

CIVE 4348 Highway Engineering

Spring 2020

Class times & location: MW 15:30-16:45 (EIEAB 2.209)

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Office hours & location: MW 13:45-15:00 (EACSB 1.207)

Textbook and/or Resource Material

The course materials will be provided and presented in the class, including but not limited to:

Mannering, Washburn, *Principles of Highway Engineering and Traffic Analysis, 6th Edition*, Wiley, 2016, [ISBN: 978-1-119-30502-6], [eText ISBN: 978-1-119-29933-2], price: \$75.95 (print) and \$72.00 (eText) at

<https://www.wiley.com/en-us/Principles+of+Highway+Engineering+and+Traffic+Analysis%2C+6th+Edition-p-9781119305026>.

Course Description and Prerequisites

Theory and practice in highway design; advanced concepts of the design of streets and highways; highway functional classification and design criteria; location studies; advanced concepts of the design of vertical and horizontal alignment; intersections and highway drainage elements design criteria; highway cross section design and earthwork volume; theory and practice in pavement design; characterization of pavement layer materials; introduction to pavement management systems.

Prerequisites: CIVE 3345 Transportation Engineering and CIVE 3475 Geotechnical Engineering & Applications (depending on the degree plan)

Learning Objectives/Outcomes for the Course

1. Introduces transportation and highway engineering within the broader field of civil engineering
2. Introduces fundamentals of highway system components: characteristics of vehicles, roads, and road users
3. Introduces the theory and practice of highway geometric design: designing horizontal, vertical, and cross-section elements
4. Introduces highway earthwork volumes
5. Introduces highway pavement design for flexible and rigid materials
6. Introduces pavement management systems for maintenance and rehabilitation of highway pavement

Students' learning will be assessed by homework, quizzes, midterm examination, final examination, and active attendance.

Learning Objectives for Core Curriculum Requirements

The course objects match the set outcomes by the Texas Higher Education Coordinating Board (THECB) and the Department of Civil Engineering.

1. Critical Thinking Skills- an ability to identify, formulate, and solve engineering problems;
2. Empirical and Quantitative Skills- an ability to apply knowledge of mathematics, science, and engineering; a knowledge of real-world issues; an ability to use the techniques, skills, and technological engineering tools necessary for engineering practice
3. Communication Skills- an experience of being a team member to solve a real-world problem

Grading Policies

A total of 100 points, as explained below.

Note: A > 90, 80 < B < 89, 70 < C < 79, 60 < D < 69

Homework (25 points): A total of 5 homework, each 5 points. Homework is due 1 week after the assigned date unless otherwise informed in the class. No exception on late submission.

Quizzes (20 points): A total of 2 quizzes, each 10 points. Schedules and topics of quizzes are according to the course timeline table unless otherwise informed in the class at least 1 week before the quiz for your preparation and attendance.

Examinations (50 points): 1 midterm exam (20 points) and 1 final exam (30 points). There will be in-class reviews before the two exams.

Attendance (5 points): Active class attendance is required. Sign-in sheets will be handed out for randomly selected sessions. Any student with more than 3 absences without pre-excuse will be dropped from the class.

Calendar of Activities

Course and evaluation timeline (tentative)

Week	Date	Topic	Homework (HW)
1	Jan 13	Introduction to highway engineering	
	Jan 15		
2	Jan 20	Martin Luther King Jr. (No classes)	
	Jan 22	Introduction to highway engineering	
3	Jan 27	Fundamentals of highway system components: road, vehicle, and user characteristics	
	Jan 29		
4	Feb 3		HW #1 out
	Feb 5	Highway geometric design: Horizontal elements	
5	Feb 10		HW #1 due
	Feb 12		
6	Feb 17		HW #2 out
	Feb 19	Quiz #1 (of topics from Jan 13 to Feb 17) + solving quiz questions	
7	Feb 24	Highway geometric design: Vertical elements	HW #2 due
	Feb 26		
8	Mar 2		HW #3 out
	Mar 4	Highway geometric design: Intersections, grade separations, and interchanges	
9	Mar 9		HW #3 due
	Mar 11	Review for midterm exam	
10	Mar 16	Midterm exam (of topics from Jan 13 to Mar 11)	
	Mar 18	Highway geometric design: Cross section elements and earthwork volumes	
11	Mar 23		
	Mar 25		
12	Mar 30		HW #4 out
	Apr 1	Route selection	
13	Apr 6	Pavement materials	HW #4 due
	Apr 8	Pavement design: Flexible and rigid pavements	
14	Apr 13		
	Apr 15		HW \$5 out

15	Apr 20	Quiz #2 (of topics from Mar 18 to Apr 15) + solving quiz questions	
	Apr 22	Pavement maintenance and rehabilitation: Pavement management systems	HW #5 due
16	Apr 27		
	Apr 29	Review for final exam	

The UTRGV academic calendar can be found at <https://my.utrgv.edu/home> at the bottom of the screen, *prior to login*. Some important dates for Spring 2020 include:

January 13	First day of classes
January 16	Last day to add a course or register for Spring 2020
January 20	Martin Luther King Jr. – NO classes
April 9	Last day to drop a course; will count toward the 6-drop rule
April 30	Study Day – NO classes
May 1 – 7	Final Exams
May 8 – 9	Commencement Exercises

UTRGV Policy Statements

STUDENTS WITH DISABILITIES:

Students with a documented disability (physical, psychological, learning, or other disability which affects academic performance) who would like to receive academic accommodations should contact **Student Accessibility Services (SAS)** as soon as possible to schedule an appointment to initiate services. Accommodations can be arranged through SAS at any time, but are not retroactive. Students who experience a broken bone, severe injury, or undergo surgery during the semester are eligible for temporary services.

Pregnancy, Pregnancy-related, and Parenting Accommodations

Title IX of the Education Amendments of 1972 prohibits sex discrimination, which includes discrimination based on pregnancy, marital status, or parental status. Students seeking accommodations related to pregnancy, pregnancy-related condition, or parenting (reasonably immediate postpartum period) are encouraged to contact Student Accessibility Services for additional information and to request accommodations.

Student Accessibility Services:

Brownsville Campus: Student Accessibility Services is located in 1.107 in the Music and Learning Center building (BMSLC) and can be contacted by phone at (956) 882-7374 or via email at ability@utrgv.edu.

Edinburg Campus: Student Accessibility Services is located in 108 University Center (EUCTR) and can be contacted by phone at (956) 665-7005 or via email at ability@utrgv.edu.

MANDATORY COURSE EVALUATION PERIOD:

Students are required to complete an ONLINE evaluation of this course, accessed through your UTRGV account (<http://my.utrgv.edu>); you will be contacted through email with further instructions. Students who complete their evaluations will have priority access to their grades. Online evaluations will be available on or about:

Module 1	February 19 – 25
Module 2	April 15 – 21
Full Spring Semester	April 10 – 29

ATTENDANCE:

Students are expected to attend all scheduled classes and may be dropped from the course for excessive absences. UTRGV's attendance policy excuses students from attending class if they are participating in officially sponsored university activities, such as athletics; for observance of religious holy days; or for military service. Students should contact the instructor in advance of the excused absence and arrange to make up missed work or examinations.

SCHOLASTIC DISHONESTY:

As members of a community dedicated to Honesty, Integrity and Respect, students are reminded that those who engage in scholastic dishonesty are subject to disciplinary penalties, including the possibility of failure in the course and expulsion from the University. Scholastic dishonesty includes but is not limited to: cheating, plagiarism (including self-plagiarism), and collusion; submission for credit of 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. Since scholastic dishonesty harms the individual, all students and the integrity of the University, policies on scholastic dishonesty will be strictly enforced (Board of Regents Rules and Regulations and UTRGV Academic Integrity Guidelines). All scholastic dishonesty incidents will be reported to Student Rights and Responsibilities.

SEXUAL MISCONDUCT and MANDATORY REPORTING:

In accordance with UT System regulations, your instructor is a "Responsible Employee" for reporting purposes under Title IX regulations and so must report to the Office of Institutional Equity & Diversity (oie@utrgv.edu) any instance, occurring during a student's time in college, of sexual misconduct, which includes sexual assault, stalking, dating violence, domestic violence, and sexual harassment, about which she/he becomes aware during this course through writing, discussion, or personal disclosure. More information can be found at www.utrgv.edu/equity,

including confidential resources available on campus. The faculty and staff of UTRGV actively strive to provide a learning, working, and living environment that promotes personal integrity, civility, and mutual respect that is free from sexual misconduct, discrimination, and all forms of violence. If students, faculty, or staff would like confidential assistance, or have questions, they can contact OVAVP (Office for Victim Advocacy & Violence Prevention) at 665-8287, 882-8282, or OVAVP@utrgv.edu.

COURSE DROPS:

According to UTRGV policy, students may drop any class without penalty earning a grade of DR until the official drop date. Following that date, students must be assigned a letter grade and can no longer drop the class. Students considering dropping the class should be aware of the “3-peat rule” and the “6-drop” rule so they can recognize how dropped classes may affect their academic success. The 6-drop rule refers to Texas law that dictates that undergraduate students may not drop more than six courses during their undergraduate career. Courses dropped at other Texas public higher education institutions will count toward the six-course drop limit. The 3-peat rule refers to additional fees charged to students who take the same class for the third time.

STUDENT SERVICES:

Students who demonstrate financial need have a variety of options when it comes to paying for college costs, such as scholarships, grants, loans and work-study. Students should visit the Students Services Center (U Central) for additional information. U Central is located in BMAIN 1.100 (Brownsville) or ESSBL 1.145 (Edinburg) or can be reached by email (ucentral@utrgv.edu) or telephone: (888) 882-4026. In addition to financial aid, U Central can assist students with registration and admissions.

Students seeking academic help in their studies can use university resources in addition to an instructor’s office hours. University Resources include the Advising Center, Career Center, Counseling Center, Learning Center, and Writing Center. The centers provide services such as tutoring, writing help, critical thinking, study skills, degree planning, and student employment. Locations are:

Center Name	Brownsville Campus	Edinburg Campus
Advising Center AcademicAdvising@utrgv.edu	BMAIN 1.400 (956) 665-7120	ESWKH 101 (956) 665-7120
Career Center CareerCenter@utrgv.edu	BCRTZ 129 (956) 882-5627	ESSBL 2.101 (956) 665-2243
Counseling Center Counseling@utrgv.edu	EUCTR 109 (956) 665-2574	BSTUN 2.10 (956) 882-3897
Learning Center LearningCenter@utrgv.edu	BMSLC 2.118 (956) 882-8208	ELCTR 100 (956) 665-2585
Writing Center WC@utrgv.edu	BUBLB 3.206 (956) 882-7065	ESTAC 3.119 (956) 665-2538