**CE 3302: Transportation Engineering**

**Summer 2015 (**WH 402, TTh10:30AM-12:20PM)

**Instructor:** Sia Ardekani, Ph.D., P.E.

**Office Number:** 434 Nedderman Hall

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**Office Hours:** TTh8:30-10:30AM or by appointment

**Section Information:** CE 3302, Sec.001, #52162 and Sec.002, #56650

**Time and Place of Class Meetings:** WH402, TTh10:30AM-12:20PM

**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.

**Requirements: 1)** Admission to CE Professional Program

**2)** CE 2331

**3)** CE 3301 or concurrent registration

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

**Techniques, Skills and Modern Engineering Tools Used in this Course:**

 Regression Modeling, Excel Data Analysis Module

**Major assignments and examinations:**

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

All homework assignments must be turned in at the start of the class or, if submitted electronically, prior to the class period in which they are due. Failure to do so will constitute a grade of zero for the homework assignment in question. 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.

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

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

**Attendance Policy:** Attendance is mandatory; each unexcused absence will result in a 1% deduction from the 5% of the course grade allotted to attendance. Therefore, five or more absences will result in a grade of zero in the attendance category. In addition, no special accommodations will be made for incomplete or missed assignments and exams due to absences.

**ABET Learning Outcomes:** At the end of this course, you should be able to achieve the following learning outcomes:

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| --- | --- |
| ***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  |

**Drop Policy:** Please see university drop policy and deadlines.

**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.

**Academic Integrity:** It is the philosophy of The University of Texas at Arlington that academic dishonesty is a completely unacceptable mode of conduct and will not be tolerated in any form. All persons involved in academic dishonesty will be disciplined in accordance with University regulations and procedures. Discipline may include suspension or expulsion from the University. According to the UT System Regents’ Rule 50101, §2.2, "Scholastic dishonesty includes but is not limited to cheating, plagiarism, collusion, the 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."

**Student Support Services Available:** The University of Texas at 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. These resources include tutoring, major-based learning centers, developmental education, advising and mentoring, personal counseling, and federally funded programs. For individualized referrals to resources for any reason, students may contact the Maverick Resource Hotline at 817-272-6107 or visit [www.uta.edu/resources](http://www.uta.edu/resources) for more information.

**Electronic Communication Policy:** The University of Texas at Arlington has adopted the University “MavMail” address as the sole official means of communication with students. MavMail is used to remind students of important deadlines, advertise events and activities, and permit the University to conduct official transactions exclusively by electronic means. For example, important information concerning registration, financial aid, payment of bills, and graduation are now sent to students through the MavMail system. All students are assigned a MavMail account. ***Students are responsible for checking their MavMail regularly.*** Information about activating and using MavMail is available at <http://www.uta.edu/oit/email/>. There is no additional charge to students for using this account, and it remains active even after they graduate from UT Arlington.

To obtain your NetID or for logon assistance, visit <https://webapps.uta.edu/oit/selfservice/>. If you are unable to resolve your issue from the Self-Service website, contact the Helpdesk at helpdesk@uta.edu.

**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. Classes are held as scheduled during this week and lectures and presentations may be given.

**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**: Grade grievances will be handled according to the policy described in the College of Engineering portion of the Catalog.

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| **Date**  | **Topic** | **Reading** |
| **TRAFFIC FLOW THEORY**  |
| 6/9 | Introduction and Background | Ch.1, pp 1-31 |
| 6/11 | Traffic Flow Variables and Measurements | Ch.2, pp 37-66 |
| 6/16 | Traffic Flow Models | Ch.2, pp 66-89 |
| 6/18 | Freeway Capacity and Level of Service | Ch.2, pp 89-94 |
| 6/23 | Freeway Capacity and Level of Service | Ch.3, pp 136-151 |
| **TRANSPORTATION PLANNING** |
| 6/25 | Planning Basics and Trip Generation  | Ch.4, pp 183-205 |
| 6/30 | Mode Choice and Trip Distribution | Ch.4, pp 206-228 |
| 7/2 | Trip Assignment  | Ch.4, pp 228-240 |
| **7/7** | **EXAM I** |  |
| **HIGHWAY DESIGN**  |
| 7/9 | Vehicle Characteristics | Ch.6, pp 339-347 |
| 7/14 | Radius of Curves in Horizontal Alignments | Ch.7, pp 394-409 |
| 7/16 | Geometry and Layout of Horizontal Curves | Ch.7, pp 380-384 |
| 7/21 | Length of Vertical Curves | Ch.7, pp 384-394  |
| **TRAFFIC ENGINEERING**  |
| 7/23 | Human Factors | Ch.6, pp 323-339 |
| 7/28 | Traffic Control Devices and Signalization Warrants | Ch.6, pp 347-357Ch.8, pp 426-435 |
| 7/30 | Traffic Signal Timing | Ch.8, pp 435-446 |
| **8/4** | **EXAM II** |  |
| 8/6 | Signal Coordination and Actuation | Ch.8, pp 435-446 |
| **PAVEMENT DESIGN**  |
| 8/11 | Pavement Design Principles  | Ch.9, pp 457-467 |
| 8/13 | Pavement Design Principles  | Ch.9, pp 457-467 |
| **8/18** | **Final Exam (10:30 AM-12:20 PM)** |