

Civil Engineering (CE) 392

Introduction to Highway Engineering – 4 credits

Spring 2015

Instructor:

Dr. David S. Hurwitz
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Teaching Assistant:

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Class Website:

<https://login.oregonstate.edu/cas/login> (This is the Canvas Login Site)

Lecture Schedule:

Monday, Wednesday & Friday
 11:00 am to 11:50 am
 Room 312, Kearney Hall

Recitation Schedule:

Thursday
 10:00 am to 11:50 am
 Room 312, Kearney Hall

Office Hours:

Instructor:

Monday: 2:30 pm to 3:30 pm
 Wednesday: 2:30 pm to 3:20 pm, or by appointment via email

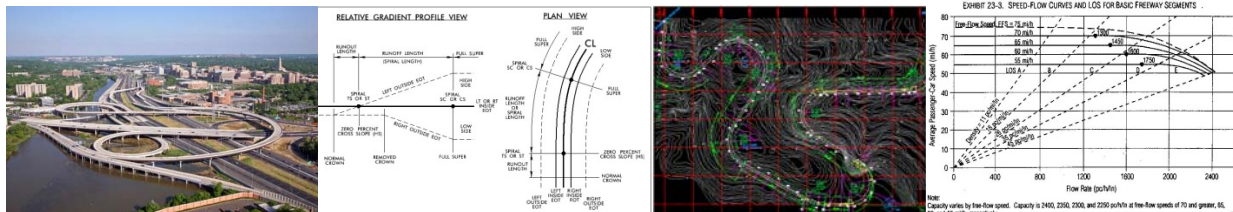
Teaching Assistant:

Tuesday: 1:00 pm to 2:00 pm
 Thursday: 1:00 pm to 2:00 pm

Open-door policy: Students are welcome to stop by any time, if the door to Dr. Hurwitz's office is open, knock and say hello. If you want to be certain that he is available to meet, you can also set up an 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:

Introduction to highway engineering standards, geometric design, cross section and roadside design, highway surfaces, pavement design, highways and the environment, and highway construction and maintenance.

Course Prerequisite:

CE 361 Surveying Theory

Course Learning Outcomes:

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

1. Understand the basic elements of highway design;
2. Identify components critical to the safe horizontal, vertical, and cross-sectional design of roadways;
3. Learn to design basic highway sections while balancing all of the independent variables critical to safe design;
4. Learn how to design a safe road for appropriate users;
5. Identify the elements critical to successful pavement design and learn how to prepare basic flexible pavement designs using current design procedures.
6. Participate in group decision making and consensus building on issues pertaining to transportation and highway engineering, particularly safety issues.
7. Understand why stakeholders need to reach consensus in planning and decision making for transportation projects.

Recommended Textbook:

1. *Principles of Highway Engineering and Traffic Analysis, 5th edition.* Fred L. Mannering & Scott S. Washburn. John Wiley and Sons, Inc. 2013.
2. There will be several supplemental handouts for this class but there is no need to purchase an additional text.

Supplemental Resources:

1. *Geometric Design of Highways and Streets.* The American Association of State Highway and Transportation Officials, 2004.
2. *Highway Capacity Manual.* The Transportation Research Board, 2010.
3. *Highway Engineering, 7th edition.* Paul H. Wright & Karen Dixon. John Wiley and Sons, Inc. 2004.

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 the following in the upper right corner of each page:
 - CE 392
 - Your Name
 - Page number / Total pages
- Securely staple all pages; do not fold or paper clip together.
- 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.

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

Exams:

There will be at least one exam during the quarter plus a comprehensive final exam. Our final exam is currently scheduled for Friday (6/12) at 7:30am. 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. You will not be permitted to use MP3 players, telephones, or similar devices during the exam.

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. Unexcused absences may lower your final course grade. 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.

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."

Course Evaluation:

Criteria	Weight
Average of Tests	20%
Average of Assignments	20%
Participation	5%
Highway Design Project	25%
Final Exam (Wed 6/11 at 2pm-4pm)	30%
Total	100%

Grading Scheme:

Range	Letter Grade
92.0 to 100.0	A
90.0 to 91.9	A -
88.0 to 89.9	B +
82.0 to 88.0	B
80.0 to 81.9	B -
78.0 to 79.9	C +
72.0 to 78.0	C
70.0 to 71.9	C -
60.0 to 69.9	D
59.9 or lower	F

CLASS & RECITATION SCHEDULE

Week #	Weekday	Dates	Important Dates	Topics
1	Monday	03/30		Basic Traffic Engineering Concepts, Capacity, and Level of Service
	Wednesday	04/01		
	Thursday	04/02	Recitation	
	Friday	04/03		
2	Monday	04/06		Corridor Selection Matrix, Horizontal Alignment, Simple Surveying
	Wednesday	04/08		
	Thursday	04/09	Recitation	
	Friday	04/10		
3	Monday	04/13		Circular Curves, Sight Distance (Stopping, Passing, Decision)
	Wednesday	04/15		
	Thursday	04/16	Recitation	
	Friday	04/17		
4	Monday	04/20		Environmental Impacts of Transportation
	Wednesday	04/22		
	Thursday	04/23	Recitation	
	Friday	04/24		
	Monday	04/27		Superelevation
	Wednesday	04/29		
	Thursday	04/30	Recitation (Kear 305)	
	Friday	05/01	Exam I	
6	Monday	05/04		Vertical Curves, Integrating Vertical and Horizontal Alignments, Cross Sections
	Wednesday	05/06		
	Thursday	05/07	Recitation	
	Friday	05/08		
7	Monday	05/11		Roadside Design, Traffic Barriers, Drainage
	Wednesday	05/13		
	Thursday	05/14	Recitation	
	Friday	05/15		
8	Monday	05/18		Pavement Design, Clear Zones
	Wednesday	05/20		
	Thursday	05/21	Recitation	
	Friday	05/22		
9	Monday	05/25	No Class – Memorial Day	Intersections and Interchanges
	Wednesday	05/27		
	Thursday	05/28	Recitation	
	Friday	05/29		
10	Monday	06/01		Turning Radius, and Intelligent Transportation Systems
	Wednesday	06/03		
	Thursday	06/04	Recitation	
	Friday	06/05		

Note: This outline is flexible and subject to change.