CVEN 307 – Section 502
Transportation Engineering (3-0)

Elective

Description: Fundamental principles and methods in planning, design, and operation of transportation systems; driver and vehicle performance capabilities; highway geometric and pavement design principles; traffic analysis and transportation planning.

Prerequisites: CVEN 302 or registration therein.

Text: Fundamentals of Transportation Engineering – A Multimodal Systems Approach, Jon D. Fricker and Robert K. Whitford, XanEdu. At bookstore.

Course Objectives: To acquaint students with the basic concepts, theory, and practice of transportation engineering as related to planning, design, and operations of the transportation system. Specifically, by the end of the course the student should be able to:

1. Define transportation, identify the various modes of transportation, and describe their respective strengths and weaknesses for hauling persons and goods in the USA.
2. Describe the major issues and challenges facing transportation professionals in a modern society.
3. Describe and discuss the fundamental principles and concepts that are used in the design of highway systems and apply these principles in the design of simple geometric features, such as horizontal and vertical alignment, earthwork computations, and pavement design.
4. Describe the fundamental parameters and relationships that are used to characterize the operation of a transportation facility, and describe methods for monitoring, assessing and improving the performance of those facilities.
5. Design transportation facilities/operations to accommodate a given demand at a specified level of service with respect to the calculated capacity.
6. Discuss the role of transit in a modern transportation system.
7. Estimate the demand for a transportation facility/mode using the traditional four-step planning process.

Instructor: Dr. Mark Burris
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Class website: Google Drive will be shared with all students

Lecture: TR 8:00 – 9:15 a.m.
Room: HEB 137

Office Hours: TR: 2:00 p.m. - 4:00 p.m. Other times by appointment.

Evaluation: Assignments   15 %
                   Group Project   10 %
                   Exam 1   20 %
                   Exam 2   20 %
                   Final Exam   35 %

Grading Policy: A = 90+; B = 80 to 89.9, C= 70 to 79.9; D = 60 to 69.9; F = below 60.

Professional Content: Preparation for engineering practice
                             Design experience
                             Incorporation of engineering standards and realistic constraints that
                                 include most of the following considerations: economic;
                                 environmental; sustainability; manufacturability; ethical; health and
                                 safety; social; and political.

Outcomes Addressed:
   1. Ability to apply knowledge of basic mathematics, science, and engineering
   2. Ability to design a civil engineering system to meet desired needs
   3. Ability to formulate and solve civil engineering problems

Topics Covered: Note this list is tentative.

Date	Class	Topic	Text Reading	Homework
1/16/18	1	Course Introduction / Introduction to Transportation Engineering		
1/18/18	2	Issues and Challenges in Transportation	1.1 – 1.3	
1/23/18	3	Traffic Flow – Measurement	2.1 – 2.3	
1/25/18	4	Traffic Flow – Measurement and Models	2.1 - 2.3	
1/30/18	5	Traffic Flow – Queueing	2.4, 3.2-3.4	
2/1/18	6	Traffic Flow – Queueing	2.4, 3.2-3.4	
2/6/18	7	Capacity and Level of Service - Freeways	2.5, 3.1	
2/8/18	8	Capacity and Level of Service - Freeways	2.5, 3.1	
2/13/18	9	Transportation Planning – The 4 Step Model	4.1 – 4.5	
2/15/18	10	Transportation Planning – The 4 Step Model	4.1 – 4.5	

Date	Class	Topic	Text Reading	Homework
2/20/18	11	Traffic Safety	6.1	
2/22/18	12	Highway Design – Stopping	6.3 & 7.2	
2/27/18	13	Highway Design – Stopping	6.3 & 7.2	
3/1/18	**14**	**EXAM # 1 – In class – 20% of course grade**	**Classes 1 through 10**	
3/6/18	15	Highway Design – Horizontal and Vertical Alignment	7.1 & 7.2	
3/8/18	16	Highway Design – Horizontal and Vertical Alignment	7.3	
3/20/18	17	Highway Design – Horizontal and Vertical Alignment	7.3	
3/22/18	18	Pavement Design	9.1 – 9.5	
3/27/18	19	Pavement Design	9.1 – 9.5	
3/29/18	20	Intersection Design and Signal Timing	8.1 – 8.3	
4/3/18	21	Intersection Design and Signal Timing	8.1 – 8.3	
4/5/18	**22**	**EXAM # 2 – In class – 20% of course grade**	**Classes 11 through 19**	
4/10/18	23	Intersection Design and Signal Timing	8.1 – 8.3	
4/12/18	24	Traffic Control Devices and the MUTCD	6.2 & 6.4	
4/17/18	25	Public Transportation	10.1 – 10.4	
4/19/18	26	Air Transportation	Parts of Chapter 11	
4/24/18	27	Tour of TTI with focus on Intelligent Transportation Systems (ITS)	13.4	
4/26/18	28	Freight Transportation	Parts of Chapter 12	
5/04/18		**Final Exam, 1 to 3 p.m., 35% of grade – covers entire course, with most material from classes 20 to 28**	**Comprehensive**	

Homework: There will be approximately 11 homework assignments. They will be *due at the beginning of the class* one week after they are assigned. Homework assignments may be handed in late with the following penalties: anytime after the beginning of class up to 1 class late -20%; 2 classes late -40%; 3 or more classes late and not excused by the University — not accepted.

Homework should be presented in a professional manner. Each assignment should have a title page indicating name, date, course and assignment number. The problem statement should be provided. Solutions should show all work neatly and in organized steps. Partial credit will be awarded for solving the problem using the correct method. Final answers should be clearly identified. Solutions should be done on unfolded paper and page numbers should be clearly indicated. Assignment's pages should be stapled together.

Group Project: The group project will be in the form of a small traffic study. Additional information will be supplied shortly and will be posted on the web.

Scholastic Honesty: *"An Aggie does not lie, cheat, or steal or tolerate those who do."*
The purpose of homework is to help you learn the course material - so doing it on your own or in groups is permitted. However, each person must turn in a separate write-up and solution prepared by his/her own hand. This means that the problem description, steps taken to solve the problem, and computer input and output must be generated by each person individually. By University regulations, copying another person's homework is considered plagiarism, and is not permitted. Please refer to http://aggiehonor.tamu.edu

Conversely, your group project is a team effort. You are expected to work together as a team. If a team member is not participating or doing their share of the work please let me know.

Also, plagiarism is commonly defined as the passing off as one's own the ideas, thoughts, writings, etc. which belong to another person. In accordance with this definition, you are committing plagiarism if you copy the work of another person and hand it in as your own – even if you have the other person's permission. This includes copying information from books, journals, websites, reports, etc. if it is not properly referenced or, if taken word for word, put in quotations and properly referenced. Plagiarism will not be tolerated.

The handouts used in this course are copyrighted. "Handouts" means all materials generated for this class, which include but are not limited to syllabi, quizzes, exams, lab problems, in-class materials, review sheets, and additional problem sets. Because these materials are copyrighted, a student does not have the right to copy the handouts unless the instructor expressly grants permission.

Attendance: Regular attendance and class participation are expected. Seats will be assigned the second day of class.

Americans with Disabilities Act (ADA):
The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please contact Disability Services, currently located in the Disability Services building at the Student Services at White Creek complex on west campus or call 979-845-1637. For additional information, visit http://disability.tamu.edu

Prepared by: Dr. Mark Burris   **Date of Preparation: January 13, 2018**