**Course Syllabus – Fall 2015**

**CE 3302: Transportation Engineering**

**Instructor:** Sia Ardekani

**Office Number:** 434 Nedderman Hall

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**Faculty Profile:** [**http://www.uta.edu/ce/facultyintro.php?id=2**](http://www.uta.edu/ce/facultyintro.php?id=2)

**Office Hours:** TWTh 9-11 AM or by appointment

**Section Information:** Sec.001, #81689 & Sec. 002, #90047

**Time and Place of Class Meetings:** TuTh 12:30-1:50 PM, Room 251 COBA

**TA:** TBD

**TA Office Hours:** TBD: NH 243

**Course Content:** Planning, design, and operation of transportation facilities. Characteristics of vehicle movement; basic geometric design of highways; traffic flow relations in traffic streams and on transit lines; highway capacity; transit operation; traffic engineering; and legal requirements and procedures for transportation planning.

**Prerequisites: 1)** Admission to CE Professional Program, **2)** CE 2331, **3)** CE 3301 or concurrent registration

**Student Learning Outcomes:** At the end of this course, you should be able to achieve outcomes shown in the following:

|  |  |
| --- | --- |
| ***ABET Outcome*** | ***Description*** |
| **(a)** | Apply knowledge of mathematics, science, and engineering in planning, analysis, and design of transportation facilities |
| **(b)** | Design and conduct experiments and analyze and interpret transportation data |
| **(c)** | Design a transportation system or component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability |
| **(e)** | Identify, formulate, and solve transportation engineering problems |
| **(f)** | Understand professional and ethical responsibility in planning, design, and operation of transportation facilities |
| **(g)** | Communicate effectively in conveying transportation solutions |
| **(h)** | Understand the impact of transportation engineering solutions in a global, economic, environmental, and societal context |
| **(i)** | Recognize the need for, and an ability to engage in lifelong learning |
| **(j)** | Knowledge of contemporary issues related to transportation systems |
| **(k)** | Use the techniques, skills and modern engineering tools necessary for practice of transportation engineering |

**ABET Outcome Evaluation:** Each of the three exams will have a question related to the ABET Outcome e (Ability to identify, formulate, and solve transportation engineering problems). Students are expected to obtain an average score of 70% or higher in the combined questions. The questions will be on the subjects of 1) Traffic Engineering, 2) Highway Design, and 3) Transportation Planning.

**Techniques, Skills and Modern Engineering Tools Used in this Course:** Regression Modeling, Excel Data Analysis Module

**Required Textbook:** Fundamentals of Transportation Engineering – A Multimodal Systems Approach, Fricker and Whitford, 1st Edition (ISBN: 0-13-035124-5)

**Major assignments and examinations:**

* Weekly homework assignments (15%)
* Pop Quizzes (5%)
* Two mid-term exams (2 X 25%)
* Comprehensive Final (30%)

All homework assignments must be turned in at the start of the class. If submitted electronically (allowed for DL students only), they must be submitted prior to the class period they are due. Failure to do so will constitute a grade of zero for the homework assignment. One week of advanced notice will be provided in scheduling the in-class mid-term exams. The final exam will be given according to the university’s published final exams schedule. Note that failure to appear for an exam at the scheduled time will constitute a grade of zero in that exam. Distance learning students will be required to attend class on the days of the exam unless prior arrangement is made with the instructor.

**Attendance Policy:** Although attendance is not mandatory, there will be unannounced in-class pop quizzes that would account for 5% of the course grade. No special accommodations will be made for quizzes, assignments, and exams missed due to absences. Students in the distance learning sections will be given 24 hours to view the lectures and submit their pop quizzes via E-mail.

due to absences.

**Grading Policy**: A composite grade is computed based on the following weights: Homework(15%), Pop Quizzes(5%), Mid-terms(25% each), Final(30%). The overall course grade will be based on the composite grade, as follows:

|  |  |
| --- | --- |
| **Composite Grade, X** | **Course grade** |
| X≥90 | A |
| 80≥X<90 | B |
| 70≥X<80 | C |
| 60≥X<70 | D |
| X<60 | F |

**Expectations for Out-of-Class Study**: Beyond the time required to attend each class meeting, students enrolled in this course should expect to spend at least an additional 3 hours per week of their own time in course-related activities, including reading required materials, completing assignments, preparing for exams, etc.

**Make-up Exam Policy**: No make-up exams are 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 physician’s note or documentation. Otherwise, failure to take the exam at the scheduled time will result in a zero grade in the exam.

**Grade Grievance Policy**: Any appeal of a grade in this course must follow the procedures and deadlines for grade-related grievances as published in the current undergraduate / graduate catalog.

**Drop Policy:** Students may drop or swap (adding and dropping a class concurrently) classes through self-service in MyMav from the beginning of the registration period through the late registration period. After the late registration period, students must see their academic advisor to drop a class or withdraw. Undeclared students must see an advisor in the University Advising Center. Drops can continue through a point two-thirds of the way through the term or session. It is the student's responsibility to officially withdraw if they do not plan to attend after registering. **Students will not be automatically dropped for non-attendance**. Repayment of certain types of financial aid administered through the University may be required as the result of dropping classes or withdrawing. For more information, contact the Office of Financial Aid and Scholarships (<http://wweb.uta.edu/ses/fao>).

**Americans with Disabilities Act:** The University of Texas at Arlington is on record as being committed to both the spirit and letter of all federal equal opportunity legislation, including the *Americans with Disabilities Act (ADA)*. All instructors at UT Arlington are required by law to provide "reasonable accommodations" to students with disabilities, so as not to discriminate on the basis of that disability. Any student requiring an accommodation for this course must provide the instructor with official documentation in the form of a letter certified by the staff in the Office for Students with Disabilities, University Hall 102. Only those students who have officially documented a need for an accommodation will have their request honored. Information regarding diagnostic criteria and policies for obtaining disability-based academic accommodations can be found at [www.uta.edu/disability](http://www.uta.edu/disability) or by calling the Office for Students with Disabilities at (817) 272-3364.

**Title IX:** The University of Texas at Arlington is committed to upholding U.S. Federal Law “Title IX” such that no member of the UT Arlington community shall, on the basis of sex, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any education program or activity. For more information, visit [www.uta.edu/titleIX](http://www.uta.edu/titleIX).

**Academic Integrity:** All students enrolled in this course are expected to adhere to the UT Arlington Honor Code:

*I pledge, on my honor, to uphold UT Arlington’s tradition of academic integrity, a tradition that values hard work and honest effort in the pursuit of academic excellence.*

*I promise that I will submit only work that I personally create or contribute to group collaborations, and I will appropriately reference any work from other sources. I will follow the highest standards of integrity and uphold the spirit of the Honor Code.*

Instructors may employ the Honor Code as they see fit in their courses, including (but not limited to) having students acknowledge the honor code as part of an examination or requiring students to incorporate the honor code into any work submitted. Per UT System *Regents’ Rule* 50101, §2.2, suspected violations of university’s standards for academic integrity (including the Honor Code) will be referred to the Office of Student Conduct. Violators will be disciplined in accordance with University policy, which may result in the student’s suspension or expulsion from the University.

**Student Support Services Available:** UT Arlington provides a variety of resources and programs designed to help students develop academic skills, deal with personal situations, and better understand concepts and information related to their courses. Resources include tutoring, major-based learning centers, developmental education, advising and mentoring, personal counseling, and federally funded programs. For individualized referrals, students may visit the reception desk at University College (Ransom Hall), call the Maverick Resource Hotline at 817-272-6107, send a message to [resources@uta.edu](mailto:resources@uta.edu), or view the information at [www.uta.edu/resources](http://www.uta.edu/resources).

**Electronic Communication:** UT Arlington has adopted MavMail as its official means to communicate with students about important deadlines and events, as well as to transact university-related business regarding financial aid, tuition, grades, graduation, etc. All students are assigned a MavMail account and are responsible for checking the inbox regularly. There is no additional charge to students for using this account, which remains active even after graduation. Information about activating and using MavMail is available at <http://www.uta.edu/oit/cs/email/mavmail.php>.

**Student Feedback Survey:** At the end of each term, students enrolled in classes categorized as lecture, seminar, or laboratory shall be directed to complete a Student Feedback Survey (SFS). Instructions on how to access the SFS for this course will be sent directly to each student through MavMail approximately 10 days before the end of the term. Each student’s feedback enters the SFS database anonymously and is aggregated with that of other students enrolled in the course. UT Arlington’s effort to solicit, gather, tabulate, and publish student feedback is required by state law; students are strongly urged to participate. For more information, visit <http://www.uta.edu/sfs>.

**Final Review Week:** A period of five class days prior to the first day of final examinations in the long sessions shall be designated as Final Review Week. The purpose of this week is to allow students sufficient time to prepare for final examinations. During this week, there shall be no scheduled activities such as required field trips or performances; and no instructor shall assign any themes, research problems or exercises of similar scope that have a completion date during or following this week *unless specified in the class syllabus*. During Final Review Week, an instructor shall not give any examinations constituting 10% or more of the final grade, except makeup tests and laboratory examinations. In addition, no instructor shall give any portion of the final examination during Final Review Week. During this week, classes are held as scheduled. In addition, instructors are not required to limit content to topics that have been previously covered; they may introduce new concepts as appropriate.

**Emergency Exit Procedures:** Should we experience an emergency event that requires us to vacate the building, students should exit the room and move toward the nearest exit, which is located at the end of the hallway to the left of the classroom. When exiting the building during an emergency, one should never take an elevator but should use the stairwells. Faculty members and instructional staff will assist students in selecting the safest route for evacuation and will make arrangements to assist handicapped individuals.

**Course Schedule:**

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| --- | --- | --- |
| **Period** | **Topic** | **Reading** |
| 8/27 | Introduction and Background | Ch.1, pp 1-31 |
| **TRAFFIC FLOW THEORY** | | |
| 9/1 | Traffic Flow Variables and Measurements | Ch.2, pp 37-66 |
| 9/3 | Traffic Flow Variables and Measurements | Ch.2, pp 37-66 |
| 9/8 | Traffic Flow Models | Ch.2, pp 66-89 |
| 9/10 | Traffic Flow Models | Ch.2, pp 66-89 |
| 9/15 | Freeway Capacity and Level of Service | Ch.2, pp 89-94 |
| 9/17 | Freeway Capacity and Level of Service | Ch.3, pp 136-151 |
| **TRANSPORTATION PLANNING** | | |
| 9/22 | Planning Basics and Trip Generation | Ch.4, pp 183-205 |
| 9/24 | Trip Distribution | Ch.4, pp 206-215 |
| 9/29 | Trip Distribution | Ch.4, pp 206-215 |
| 10/1 | Mode Choice | Ch.4, pp 216-228 |
| 10/6 | Trip Assignment | Ch.4, pp 228-240 |
| 10/8 | **In-Class EXAM I** | |
| 10/13 | Trip Assignment | Ch.4, pp 228-240 |
| **HIGHWAY DESIGN** | | |
| 10/15 | Human Factors & Vehicle Characteristics | Ch.6, pp 323-347 |
| 10/20 | Human Factors & Vehicle Characteristics | Ch.6, pp 323-347 |
| 10/22 | Radius of Curves in Horizontal Alignments | Ch.7, pp 394-409 |
| 10/27 | Geometry and Layout of Horizontal Curves | Ch.7, pp 380-384 |
| 10/29 | Length of Vertical Curves | Ch.7, pp 384-394 |
| 11/3 | Length of Vertical Curves | Ch.7, pp 384-394 |
| **TRAFFIC ENGINEERING** | | |
| 11/5 | Traffic Control Devices | Ch.6, pp 347-357 |
| 11/10 | Traffic Signal Warrants | Ch.8, pp 426-435 |
| 11/12 | **In-Class EXAM II** | |
| 11/17 | Traffic Signal Timing | Ch.8, pp 435-446 |
| 11/19 | Traffic Signal Timing | Ch.8, pp 435-446 |
| 11/24 | Signal Coordination and Actuation | Ch.8, pp 435-446 |
| 11/26 | THANKSGIVING BREAK |  |
| 12/1 | Signal Coordination and Actuation | Ch.8, pp 435-446 |
| **PAVEMENT DESIGN** | | |
| 12/3 | Pavement Design Principles | Ch.9, pp 457-473 |
| 12/8 | Pavement Layer Thicknesses Design | Ch.9, pp 473-507 |
| **12/17** | **FINAL EXAM on Thursday 12/17, 11-1:30 PM** | |

*As the instructor for this course, I reserve the right to adjust this schedule in any way that serves the educational needs of the students enrolled in this course. – S. A. Ardekani*

**Emergency Phone Numbers**: In case of an on-campus emergency, call the UT Arlington Police Department at **817-272-3003** (non-campus phone), **2-3003** (campus phone). You may also dial 911.