

The University of Texas at Tyler  
Department of Civil Engineering

**CENG 5354/4354 Urban Transportation Planning**

**Course Syllabus (Fall 2020)**

**Date: August 18, 2020. This version supersedes all earlier versions.**

Time & Venue	Class times: TR, 3:30 p.m. – 4:50 p.m., RBN Bldg. Rm. 2011
Instructor	Dr. Matthew Vechione Office: RBS 1011 Email: <a href="mailto:mvechione@uttyler.edu">mvechione@uttyler.edu</a> Phone: (903) 565-5711 Office hours: MWF 10:00 a.m. – 11:00 a.m.
Teaching Assistant	N/A
Course Website	See UT Tyler's Canvas Website
Course Objective	Overview of the four-step urban transportation planning process, estimation of the travel demand models of trip generation, trip distribution, mode choice, and traffic assignment, and forecasting of travel patterns using travel demand models, state-of-the-art approaches and transportation network analysis for evaluation of system alternatives.  Graduate students will complete an additional project.
Prerequisite/Co-requisite	1. CENG 3351 Transportation Engineering Systems
Required Text	No prescribed textbook. References: <ul style="list-style-type: none"><li>○ Transportation Engineering &amp; Planning 3<sup>rd</sup> Edition, Papacostas, C. S., and Prevedouros, P. D. Prentice Hall. ISBN 978-0-13-081419-9, 2001.</li></ul>
Grading	Contributions towards final grade (out of 100%) <ul style="list-style-type: none"><li>5% Professional Practice (ASCE/ITE Meetings)</li><li>20% Exam 1</li><li>20% Exam 2</li><li>25% Final Examination</li><li>15% Homework/TRANUS Labs</li><li>15% Project</li></ul>

	<p>In grading the homework, assignments, tests, exams, etc., no credit will be given to methods <b>not</b> covered in this class, although these methods, tables, formula may appear in the textbook. Errors or outdated material in the textbook should not be the reason for claiming full credit on work done.</p> <p>Letter grades will be assigned based on the final course grade:</p> <p style="padding-left: 40px;">A 90 and above B 80 to 89.99 C 70 to 79.99 D 60 to 69.99 F below 60</p> <p>No letter grade will be released until it is official on PeopleSoft.</p> <p>In consistency with the College of Engineering’s policy, a student who does not score 50% or more of the total points allocated to the <b>Final Examination</b> will automatically receive an <b>F</b> grade.</p>
Attendance	<p>During some class meetings, the instructor will return the graded homework, assignments or exams towards the end of the meeting by calling names. Students who are not there to collect their work will be marked absent.</p> <p>To protect your confidentiality, graded homework, assignments and exams will not be placed at open area for collection. They will only be distributed by the instructor during class or office hours. Graded homework, assignments, and exams not collected after the final exam week will be disposed according to UT Tyler policy.</p>
Exams	Exams are given during the class times. The dates of the Exams will be announced at least 1 week advance in class.
Final Exam	<b>The Final Exam is on 12/8.</b> All material covered in the course will be tested.
General Exam Rules & Cheat Sheet	<p>All exams are closed book. You are only allowed to bring your writing instruments, erasers, and NCEES approved calculators.</p> <p>Topics to be tested will be announced in class and on Canvas one week prior to the exam.</p> <p>The instructor will set questions from material taught in class. The meaning of “taught in class” includes verbal instructions or written notes on the white board and Canvas, briefing/ presentation during field trips, observation during field work/ experiments. They do not necessary appear</p>

	<p>in the textbook, distributed class notes, or homework. It is very important that you attend the class activities and take additional notes.</p> <p>To discourage students from focusing narrowly in only a few questions, <b>no</b> practice exam will be given. There are enough self-practice problems, which are not required as part of each homework assignment as well as in the textbook at the end of each chapter.</p>
Calculators	<p>In line with the Civil Engineering Department's policy, only calculators permitted by NCEES for use in the <u>current semester's FE exam</u> are permitted to be used in the CENG 5354/4354 examinations. No other model of calculator will be allowed. Models previously allowed by NCEES in the past but are no longer valid for the current FE exam are prohibited in the CENG 5354/4354 exams. Please check <a href="http://www.ncees.org">www.ncees.org</a> for the latest permitted calculator models. It is the student's responsibility to check the validity of his/her calculator model, purchase, and be familiar with the functions of the permitted calculators prior to the exam. If an unapproved calculator is found during any exam, it will be taken away immediately and only be returned to the student after the exam. No borrowing of other students' calculators is allowed during exam.</p>
Field Trip	<p>Two field trips will be made.</p> <p>The first field trip is to the City of Tyler Metropolitan Planning Organization (MPO) Transportation Policy Committee Meeting. The meeting will start at 2:00 p.m. on September 24, and ends when all agenda items have been discussed.</p> <p>The second field trip is to the City of Tyler Metropolitan Planning Organization (MPO) Technical Advisory Committee Meeting. The meeting will start at 2:00 p.m. on November 5, and ends when all agenda items have been discussed.</p>
Design Project	<p>A project will be given. All students are to work as a team to plan for field survey and data analysis.</p>
Topical Presentation	<p>At the end of the 3<sup>rd</sup> week, each <u>graduate</u> student will propose/select a topic for presentation in the class. The purpose of this is to train students to learn a relatively advanced topic on his/her own, and to teach fellow classmates. The duration of the presentation depends on the class size. The dates of the presentations will depend on the topic of interest, to fit the class schedule.</p>
Homework	<p>About 15-20 homework problems will be assigned out of the textbook. The homework problems will be assigned at the completion of a topic and will be due in class on the day stated in the homework sheet and course schedule. Only selected homework problems will be graded. All</p>

	<p>homework solutions <b>must</b> be submitted on engineering paper (you can buy them in the Civil Engineering Department Office for \$5.00, at Office Depot, or online), stapled at the top-left corner. Homework solutions not submitted on engineering paper will received only 90% of the graded credit.</p> <p>In all your homework and exam solutions, you are expected to present, in written form, the formulae used, the variable values, intermediate calculations, final answers, and their units. Draw a box around your final answer. Not having any of the above will lead to points being deducted.</p> <p>Do not expect all the homework problems be similar to the examples covered during class time. In some cases, you are expected to read additional examples in the textbook or think of the solution yourself or discuss with your classmates.</p>
Late Homework/ Assignment Policy	<p>Absolutely <b>NO</b> late homework will be accepted. If it is not in my hands when I leave the classroom on the due date, I will not grade it, and you will receive a zero for the assignment. No exceptions.</p> <p>Homework solutions are usually posted on Canvas two days after the due date.</p>
Grace Day Coupon	<p style="text-align: center;"><b>CENG 5354/4354 Homework Grace Day Coupon</b></p> <p>To allow for emergencies that may arise, you may use this coupon for one “grace day” for homework.* In other words, one homework can be turned in 24 hours late without penalty. Cut out (or take a screenshot) of this coupon and submit in lieu of your homework assignment.</p> <p>*Not transferable to another student.          *Only valid for homework and TRANUS lab assignments.          *You are not required to use this coupon. If you do not use this coupon on a homework or TRANUS lab assignment, turn it in with your final exam for an additional 5 bonus points on the final exam.</p>
Re-schedule of Examination	<p>There is no make-up or rescheduling of the Final Examination.</p> <p>Make-up for the Exams will only be arranged if you inform the instructor <b>prior</b> to or on the day <b>before</b> the exam, with a strong valid reason. Examples of strong valid reasons are official UT Tyler travel, accident, illness, child-birth, passing of an immediate family member, jury duty, or court appearance. These are not expected and cannot be rescheduled. You will be required to show documentary evidence for the valid reason (e.g., doctor’s letter, police report, court letter). Events that can be pre-scheduled or rescheduled are not considered valid reasons. Examples of non-valid reasons are traffic, wedding, driving test, sending car for service, clash with another course schedule, etc. Job interviews will be considered on a</p>

	<p>case by case basis (again, with documentary evidence). If an emergency happens during the exam day, you should contact the instructor at the earliest possible time (or call the Civil Engineering office, contact one of your classmates or TA who will then inform the instructor). Any make-up exam will be given on the Dead Day.</p> <p>Each student is only allowed one (1) make-up exam. That is, he/she can only make-up Exam 1 or Exam 2, but not both.</p> <p>To compensate for the fact that you may apply what you learn in the entire course when answering make-up Exams 1 or 2, the make-up exam will be more difficult than the original exam.</p> <p>Students who fail to show up for the make-up or final exam with an invalid reason will be given 0 points for that exam; or for a valid reason an incomplete “I” grade. He/she must take the exam the next time this course is being offered to have the “I” grade change to a letter grade. All the assessment components and marks will be retained for the calculation of the final letter grade. The letter grade will be benchmarked against the same class for the semester in which the exam had been missed.</p>
<p>Collaboration/ Cheating</p>	<p>Cheating is unethical and not acceptable. Plagiarism is using information or original wording in a paper without giving credit to the source of that information or wording: it is also not acceptable. Do not submit work under your name that you did not do yourself. You may not submit work for this class that you did for another class. If you are found to be cheating or plagiarizing, you will be subject to disciplinary action, per UT Tyler catalog policy.</p>
<p>Audio/Video Recording</p>	<p>Recording of class instructions by any phone, audio or video device is not permitted. The only exception is at the request of Student Accessibility and Resources, or at the request of Department, College, or University for teaching evaluation.</p>
<p>Phone/iPod/iPad, laptop, etc.</p>	<p>Please turn off your cell phone or switch it to silent mode during class time. If you need to answer a phone call, please leave the class quietly and only answer outside the class door. You are not allowed to answer any phone calls during the examination.</p>
<p>Disability</p>	<p>In accordance with Section 504 of the Rehabilitation Act, Americans with Disabilities Act (ADA), and the ADA Amendments Act (ADAAA), the University of Tyler at Texas offers accommodations to students with learning, physical and/or psychological disabilities. If you have a disability, including non-visible a diagnosis such as a learning disorder, chronic illness, TBI, PTSD, ADHD, or you have a history of modifications or accommodations in a previous educational environment, you are</p>

	<p>encouraged to visit <a href="https://hood.accessiblelearning.com/UTTyler">https://hood.accessiblelearning.com/UTTyler</a> and fill out the <u>New Student</u> application. The <b>Student Accessibility and Resources</b> (SAR) office will contact you when your application has been submitted and an appointment with an Accessibility Case Manager. For more information, including filling out an application for services, please visit the SAR webpage at <a href="http://www.uttyler.edu/disabilityservices">http://www.uttyler.edu/disabilityservices</a>, the SAR office located in the University Center, # 3150 or call 903.566.7079.</p>
<p>Important Covid-19 Information for Classrooms and Laboratories</p>	<p>Students are required to wear face masks covering their nose and mouth, and follow social distancing guidelines, at all times in public settings (including classrooms and laboratories), as specified by <a href="#">Procedures for Fall 2020 Return to Normal Operations</a>. The UT Tyler community of Patriots views adoption of these practices consistent with its <a href="#">Honor Code</a> and a sign of good citizenship and respectful care of fellow classmates, faculty, and staff.</p> <p>Students who are feeling ill or experiencing symptoms such as sneezing, coughing, or a higher than normal temperature will be excused from class and should stay at home and may join the class remotely. Students who have difficulty adhering to the Covid-19 safety policies for health reasons are also encouraged to join the class remotely. Students needing additional accommodations may contact the Office of Student Accessibility and Resources at University Center 3150, or call (903) 566-7079 or email <a href="mailto:saroffice@uttyler.edu">saroffice@uttyler.edu</a>.</p>
<p>Recording of Class Sessions</p>	<p>Class sessions may be recorded by the instructor for use by students enrolled in this course. Recordings that contain personally identifiable information or other information subject to FERPA shall not be shared with individuals not enrolled in this course unless appropriate consent is obtained from all relevant students. Class recordings are reserved only for the use of students enrolled in the course and only for educational purposes. Course recordings should not be shared outside of the course in any form without express permission.</p>

**Suggested Topics for Graduate Student Presentations**

- Travel demand forecasting and its relation to Smart Cities
- Intelligent Transportation Systems (ITS) and their use in travel demand forecasting
- Blockchain and its potential use in traffic engineering and travel demand forecasting
- Queueing and environmental impacts for border crossing and homeland security
- Intelligent Transportation Systems (ITS) in Tyler: challenges and opportunities
- Smart Cities and applications for Tyler (e.g. bus service)

Students are free to propose his/her own topic, related to their thesis topic, as well.

## Tentative Schedule

Lesson	Date	Topic	HW Assigned	HW Due
1	8/25	Course Introduction	Project	
2	8/27	Overview of Transportation Planning		
3	9/1	Overview of Transportation Planning	HW 1	
4	9/13	Overview of Transportation Planning		
5	9/8	Overview of Transportation Planning	HW 2	HW 1
6	9/10	Introduction to TRANUS		<i>GS Topic</i>
7	9/15	TRANUS Lab 1	Lab 1	HW 2
8	9/17	Trip Generation		
9	9/22	Trip Generation	HW 3	Lab 1
	9/24	Field Trip 1		
10	9/29	TRANUS Lab 2	Lab 2	HW 3
11	10/1	Trip Distribution		<i>GS Abstract</i>
12	10/6	Trip Distribution	HW 4	Lab 2
13	10/8	TRANUS Lab 3	Lab 3	
	<b>10/13</b>	<b>Exam I</b>		
14	10/15	TRANUS Lab 4	Lab 4	HW 4 Lab 3
15	10/20	Mode Choice		
16	10/22	Mode Choice	HW 5	Lab 4
17	10/27	CALIB Lab 5	Lab 5	<i>GS Draft Slides</i>
18	10/29	Traffic Assignment		HW 5
19	11/3	Traffic Assignment	HW 6	Lab 5
	11/5	Field Trip 2		
20	11/10	TRANUS Lab 6	Lab 6	HW 6
21	11/12	MPO Guest Speaker: Michael Howell		
22	11/17	TRANUS Lab 7	Lab 7	Lab 6
	<b>11/19</b>	<b>Exam II</b>		
	11/24	No Class (Thanksgiving)		
	11/26	No Class (Thanksgiving)		
23	12/1	Class Presentations		Lab 7 Project
24	12/3	Graduate Student Presentations		
	<b>12/8</b>	<b>Final Exam</b>		

## **Desired Learning Outcomes**

In this course, you will learn to:

1. Develop an organized approach to solving urban transportation planning problems following the four-step procedure.
2. Conduct and evaluate an urban transportation planning study; and apply the concepts from class to analyze the data collected.
3. Explain and apply the trip generation and trip attraction process.
4. Explain and apply the trip distribution procedure (including the gravity model and FHWA friction factor method).
5. Explain and apply the modal split process (including the use of the logit model).
6. Explain and apply the traffic assignment (route choice) procedure.
7. Use spreadsheets and urban transportation planning software as tools to perform the mathematical operations required in urban transportation planning applications.