**Course Syllabus – Fall 2016**

**CE 6309: Traffic Flow Theory**

**Instructor:** Sia Ardekani

**Office Number:** 434 Nedderman Hall

**Office Telephone Number:** 817-272-3762

**Email Address:** Ardekani@uta.edu

**Office Hours:** TuWTh8:30 AM-11 AM or by appointment

**Section Information:** CE 6309-001, #89577 and CE 6309-002, #89578

**Time and Place of Class Meetings:** TuTh 3:30-4:50 PM, WH221

**Course Content:** Speed, density relationships of vehicular traffic flow; statistical aspects of traffic events and queuing processes; deterministic models and simulation models of traffic flow behavior; applications of flow theory to traffic problem solutions.

**Student Learning Outcomes:**

* To command basic and applied knowledge of Transportation Engineering
* To demonstrate the mastery of the theory and application of traffic models beyond the fundamental knowledge gained in undergraduate courses
* To conduct independent and original study involving gathering, analysis, and interpretation of data
* To present scientific results in both written and oral format

**Prerequisites:** CE 5330 or equivalent

**Textbooks:**

**1.** Traffic Flow Theory: A State-of-the-Art Report, 2001 Edition, TRB Committee on Traffic Flow Theory and Characteristics.

**2.** Traffic Flow Theory Course Notes, 2012 Edition, McGraw Hill, ISBN: 1-121-57616-8.

**Major assignments and exams:** Homework assignments, an in-class exam, term project, written and oral presentations. All homework 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. One week of advanced notice will be provided in scheduling the in-class exam. Failure to appear for the exam at its scheduled time will constitute a grade of zero in the exam. There will be a term project in lieu of the final exam. It entails field data collection, analysis, and a report.

**Attendance Policy:** Attendance is not mandatory; however, no special accommodations will be made for incomplete or missed assignments to absences.

**Grading Policy:** Homework (30%), In-class exam (40%), Term project (30%).

**Exam Location Policy for Online Students:** Within the first two weeks of the semester, all online students must identify a testing center where they will be taking the tests. Otherwise, they are expected to come to class during the exam day to take the test with the in-class students. There will be no exception to this policy.

**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 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.

**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:** UT Arlington is 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 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. 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 Policy:** The University of Texas at Arlington (“University”) is committed to maintaining a learning and working environment that is free from discrimination based on sex in accordance with Title IX of the Higher Education Amendments of 1972 (Title IX), which prohibits discrimination on the basis of sex in educational programs or activities; Title VII of the Civil Rights Act of 1964 (Title VII), which prohibits sex discrimination in employment; and the Campus Sexual Violence Elimination Act (SaVE Act). Sexual misconduct is a form of sex discrimination and will not be tolerated.*For information regarding Title IX, visit* [www.uta.edu/titleIX](http://www.uta.edu/titleIX) or contact Ms. Jean Hood, Vice President and Title IX Coordinator at (817) 272-7091 or <jmhood@uta.edu>.

**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 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).

**The IDEAS Center (**2nd Floor of Central Library) offers **free** tutoring to all students with a focus on transfer students, sophomores, veterans and others undergoing a transition to UT Arlington. To schedule an appointment with a peer tutor or mentor email [IDEAS@uta.edu](mailto:IDEAS@uta.edu) or call (817) 272-6593.

**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>.

**Campus Carry:** Effective August 1, 2016, the Campus Carry law (Senate Bill 11) allows those licensed individuals to carry a concealed handgun in buildings on public university campuses, except in locations the University establishes as prohibited. Under the new law, openly carrying handguns is not allowed on college campuses. For more information, visit <http://www.uta.edu/news/info/campus-carry/>

**Student Feedback Survey:** At the end of each term, students are directed to complete a Student Feedback Survey (SFS). Instructions on how to access the SFS 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 exams is designated as the Final Review Week. The purpose of this week is to allow students time to prepare for final exams. During this week, there shall be no scheduled activities such as required field trips; and no instructor shall assign any themes, research or exercises of similar scope with a completion date during or following this week *unless specified in the syllabus*. Also, instructors shall not give any exams constituting 10% or more of the final grade, except makeup tests and laboratory exams. In addition, instructors shall give any portion of the final exam during the Final Review Week. During this week, classes are held as scheduled. In addition, instructors may introduce new concepts as appropriate.

**Course Schedule:**

**TOPIC PERIODS READING**

Introduction 1

Statistical Tools 4 **Text 2/ Ch 1**

Ref 1/PP 95 to110

Ref 2/Ch 3

Ref 5/Ch 7

Ref 6/PP 40 to 73

Headway Distributions 3 **Text 1/PP 8-1 to 8-15**

and Gap Acceptance **Text 2/Ch 2** Ref 1/Ch 2

Ref 5/Ch 9

Speed, Flow, Density 3 **Text 1/PP 2-1 to 2-15**

Measurements Ref 1/PP 116 to130 & 192 to 200 Ref 2/Ch 2

Ref 3/PP 1 to 6

Ref 6/PP 75 to 93

Speed, Flow, Density Relations 3 **Text 1/PP 2-15 to 2-33**

**Text 2/Ch 3**

Ref 1/PP 283 to 303

Ref 2/Ch 4

Ref 3/PP 9 to12

Ref 6/PP 93 to101

Bottleneck Analysis 2 Ref 1/PP 321 to 360

Ref 3/PP 6 to 9 & 12 to16

Network Models 2 **Text 1/PP 6-13 to 6-30**

**Text 2/Ch 4**

Ref 3/PP 19 to 21

Fuel Consumption Models 1 **Text 1/PP 7-8 to 7-16**

**Text 2/Ch 5**

Car-Following Models 3 **Text 1/Ch 4**

**Text 2/Ch 6**

Ref 1/Ch 6

Ref 3/PP 21 to 36

Overtaking on 2-lane Roads 2 **Text 2/PP 111--116**

Multi-Lane Theories 3 **Text 1/Ch 11**

**Text 2/PP 117-130**

Ref 2/Ch 7

Ref 3/PP 17 to19

*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*

**References:**

1. Traffic Flow Fundamentals, by Adolf D. May, Prentice-Hall, 1990 (on 24-hr reserve, Call# HE 336 .T7 M39 1990).

2. Traffic Flow Theory - A Monograph, by Gerlough and Huber (on 24-hr reserve, Call# HE 336 .T7 G47).

3. Traffic Theory, by D. Gazis, Kluwer Publishers, 2002 (on 24-hr reserve, Call# HE 336 .T7 G39 2002).

4. Fundamentals of Transportation and Traffic Operations, by C.F. Daganzo, Pergamon Press, 1997.

5. Traffic Flow Theory & Control, by D.R. Drew, McGraw Hill, Inc., 1968.

6. Introduction to the Theory of Traffic Flow, by W. Leutzbach, Springer-Verlag, 1988.

7. Traffic Flow Dynamics, by M. Treiber and A. Kesting, Springer, 2013.

8. An Introduction to Traffic Flow Theory, by L. Elefteriadou, Springer, 2014.

**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.