected to be above reproach in all scholastic activities. Students who engage in scholastic dishonesty are subject to disciplinary penalties, including the possibility of failure in the course and dismissal from the university. Scholastic dishonesty includes but is not limited to cheating, plagiarism, collusion, the submission for credit any work or materials that are attributable in whole or in part to another person, taking an examination for another person, any act designed to give unfair advantage to a student, or the attempt to commit such acts (Regents Rules and Regulations, Part One, Chapter VI, Section 3, Subsection 3.2, Subdivision 3.22). Scholastic dishonesty harms the individual, all students, and the integrity of the university. Policies on scholastic dishonesty will be strictly enforced.

### **COURSE/INSTRUCTOR EVALUATION**

A course/instructor evaluation will be conducted in class near the end of the semester.