THE PENNSYLVANIA STATE UNIVERSITY
DEPARTMENT OF CIVIL AND ENVIRONMENTAL ENGINEERING

CE 321: Highway Engineering

Spring 2011

Syllabus Revision 2; January 20, 2011

Course Objectives:

- To understand the significance and role of transportation in society and within the civil engineering profession.
- To provide the fundamentals necessary to solve highway engineering problems encountered on the Fundamentals of Engineering (FE) or Principles and Practice of Engineering (PE) exams in civil engineering.
- To introduce fundamentals of traffic engineering and transportation planning analysis
- To learn and use highway engineering software applications.

Lecture Hours:

T, Th	9:45 – 11:00 AM	Sec 1 and 2	62 Willard

Lab Lectures:

F	8:00 – 9:55 AM	Sec 1	228 Sackett Building (CAD Lab)
F	10:10 – 12:05 PM	Sec 2	228 Sackett Building (CAD Lab)

Instructor and Teaching Assistant Contact Information:

Instructor & Teaching Assistant	**Prof. Paul P. Jovanis**	**Dan Kwon**
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Office Hours	T, Th 3:00 –4:30 PM Other times by appointment	Mon., Th., 6-8PM 228 Sackett

Required Text: Mannering, F. L., S.S. Washburn and W. P. Kilareski. Principles of Highway Engineering and Traffic Analysis, Fourth Edition, John Wiley & Sons, Inc., 2009 (referred to as MWK syllabus).

Grading:

Periodic chapter quizzes (7 quizzes at 6% each)	42%
Self Assessment Exercises	15%
Lab project	18%
Lab and homework assignments	25%
Total	**100%**

There may be a maximum adjustment of 5 percentage points in the share of the grade for any of the components above, depending on the evolution of the class.

Students are responsible for all reading assignments prior to class meeting times. The self assessment exercises are intended to provide the student with an opportunity to assess their knowledge of basic foundational material in each chapter prior to the lectures.

The enclosed course syllabus will serve as a general guide for the topics covered during each scheduled period, however there may be minor adjustments required by progress on individual lectures. Class lectures are contained on the course Angel site which will also be used to facilitate communication within the classroom.

There will be 7 quizzes based upon material in Chapters 2-8. Quizzes will contain primarily open-book questions; if there is a closed book portion to a quiz, it will be announced ahead of time. For open-book portions, students will be permitted to use the course textbook, notes, and homework solutions. Calculators will be needed for all quizzes. ***There is no final exam for this course.***

All homework assigned during course and laboratory lectures are individual efforts. These assignments will be made by the course or laboratory instructor during regularly scheduled periods. All assignments will be graded and returned as soon as possible. Adequate time will be given to complete all assignments – *late coursework will not be accepted unless given approval by the course instructor prior to the due date*. Be sure to clearly state all assumptions for given problems; provide orderly problem calculations; and, clearly identify solutions (include units).

Class attendance is highly recommended. Active student participation during lecture and laboratory periods is encouraged. Example problems will be completed during class. Time will be provided during many lab periods to make progress on assignments and the lab project. This is an excellent opportunity to learn the engineering material required for this course and the FE while under the guidance of the TA.

University Academic Integrity Policy:

"Academic integrity is the pursuit of scholarly activity in an open, honest and responsible manner. Academic integrity is a basic guiding principle for all academic activity at The Pennsylvania State University, and all members of the University community are expected to act in accordance with this principle. Consistent with this expectation, the University's Code of Conduct states that all students should act with personal integrity, respect other students' dignity, rights and property, and help create and maintain an environment in which all can succeed through the fruits of their efforts.

Academic integrity includes a commitment not to engage in or tolerate acts of falsification, misrepresentation or deception. Such acts of dishonesty violate the fundamental ethical principles of the University community and compromise the worth of work completed by others.**"**

—From Penn State's *University Faculty Senate Policy 49-20*
The University Academic Integrity Policy applies to all assignments and exams conducted in CE 321 during the Spring 2011 semester.

CE 321: Syllabus of Lectures and Quizzes

Class #	Date	Reading	Lecture Topic
1	T 1/11	Class Syllabus	Class Introduction
2	Th 1/13	MWK Chap 1 Self Assessment 1	Highway Users and Current Issues
3	F 1/14	Lab manual	Laboratory #1
4	T 1/18	MWK 2.1 – 2.5 Self-Assessment 2	Vehicle Performance and Resistance
5	Th 1/20	MWK 2.6 – 2.8	Tractive Effort and Vehicle Acceleration
6	F 1/21	Lab manual	Laboratory #2
7	T 1/25	No Class	No class
8	Th 1/27	MWK 2.9.1 – 2.9.6 Self Assessment 3	Vehicle Braking – practical and theoretical
9	F 1/28	Lab manual	Laboratory #3
10	T 2/1	MWK 3.1 - 3.2; 3.4 Self Assessment 4	Introduction to Geometric Design and Horizontal Alignment – I
11	Th 2/3	MWK Chapter 2	***Quiz: Chapter 2***
12	F 2/4	Lab manual	Laboratory #4
13	T 2/8	MWK 3.4	Horizontal Alignment - Examples
14	Th 2/10	MWK 3.3	Vertical Alignment – I
15	F 2/11	Lab manual	Laboratory #5
16	T 2/15	MWK 3.3.5-3.3.6	Vertical Alignment – Examples
17	Th 2/17	Class Notes Self-Assessment 5	Cross Sectional Elements
18	F 2/18	Lab manual	Laboratory #6
19	T 2/22	MWK Chapter 3	***Quiz: Chapter 3***
20	Th 2/24	MWK 4.1-4.4 Self Assessment 6	Flexible Pavement Design
21	F 2/25	Lab manual	Laboratory #7
22	T 3/1	MKW 4.5 – 4.6	Flex Pave. Examples; Rigid Pavement Design
23	Th 3/3	MWK Chapter 4	***Quiz: Chapter 4***
24	F 3/4	Lab manual	Laboratory #8
Spring Break March 7-11 NO CLASS			
25	T 3/15	MWK 5.1 – 5.4 Self Assessment 7	Traffic Stream Parameters & Models
26	Th 3/17	MWK 5.5	Queuing Theory
27	F 3/18	Lab manual	Laboratory #9
28	T 3/22	MWK 5.6	Traffic Analysis @ Highway Bottlenecks
29	Th 3/24	MWK Chapter 5	***Quiz: Chapter 5***
30	F 3/25	Lab manual	Laboratory #10
31	T 3/29	MWK 6.1 – 6.4 Self-Assessment 8	Capacity and LOS: Freeways and Multi-Lane
32	Th 3/31	MKW 6.5	Capacity and LOS: 2-lane Highways
33	F 4/1	Lab manual	Laboratory #11

34	T 4/5	MWK Chapter 6	***Quiz: Chapter 6***
35	Th 4/7	MWK 7.1 – 7.4 Self Assessment 9	Signalized Intersection Operation
36	F 4/8	Lab manual	Laboratory #12
37	T 4/12	MWK 7.5 – 7.8	Signal Timing
38	Th 4/14	MWK 8.1 – 8.4 Self Assessment 10	Transportation Planning/Trip Generation
39	F 4/15	Lab manual	Laboratory #13
40	T 4/19	MWK Chapter 7	**Quiz: Chapter 7**
41	Th 4/21	MWK 8.5	Mode Choice
42	F 4/22	Lab manual	Laboratory #14
43	T 4/26	MWK 8.6	Traffic Assignment
44	Th 4/28	MWK: Chapter 8	***Quiz: Chapter 8***
45	F 4/29	Lab manual	Laboratory Wrap-up
Final Exam Week May 2-6 **BEST WISHES!!!**			