

**CE 363 TRANSPORT ENGINEERING AND PAVEMENT DESIGN
(4 Units)
Fall 2019 Course Syllabus**

**Days and Times: Monday and Wednesday: 8am~8:50am, Friday: 3:00pm~4:50pm
Location: CE201**

Catalog Description: Basis for planning, design, and operation of transportation facilities. Driver and vehicle Description: performance characteristics, highway geometric and pavement design principles; traffic analysis and transportation planning. Prerequisite: Advance standing

Course Goals: Students should develop a fundamental understanding of transportation engineering and pavement design. Specifically, students should understand the basic concepts and engineering principles of transportation engineering and pavement design. They should be able to apply these concepts and principles to common problems in the design, operation, and planning of transportation facilities. Students should also be able to solve problems in transportation and pavements for the Fundamentals of Engineering examination.

ABET: The Accreditation Board for Engineering and Technology (ABET) accredits the Civil Engineering curriculum at the University of Arizona. This course fits in the Civil Engineering curriculum, and satisfies ABET outcomes, as defined below and on the “ABET 2010 Criteria Course Classification Form” that is attached.

Primary ABET Outcomes

- C. Ability to design a system, component, or process to meet desired needs
- L. Pass the FE exam as the first step towards professional registration
- M. Be proficient in the major areas of civil engineering

Secondary ABET Outcomes

- A. Apply mathematics, science, and engineering principles
- B. Ability to design and conduct experiments and interpret data
- E. Ability to identify, formulate, and solve engineering problems
- H. The broad education necessary to understand the impact of engineering solutions in a global context
- K. Ability to use the techniques, skills, and modern engineering tools necessary for engineering practice

Instructor Information:

- Dr. Yao-Jan Wu
 - Civil Engineering Building 324F
 - Office Phone: (520) 621-6570
 - Email: yaojan@email.arizona.edu
 - Open Office Hours:
 - Monday/Wednesday: 9:00am~10:00am (one hour after the class)
 - Stop by is welcome
 - Other times available by appointment

CE 363 Syllabus (Latest Revision: 9/22/2019)**Teaching Assistant Information**

- Xiaobo Ma
 - Civil Engineering Graduate Student
 - Email: xiaoboma@email.arizona.edu
 - Open Office Hours (Subject to change)
 - Tuesday - 1 Hour - 2pm ~ 3pm
 - Thursday - 1 Hour - 2pm ~ 3pm
 - Office: CE214 (for office hours only)
 - Other times available by appointment (Office CE324G1 – Smart Transportation Lab)

Text/Notes/Materials/Supplies:

Required Text: Principles of Highway Engineering and Traffic Analysis, 6th edition, F. Mannering and S. Washburn, Wiley 2016. ISBN # 978-1-119-30502-6

Make sure you get the 6th edition. Earlier editions will not work – many equations, methods and assumptions have been changed.

Additional materials supplied via D2L.

Grading and Assessment:

5% in-class quizzes/exercises, 10% homework, 20% design projects, 20% for each of two in-class exams, and 25% for a comprehensive final exam.

A = above 90%; B = 80 to 89%; C = 70 to 79%; D = 60 to 69%; E = below 60%.

Please note that it is a very clear cut between grades. For example, 89.99% is B. There are several extra credit activities offered during the semester. No extra credit activities are allowed after the final exam.

Homework

There will be homework assignments. Each assignment is generally scored out of 100 points.

- Working on homework 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 any computer input and output must be written by each person individually.
- **Homework Submission:** You are required to turn in your homework on time (homework assignments are usually due one week after they are posted). The assignment must be turned in to the TA or the Instructor before the beginning of the class (8am). Every five minutes late will be 5% off. Your lowest homework score will be eliminated. The TA will grade either the odd or even number of problems chosen at random.
- Copying another person's work without attribution, including copying of any part or the whole of computer files or material from the Internet, is considered plagiarism. It will be prosecuted as a violation of the University of Arizona Student Code of Conduct in

CE 363 Syllabus (Latest Revision: 9/22/2019)

accordance with the Code of Academic Integrity. Both codes are published on-line at <http://deanofstudents.arizona.edu/policiesandcodes/>. It is the student's responsibility to be familiar with these Codes.

Design Project:

There will be four design projects completed in groups of four members. Each project will culminate in a written report that will be scored out of 100 points. Grading rubrics for these project reports will be provided. Consistent with civil engineering practice, the design exercises receive no credit if they are late.

The final project is worth 200 points. An end-of-semester peer evaluation will also count for 100 points toward the individual student's design project grade. Hence, each student's grade for the design projects will be out of 600 points.

D2L:

The primary source for homework, solutions, design project activities, and other course materials will be D2L. Students may access D2L through <http://d2l.arizona.edu/>. **It is the students' responsibility to check this site regularly.**

Teaching Philosophy/Tips for Success in Course:

1. Check out **D2L** for updates.
2. **Study time:** The normal after-class study time is 2 hours for a one-credit hour class. You're expected to study 8 hours (weekly average) outside this 4-credit-hour class.
3. **Class Attendance:** Information lectured in the class cannot always be found in the textbook or course slides. Some random quizzes and bonus questions will be given in the class.
4. Please feel free to give your instructor feedback (in person, mail, or email). Anonymous online feedback is available at <https://www.yaojan.org/course-feedback>. I will try my best to help you. Note that I cannot reply if the feedback is anonymous.

Course Policy:

1. Respect your classmates (on time and be quiet). No use of cell phones in the class.
2. Class Attendance. You are expected to attend all lectures and computer labs scheduled for this course. If you cannot attend a specific lecture, please get instructor's permission ahead of the class time or provide relevant document (e.g. doctor's note) afterwards.

CE 363 Syllabus (Latest Revision: 9/22/2019)

- a. All holidays or special events observed by organized religions will be honored for those students who show affiliation with that particular religion (<http://policy.arizona.edu/human-resources/religious-accommodation-policy>)
 - b. Absences pre-approved by the UA Dean of Students (or Dean's designee) will be honored.
 - c. If you miss more than three classes without notifying your instructor, you will be dropped out the class.
 - d. The UA's policy concerning Class Attendance, Participation, and Administrative Drops is available at: <http://catalog.arizona.edu/policy/class-attendance-participation-and-administrative-drop>
3. If you have any questions regarding your grade, please let me know **within 7 days** after your grade is returned. Any corrections will not be made after 7 days.
 4. University Policy 200E on prohibited behaviors: <http://policy.arizona.edu/human-resources/nondiscrimination-and-anti-harassment-policy>
 5. The UA Threatening Behavior by Students Policy prohibits threats of physical harm to any member of the University community, including to oneself. See <http://policy.arizona.edu/education-and-student-affairs/threatening-behavior-students>
 6. UA Academic policies and procedures are available at <http://catalog.arizona.edu/policies>
 7. Student Assistance and Advocacy information is available at <http://deanofstudents.arizona.edu/student-assistance/students/student-assistance>
 8. Confidentiality of Student Records (<http://www.registrar.arizona.edu/personal-information/family-educational-rights-and-privacy-act-1974-ferpa?topic=ferpa>)
 9. Accessibility and Accommodations:

It is the University's goal that learning experiences be as accessible as possible. If you anticipate or experience physical or academic barriers based on disability or pregnancy, please let me know immediately so that we can discuss options. You are also welcome to contact Disability Resources (520-621-3268) to establish reasonable accommodations.

Please be aware that the accessible table and chairs in this room should remain available for students who find that standard classroom seating is not usable.

(<http://drc.arizona.edu/instructors/syllabus-statement>)

CE 363 Syllabus (Latest Revision: 9/22/2019)

Tentative Schedule: (*Schedules and topics may change, watch D2L for updates*)

Week	Day	Date	Topics	Readings	Assignments
1	M	Aug. 26	Course Overview		
	W	Aug. 28	Introduction to Transportation Engineering	ITE Video RM-1, Ch 1	
	F	Aug. 30	Vehicle Dynamics	Ch 2.1-2.5 Ch 2.6-2.9	A#1 Out
2	M	Sep. 2	Labor day (No Class)		
	W	Sep. 4	Vehicle Dynamics	Ch 2.9, RM-2	
	F	Sep. 6	Geometric Design	Ch 3.1 - 3.2	
3	M	Sep. 9	Geometric Design	Ch 3.3-3.4	A#1 Due
	W	Sep. 11	Geometric Design		
	F	Sep. 13	Geometric Design/Pavement Design		A#2 Out
4	M	Sep. 16	Pavement Design	Ch4, RM-3	
	W	Sep. 18	Pavement Design	Ch4	
	F	Sep. 20	Pavement Design PAG Pedestrian/Bike Count Program	Ch4	A#2 Due A#3 Out P#1 Out
5	M	Sep. 23	Pavement Design/Traffic Flow Theory	Ch 5.1~5.4	
	W	Sep. 25	Traffic Flow Theory (Online Class) (Optional: ITS Arizona Annual Conference: 9/24~25)	Ch 5.5	
	F	Sep. 27	Traffic Flow Theory		A#3 Due (updated)
6	M	Sep. 30	Queuing Theory		A#4 Out
	W	Oct. 2	Signalized Intersections	Ch7.1~7.4	
	F	Oct. 4	Midterm 1 Exam		
7	M	Oct. 7	Signalized Intersections		
	W	Oct. 9	Signalized Intersections	Ch7.5	A#4 Due A#5 Out;
	F	Oct. 11	No Class – Honors Convocation (3pm~5pm only)		
8	M	Oct. 14	Signalized Intersections		P#1 Due;
	W	Oct. 16	Highway Capacity and LOS	Ch6.1~6.4	
	F	Oct. 18	Highway Capacity and LOS VISSIM Installation	Ch6.5~6.7 RM-4	A#5 Due ICE#0
9	M	Oct. 21	Highway Capacity and LOS		
	W	Oct. 23	Highway Capacity and LOS		P#2 Out A#6 Out
	F	Oct. 25	Lab 1: Introduction to Traffic Simulation		ICE#0 Due ICE#1Out
10	M	Oct. 28	Traffic Detection Systems	RM-5	

CE 363 Syllabus (Latest Revision: 9/22/2019)

	W	Oct. 30	Midterm 2 Review		A#6 Due
	F	Nov. 1	Lab 2: Traffic Simulation		ICE#2 Out ICE#1 Due
11	M	Nov. 4	Transportation Studies		
	W	Nov. 6	Transportation Planning		P#3 Out
	F	Nov. 8	Midterm 2 Exam		ICE#2 Due
12	M	Nov.11	Veterans Day (No Class)		
	W	Nov. 13	Transportation Planning	Ch8.1 – 8.5	P#2 Due
	F	Nov. 15	Lab 3: Traffic Simulation		ICE#3 Out
13	M	Nov. 18	Transportation Planning		
	W	Nov. 20	Transportation Planning/Traffic Safety	RM-6 Ch8.6 – 8.7;	
	F	Nov. 22	Final Project	RM-7	A#7 Out Final Project out P#4 Out
14	M	Nov. 25	Project 3 Sales Pitch: Guest Judge (Blake Olofson, City of Tucson)		P#3 Due 7am
	W	Nov. 27	Transportation Planning		
	F	Nov. 29	Thanksgiving Break: No class		
15	M	Dec. 2	Lab 4: Intersection Analysis (P4 Help)		
	W	Dec. 4	Lab 4: Intersection Analysis (P4 Help)		
	F	Dec. 6	Final Project Presentation		A#7 Due
16	M	Dec. 9	Final Review		
	W	Dec. 11	Invited Talk: (TBD) or ITS		
	F	Dec. 13	Final Exam Week Starts (No class)		
17	W	Dec. 18	<u>Final Exam (8:00-10:00am)</u>		

Ch# - Chapter Number ; A# - Assignment Number; RM# - Reading Material Number.