

Transportation Engineering (CE 3500)

Spring 2011

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Office Hours: Monday and Wednesday, 1:00–2:30, Friday 1:00–2:00, and by appointment

Course Website: <http://www.uwyo.edu/sboyles/teaching/ce3500/index.html>

Welcome to CE 3500! This course will introduce you to the fundamentals of transportation engineering, teaching basic concepts and elementary design methods. CE 3500 is broadly structured in three parts, each corresponding to a different aspect of the field: *planning*, working on a large geographic scale and thinking up to 30 years in the future to develop general policies such as where roadways need to be constructed; *operations*, working at the scale of individual roadways or corridors to quantify how easily people can travel; and *design*, addressing the specifics of how to implement a plan which is effective operationally — for instance, designing a traffic signal which avoids excessive delay; designing a windy road through the mountains which is as safe as possible; or designing pavement which can withstand heavy truck traffic. You will learn these concepts through lectures and individual homework, then have the opportunity to apply them in group assignments with open-ended design problems.

Class meets Monday, Wednesday, and Friday from 10:00–10:50 in CR 219, and for lab on Thursday **12:30–2:00** in CR 103. (Note that the lab starts at 12:30, not 12:15 as shown in the online schedule.)

Course Materials

There is no textbook for this course. I will provide notes on selected topics and post lecture slides throughout the course.

Grading

Final course grades are determined by performance on individual homeworks, group assignments (which will largely take place during the scheduled lab time on Thursday), and two in-class exams. The weight of each of these factors is as follows:

Category	Weight
Individual Homeworks	35%
Group Assignments	35%
Exams	30%

These components are designed to work together: the exam focuses on concepts, while the group assignments involves application and skills involved in engineering practice. The homeworks give you a chance to learn these skills and practice them throughout the semester. Groups of two or three students will be determined during the first lab session. The group assignments will take the form of simple design exercises using software tools learned during the lab hour; the group(s) with the best solutions will be awarded bonus points. At the end of the semester, groups will also be expected to present one or more of their designs.

Students who require an extension on homework must notify me three days in advance of the deadline. No extensions will be given on group assignments. Students requiring an exam on a different date must notify me seven days in advance; the make-up exam may be more difficult than the general exam. Otherwise, no late work will be accepted. Exceptions can be made for documented medical illness or family emergencies.

Miscellanea

The University of Wyoming is built upon a strong foundation of integrity, respect and trust. All members of the university community have a responsibility to be honest and the right to expect honesty from others. Any form of academic dishonesty is unacceptable to our community and will not be tolerated [from the UW General Bulletin]. Teachers and students should report suspected violations of standards of academic honesty to the instructor, department head, or dean. Other University regulations can be found at: <http://uwadmweb.uwyo.edu/legal/universityregulations.htm>

If you have a physical, learning, or psychological disability and require accommodations, please let me know as soon as possible. You must register with, and provide documentation of your disability to University Disability Support Services (UDSS) in SEO, room 330 Knight Hall.)

Schedule

A tentative class schedule is shown on the next page. All dates and topics are subject to change.

Date	Topic
Planning	
1/10	Course introduction
1/12	Four-step model overview
1/13	Lab: Form groups
1/14	Trip generation
1/17	Trip distribution
1/19	Mode choice
1/20	Lab: Planning software
1/21	Route choice: Fundamentals
1/24	NO CLASS: TRB Conference
1/26	NO CLASS: TRB Conference
1/27	No lab
1/28	Route choice: Scalable techniques
Operations	
1/31	Traffic flow concepts
2/2	Flow-density relationships
2/3	Lab: Data collection and simulators
2/4	Shockwaves: Concepts
2/7	Shockwaves: Examples
2/9	Intersections: Gap acceptance
2/10	No lab
2/11	Intersections: Basic queuing theory
2/14	Intersections: Fancier queues
2/16	Signal operations
2/17	Lab: Simulating signal operations
2/18	Signal optimization and design
2/21	Level of service and HCM
2/23	Undivided highways LOS
2/24	No lab
2/25	Freeway LOS
2/28	Signal LOS
3/2	Signal LOS
3/3	Lab: Highway Capacity software
3/4	MUTCD and warrants
3/7	Combining operations and planning
3/9	Exam review
3/10	Lab: Exam 1
3/11	Intelligent Transportation Systems
3/14	NO CLASS: Spring break
3/16	NO CLASS: Spring break
3/18	NO CLASS: Spring break

Date	Topic
Design	
3/21	Vehicle performance and physics
3/23	Vertical curves
4/21	No lab
3/25	Vertical curves
3/28	Horizontal curves
3/30	Horizontal curves
4/21	Lab: Roadway design in practice
4/1	Horizontal curves
4/4	Innovative geometric design
4/6	Roadway safety
4/7	No lab
4/8	Flexible Pavements
4/11	Flexible Pavements
4/13	Rigid Pavements
4/14	Lab: Pavement design
4/15	Rigid Pavements
4/18	Critical Issues in Transportation
4/20	Exam review
4/21	Lab: Exam 2
4/22	NO CLASS: Easter Break
4/25	Project presentations
4/27	Project presentations
4/28	No lab
4/29	Project presentations, course wrap-up