COURSE SYLLABUS

CIVE 3345-Transportation Engineering	**Dr. Fatemeh Nazari, Ph.D.**
Fall 2019	**fatemeh.nazari@utrgv.edu**
MW 12:30-13:45 at EHABE 2.110 MW 19:40-22:20 at EACSB 2.158	MW 14:00-15:00 at EACSB 1.207

Textbook and/or Resource Material
Mannering and 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], https://www.wiley.com/en-us/Principles+of+Highway+Engineering+and+Traffic+Analysis%2C+6th+Edition-p-9781119305026.

Course Description and Prerequisites
This course introduces principles of transportation engineering and traffic analysis in formation of three credit lecture and lab. The covered topics include introduction to transportation system, issues, and challenges, fundamentals of traffic flow and queuing theory, highway capacity and level-of-service analysis, traffic control and analysis at signalized intersections, and travel demand and traffic forecasting.
Prerequisites: CIVE 2220 civil engineering measurement and MECE 2320 dynamics (depending on the degree plan)

Learning Objectives/Outcomes for the Course
1. Introduces transportation and traffic engineering and challenges in transportation system
2. Provides a broad overview of the role of transportation/traffic in the economy and in society
3. Introduces highway traffic theories and transportation planning principles for solving transportation problems
4. Introduces traffic engineering approaches to highway capacity and level of service analysis
5. Introduces traffic control systems and analysis & design of signalized intersections
6. Presents a comprehensive analysis of travel demand and travel forecasting
7. Enables students to apply the principles and approaches to solve a real-world project

Students' learning will be assessed by homework, quizzes, computer lab reports, midterm examination, final examination, attendance, and term project.

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.
- Critical Thinking Skills- an ability to identify, formulate, and solve engineering problems
- Communication Skills- an experience of being a team member to solve a real-world problem
- 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
- Teamwork- an experience of being a team member to solve a real-world problem

Grading policies
A total of 100 points – homework (10%), quizzes (10%), computer lab reports (10%), term project (15%), midterm examination (20%), final examination (30%), and attendance (5%)

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

Homework (10%): A total of five assignments. Due dates will be posted when HW is assigned. ***No late submission is allowed***. Solutions will be posted on Blackboard after the graded homework has been handed in.

Quiz (10%): A total of four quizzes – please check the course timeline on for the schedules of quizzes. Quiz takes place in the last 15 minutes of the class. Usually there is one or two questions on material from the previous lecture.

Group project (15%): TBA. Will be assigned in week 5. The class will be divided into groups – number of teammates to be determined. Please form your own group by the end of week 6. The final products include a term project report due on Wednesday, December 4 and term project presentations by each group in weeks 14-15.

Lab session (10%): Lab sessions will take place in EACSB 2.158 using SPSS and excel spreadsheet. Please check the course timeline on the next page for the schedules of lab reports.

Examinations: one mid-term exam (20%) in week 9 and one final exam (30%), time TBA. There will be in-class reviews before each of the exams.

Attendance (5%): class attendance is required. There will be sign-in sheet handed out during the class for randomly selected lectures. Please note that any student with more than 3 absences without pre-excuse will be dropped from the class.

Tentative course outline

Wk	Date	Topic	Assignment
1	8/26 8/28	Introduction, system issues and challenges	
2	9/2 9/4	Introduction, system issues and challenges	Sep 2: Labor Day, No class
3	9/9 9/11	Traffic stream parameters (Ch 5.1-5.2) Basic traffic stream models (Ch 5.3) Models of traffic flow (Ch 5.4) Queuing theory and traffic flow analysis (Ch 5.5)	**HW #1 due** **(Transportation system)**
4	9/16 9/18	Introduction to HCM LOS concept and determination (Ch 6.1-6.3) Basic freeway segments (Ch 6.4) **Quiz #1 (Traffic flow and queuing theory)**	
5	9/23 9/25	Multilane and two-lane highways (Ch 6.5-6.6) Design traffic volumes (Ch 6.7) Term project discussion I	**HW #2 due** **(Traffic flow and queuing theory)**
6	9/30 10/2	Introduction to signalized intersections (Ch 7.1-7.2) Analysis of signalized intersections (Ch 7.3) Optimal traffic signal timing (Ch 7.4) **Quiz #2 (Highway capacity and LOS)**	
7	10/7 10/9	Development of a traffic signal phasing and timing plan (Ch 7.5) LOS of signalized intersections (Ch 7.6)	**HW #3 due** **(Highway capacity and LOS)**
8	10/14 10/16	Signal coordination (7.7) Adjustment factor and arrival type (7.8)	

Wk	Date	Topic	Assignment
		Review for midterm exam Term project discussion II **Quiz #3 (Signalized intersections)**	
9	10/21 10/23	**Midterm exam** Introduction to travel demand & traffic forecasting (Ch 8.1-8.3)	
10	10/28 10/30	Trip generation & regressions models (Ch 8.4)	**HW #4 due (Signalized intersections)** **Lab report I due**
11	11/4 11/6	Trip destination & gravity models (Ch 8.5)	**Lab report II due**
12	11/11 11/13	Modal split & choice models (Ch 8.5) Trip assignment (Ch 8.6) **Quiz #4 (Travel demand & traffic forecasting)**	
13	11/18 11/20	Traffic forecast in practice (Ch 8.7) Four-step process (Ch 8.8) Term project discussion III	
14	11/25 11/27	Review for final Term project presentations	**HW #5 due (Demand & traffic forecasting)**
15	12/2 12/4	Term project presentations	**Term project report due**

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 Fall 2019 include:

August 26	First day of classes
August 29	Last day to add a course or register for Fall 2019
September 2	Labor Day Holiday – NO classes
November 13	Last day to drop a course; will count toward the 6-drop rule
November 28 - 29	Thanksgiving Holiday – NO classes
December 5	Study Day – NO classes
December 6 - 12	Final Exams
December 13 - 14	Commencement Exercises

Civil Engineering Student Outcomes

a. an ability to apply knowledge of mathematics, science, and engineering
b. an ability to design and conduct experiments, as well as to analyze and interpret data
c. an ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability
d. an ability to function on multidisciplinary teams
e. an ability to identify, formulate, and solve engineering problems
f. an understanding of professional and ethical responsibility
g. an ability to communicate effectively
h. the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context
i. recognition of the need for, and an ability to engage in life-long learning
j. a knowledge of contemporary issues
k. an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice

Contribution of Course Outcomes to Program Outcomes

	a	b	c	d	e	f	g	h	i	j	k
1	√									√	
2	√									√	
3	√	√			√				√		√
4	√	√			√				√		√
5	√	√			√				√		√
6	√	√			√				√		√
7	√		√	√	√		√	√	√		√

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	October 2nd – 8th
Module 2	November 27th – December 3rd
Full Fall Semester	November 14th – December 4th

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