Course Syllabus

Jump to Today Edit

University of Texas at Tyler - Department of Civil Engineering CENG 4351 Traffic Engineering: Operations and Control

Fall 2020

Instructor: Vanesha Nicholson

HEC D114

vnicholson@uttyler.edu

Laboratory:

Wednesday: 5:10 PM-7:55 PM, HEC D114

Course Website:

Canvas will be used to manage the course material for the semester. There you will find homework assignments, solutions, handouts and other material pertaining to the class. **PLEASE CHECK THERE REGULARLY.**

Catalog Description:

Introduction to traffic systems, flow characteristics, data collection, control of urban streets and freeways, operations of arterial streets, freeway, and networks, optimal signal timing design, capacity analysis using computer simulation. Additionally, the course will cover a detailed Evaluation of stresses in flexible pavements, materials characterization, and design of flexible pavements for highways and airports.

Learning Objectives:

1. Develop an organized approach to solving traffic engineering analysis and design
2. Explain traffic stream characteristics, volume studies, speed, travel time, delay, accident, intersection design and parking
3. Explain traffic congestion from the supply and demand perspective and classify many intelligent transportation system
4. Explain uniform traffic control devices including traffic signs, markings, signal, and
5. Analyze freeway and highway capacity including the unsignalized and signalized intersection capacity, arterial planning and design, identify operational problems and carry out traffic engineering
6. Explain signal components, control and operations, signal timing and systems coordination and evaluate alternative signal timing

7. Familiarize the students with the procedures used to design
8. Develop a fundamental understanding of the analysis of pavement structures (develop necessary analytical skills to analyze stresses and strains in pavement system).
9. Understand the concepts and theory behind the materials and drainage characterization requirements for input in pavement structural design and

Prerequisites:

CENG 3351 (Links to an external site.): Transportation Engineering Systems, CENG 2336 (Links to an external site.): Geomatics.

Required Texts:

Traffic Engineering, Roger P. Roess, William R. McShane, and Elena S. Prassas, 4th Edition, Prentice Hall, 2010. ISBN: 0136135730. ISBN-13: 9780136135739. Available at the bookstore and web outlets.

Supplemental Textbooks/References:

Pavement Analysis and Design, H. Huang, 2nd Edition, Prentice Hall, 2004. ISBN-10: 0131424734. ISBN-13: 978-0131424739. Available at the bookstore and web outlets.

- HCM2010: Highway Capacity Manual 2010 (with U.S. Units). Copies/handouts of some chapters will be provided
- MUTCD: Manual on Uniform Traffic Control Devices 2009 Edition dated December 2009 (in both html and pdf formats, as well as a list of known errors included) http://mutcd.fhwa.dot.gov/kno_2009.htm (Links to an external site.) (which is the most recent version for the MUTCD). MUTCD's & Traffic Control Devices Information currently used in Texas adopt this national manual and some supplements are added specifically for the State of Detailed information can be found in this website: http://www.txdot.gov/government/enforcement/signage/tmutcd.html (Links to an external site.)
- Additional handouts/references for the use of traffic software will be provided in due

Schedule (Tentative and Subject to Change):

Date	Lesson #	Material Covered	Lesson Material
26-Aug		Lab 1: Introduction	
2-Sept		Lab 2: Turning Movement Counts	
16-Sept		Lab 3: Turning Movement Counts and Intro. to Synchro	
30-Sept		Lab 4: Speed Studies	
7-Oct		Lab 5: Accident Study	
21-Oct		Lab 6: Parking Study	
TBA		Exam 1	
11-Nov		Lab 7: 3D-Move	

	Lab 8: 3D-Move
	Lab 9: PaveXpress
	Exam 2
	Lab 12: Rotational Viscometer
26-Nov	Thanksgiving Holiday: NO class
	Lab 13: Penetration Test
	Lab 14: Final Review Session
	Study Day

Exams:

There will be 2 midterm examinations and one final examination. The exams are **TENITATIVELY** scheduled for:

Exam 1: TBA

Exam 2: TBA:

Exams dates may be moved up or pushed back depending on the progress of the lectures. You can use a calculator and instructor approved reference material. Solutions to exams will **NOT** be posted however, key answers will be demonstrated at class. No make-up exams will be given except for medical or other similar hardships where advanced arrangements are made with the instructor; or in case of non-selective medical emergencies with appropriate physician's note or documentation. Other than circumstances described above, failure to take the exam at the scheduled time will constitute a grade of zero in the exam.

Homework:

Homework will be assigned on regular basis. **Homework is due on the date assigned at the beginning of lecture**. No late homework will be accepted except when arrangements are made with the instructor ahead of time. Solutions will be posted on Canvas. **5% Extra credit will be given for each fully computer-typed homework assignments**.

Laboratory:

There will be a series of labs completed during the semester. We will meet for lab on Wednesday from 5:10pm-7:10pm in HEC D114(Virtually).

Be sure to review the handout and complete all required work prior to coming to lab. This will help to prepare you the experiment and help to make the sessions run smoother. If necessary a quiz will be given at the beginning of the lab which covers the experiment for the day.

You will work in groups of 2 to complete each lab. The instructor will assign the groups. Each group will be required to turn in one report for the entire group. However, there may be some lab assignments which are done individually. The format for the report is provided with the syllabus. You are encouraged to visit the writing center as they can provide excellent feedback and help you with your writing.

Grades:

Homework/Quizzes = 20%

Professional Practice = 10%

Midterm Exams (2) = 30%

Final Exam = 20%

Labs= 20%

Grade Scale:

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

****NOTE:** There will be no makeup work or extra credit allowed/granted at the end of or during the semester unless allowed/granted to everyone by the instructor. All assignments must be turned in at the appropriate time to receive credit.

Calculator Policy:

Only NCEES approved calculators will be permitted during tests and your test will be collected and your grade will be a zero if you are using a non-approved calculator.

The approved calculators include the following: (Please check the NCEES website for a complete listing, www.ncees.org/exams/calculator-policy/. (Links to an external site.) Examples include but are not limited to:

- Hewlett Packard – HP 33s, HP 35s, and no others
- Casio – All FX 115 models
- Texas Instruments – All TI 30X or TI-36X
    - If you are unsure about your calculator, it is your responsibility to check with the instructor for

At the discretion of the course instructor, any calculator not meeting the requirements stated (especially in the case of a graphing calculator) may be used but only after an inspection of the device and a clearing of all the memory within the device, performed for the instructor at a time immediately prior to the exam. At any time during the exam your calculator is subject to a random search by the instructor. Failure or refusal to clear all memory or to surrender your calculator to search will disqualify you from the exam immediately, unless you can produce a calculator meeting the requirements as stated above.

-Laptops/PDAs/MP3 players/Cell Phones or other electronic devices:

The use of any electronic device, except an approved calculator, is not permitted during exams. Your exam will be collected and your grade will be a zero if you are caught using a non-approved electronic device/calculators. Any instances of a calculator inappropriately used during an exam will be the basis of alleging Academic Misconduct and may result in Failing (F) of the course at the determination of the course's instructor or the basis for a recommendation for expulsion from the University. Any Calculator used during an exam in this course must meet the requirements stated within the policy below.

Professional Practice:

Your professional practice grade will be computed based upon your attendance and the number of assignments you turn in that are completed in a professional manner.

Final day to withdraw:

The final day to withdraw from the course without penalty is **November 5th.**

Census dates:

The university requires that instructors to report the attendance to the register at various points in the semester. Therefore, on **September 10th** I will be taking attendance. Please make sure you are there for class on that date or notify ahead if you will not be there.