Civil Engineering (CE) 595
Traffic Operations and Design – 3 credits
Fall 2014

Instructor:

Dr. David S. Hurwitz
Room 305 Owen Hall
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Class Website:

http://myoregonstate.edu/ (This is the BlackBoard Login Site)

Lecture Schedule:

Monday, & Wednesday
9:00 am - 9:50 am
Room 205, Kearney Hall

Recitation Schedule:

Tuesday
10:00 am – 11:50 am
Room 124, Kearney Hall

Office Hours:

Mondays: 2:00 pm – 3:00 pm
Tuesdays: 2:00 pm – 3:00 pm, or by appointment via email

Email:

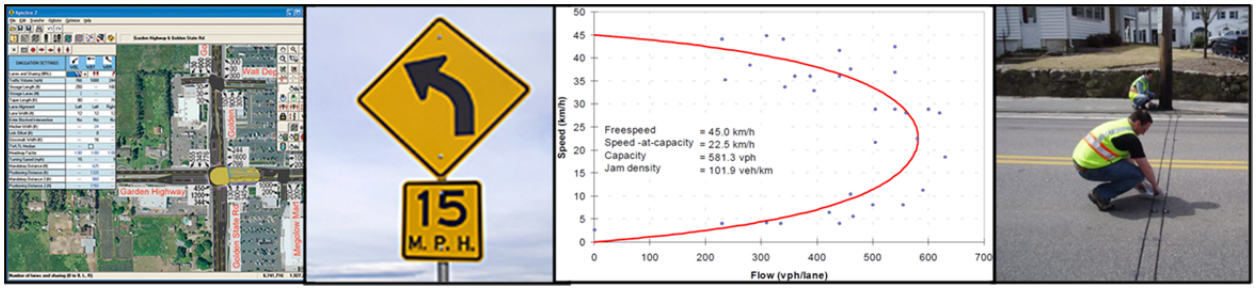
Every student must have ENGR and ONID accounts. Read email daily. Note: a class email distribution list will be generated from ENGR accounts. You can "forward" ENGR or ONID to any account.

Course Description:

A project course based upon advanced concepts, theory and tools of traffic operations. The class also will use simulation tools for microscopic modeling.

Course Prerequisite:

CE 491 (also acceptable as a co-requisite)



Course Learning Outcomes:

By the end of the course, you will be able to:

1. Describe the character, elements and impacts of human factors and vehicle characteristics on traffic operations and safety;

2. Conduct and analyze the results of volume, speed, and delay studies to assess the performance of transportation infrastructure;

3. Apply traffic signal warrants and engineering judgment to assess the need for signalization at signalized intersections;

4. Conduct a full traffic impact study resulting in the assessment and design of on and off site mitigation; and

5. Communicate effectively the results of transportation engineering analysis in written and verbal forms.

Recommended Textbook:

1. Roger P. Roess, Elena S. Prassas, & William R. McShane, *Traffic Engineering*, Fourth Edition, Pearson Higher Education, Inc., Upper Saddle River, NJ, 2011

2. Thomas R. Currin, *Introduction to Traffic Engineering a Manual for Data Collection and Analysis*, Second Edition, Cengage Learning, Stamford, CT, 2013.

Supplemental Resources:

1. *Highway Capacity Manual (HCM)*, Transportation Research Board (TRB), Washington D.C., 2010.

2. *Manual on Uniform Traffic Control Devices*, FHWA, U.S. Department of Transportation, Washington, D.C., 2009. Web site: http://mutcd.fhwa.dot.gov/.

3. Walter H. Kraft, Wolfgang S. Homburger, & James L. Pline, *Traffic Engineering Handbook*, Sixth Edition, Institute of Transportation Engineers (ITE), Washington, D.C., 2010.

4. Bastian J. Schroeder, Christopher M. Cunningham, Daniel J. Findley, Joseph E. Hummer, & Robert S. Foyle, *Manual of Traffic Engineering Studies*. Second Eddition, Institute of Transportation Engineers (ITE), Washington, D.C., 1994.

5. Nicholas J. Garber and Lester A. Hoel, *Traffic and Highway Engineering*, Fifth Edition, Cengage Learning, Toronto, ON, 2015.

Homework:

Homework is instrumental in helping you grasp fundamental concepts and in exposing you to techniques and skills for applying these principles to real-life situations. You may discuss homework problems with your classmates (NOT COPY THEIR SOLUTIONS), but please try all homework on your own initially. Additionally solutions must be developed and submitted independently. For homework activities that require the use of a computer software package, the student may be required to submit his or her input files. It is not appropriate to copy a computer file prepared by someone else and administrative actions will be taken in the event this occurs.

Use the following guidelines for homework preparation:

- Use clean, 8.5 x 11 inch paper. Engineering paper is preferred; neatness is important and appreciated.
- Write on only one side of the paper, and start a new problem on a new sheet of paper unless otherwise directed.
- Write your name and course number in the upper right corner of each page.
- Securely staple all pages.
- Show all of your work and state any assumptions clearly. Draw a block or a cloud around your final answer(s).
- For graphical solutions, use graph paper or computer generated plots. Label the axes of your graph and include units.
- When drawing sketches, use a straight edge.
- Fold the completed homework lengthwise (4.25 x 11 inches when folded)
- Write your name on the outside of the folded homework.

Late homework **is not accepted** unless specific arrangements are made with Dr. Hurwitz **prior** to the deadline.

Exams:

There will be one exam during the quarter plus one final exam. The exams must be taken as scheduled. If you MUST miss an exam for an emergency situation, please let Dr. Hurwitz know as soon as possible (prior to the exam). If you oversleep or skip an exam you will not have an opportunity to make it up. If you have a valid (according to Dr. Hurwitz) time conflict and you let him know in advance, there is the possibility of taking an exam at an alternate time.

Class Attendance:

You are expected to attend every class and participate in discussion. If you are not able to make class, notify the instructor before class. If you do miss class, it is your responsibility to find out what was covered and any administrative information that was presented.

Statement of Disruptive Behavior:

In an academic community, students, faculty and staff each have responsibility for maintaining an appropriate environment conducive to learning. Students, faculty and staff have the responsibility to treat each other with understanding, dignity and respect.

OSU's policy on disruptive behavior may be found at:
http://oregonstate.edu/studentconduct/disruptive-behavior

The following specific behavior is never allowed:

- No cell phones or pagers in class.
- No use of Laptops or other electronic devices for activity outside of its use in THIS class.
- No reading the Barometer during class.

Statement of Expectations for Student Conduct:

OSU's policy on academic honesty may be found at:
http://oregonstate.edu/studentconduct/http:/%252Foregonstate.edu/studentconduct/code/index.php

Statement Regarding Students with Disabilities:

"Accommodations are collaborative efforts between students, faculty and Disability Access Services (DAS). Students with accommodations approved through DAS are responsible for contacting the faculty member in charge of the course prior to or during the first week of the term to discuss accommodations. Students who believe they are eligible for accommodations but who have not yet obtained approval through DAS should contact DAS immediately at 737-4098."

CLASS & RECITATION SCHEDULE

Week	Day	Date	Content / Topic	Suggested Textbook Reading
1	Mon	09-29	Introduction to Traffic Engineering User, Vehicle, & Roadway Characteristics	Traffic Engineering (Chp 2, pg 17–26)
	Tues	09-30		
	Wed	10-01		
2	Mon	10-06	Introduction to Traffic Studies Traffic Stream Parameters: Volume, Speed, Density, etc.	Traffic Engineering (Chp 5, pg 95-104) Intro for Data Collection (Chp 2, pg 4-12)
	Tues	10-07		
	Wed	10-08		
3	Mon	10-13	Traffic Studies: Volume, Travel Time, and Delay Studies	Traffic Engineering (Chp 9, pg 165-178) Intro for Data Collection (Chp 3, pg 13-22)
	Tues	10-14		
	Wed	10-15		
4	Mon	10-20	Traffic Studies: (continued)	Traffic Engineering (Chp 10, pg 198-211)
	Tues	10-21		
	Wed	10-22		
5	Mon	10-27	Analysis of Intersection Delay	Traffic Engineering (Chp 21, pg 503-504)
	Tues	10-28		
	Wed	10-29	**Mid Term Exam**	
6	Mon	11-03	TIAS Procedures, Trip Generation	Trip Generation (Volume 1, pg 7-9, 14)
	Tues	11-04		
	Wed	11-05		
7	Mon	11-10	Signal Design, Timing, Phasing The MUTCD and Signal Warrants	Traffic Engineering (Chp 4, pg 65-94) MUTCD (Section 4C.01, pg 436-448)
	Tues	11-11		
	Wed	11-12		
8	Mon	11-17	Micro-simulation and the Traffic Engineer	
	Tues	11-18		
	Wed	11-19		
9	Mon	11-24	Signalized Intersection versus Roundabout Operations	
	Tues	11-25		
	Wed	11-26	***Individual Study Day (No Class)***	
10	Mon	12-01	Project Presentations Course review and conclusion	
	Tues	12-02		
	Wed	12-03		
11	Mon	12-08	**Final Exam (2:00pm to 4:00pm)**	

*This Schedule is flexible and subject to change

Course Evaluation:

Criteria	Others
Mid Term Exam	25%
Average of Labs Exercises and Homework	25%
Project/Oral Presentation	15%
Active Class Participation	5%
Final Exam	30%
Total	**100%**

Grading Scheme:

92.0 - 100.0 ➔ A
90.0 – 91.9 ➔ A-

88.0 – 89.9 ➔ B+
82.0 - 88.0 ➔ B
80.0 – 81.9 ➔ B-

78.0 – 79.9 ➔ C+
72.0 - 78.0 ➔ C
70.0 – 71.9 ➔ C-

60.0 - 69.9 ➔ D
59.9 or lower ➔ F