

**THE PENNSYLVANIA STATE UNIVERSITY
Department of Civil & Environmental Engineering**

**CE 583 - Bituminous Mixtures & Materials
Spring Semester 2010**

Instructor: Mansour Solaimanian, Ph.D., P.E.

Lecture Time:

Monday 11:15 A.M. – 1:00 P.M. and Wednesday 11:15 A.M. – 12:05 p.m.

Lecture Room:

Mondays at 127 Henderson South and Wednesdays at 222 Thomas

Office: Room 206M (Sackett), Room 221 (LTI)

Phone: 863-5271 (Sackett), 863-1903 (LTI), **e-mail:** msol@psu.edu

Office Hours: Monday: 1:00- 2:00 p.m., Wednesday: 12:00 – 1:00 p.m.
(Other times available by appointment)

Prerequisites: CE 336 MATERIALS SCIENCE FOR CIVIL ENGINEERS

GRADING:

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| • EXAM NO. 1 | 20% |
| • EXAMNO. 2 | 20% |
| • EXAM NO. 3 | 30% |
| • HOMEWORK | 10% |
| • DESIGN PROJECT | 10% |
| • PRESENTATIONS | 10% |

Homework

Please hand in at the beginning of class on the day when due as announced in class or as posted on the web site for the course.

Course Description:

Composition, physical behavior, design, production, construction, and performance of bituminous materials and mixtures.

Course Objectives

The goal of the course is to introduce graduate students and seniors to bituminous materials and mixtures.

Textbooks:

1. Hot Mix Asphalt Materials, Mixture Design, and Construction, 2nd Edition, 1996, NCAT, Roberts et al;
2. Asphalt Institute Superpave Mix Design, Superpave Series No.2 (SP-2)

References

1. The Aggregate Handbook, Editor: [Richard D. Barksdale](#), National Stone Association (1991)
2. Hot Mix Asphalt, Materials, Mixture Design, and Construction, NAPA, 1986.
3. Performance Graded Asphalt Binder Specification and Testing, Superpave Series No. 1 (SP-1); *Asphalt Institute*, (<http://www.asphaltinstitute.org>).
4. Mix Design Methods for Asphalt Concrete Manual Series (MS-2), *Asphalt Institute*, (<http://www.asphaltinstitute.org>).

Communications

The ANGEL system will be used for communication, postings, and other course-related items as the need arises. You could also e-mail me as needed.

Examinations

Students are expected to adjust work, travel and personal commitments to accommodate the examinations to the fullest extent possible.

Academic Integrity

Students are expected to uphold the highest academic integrity. Any deviation will result in disciplinary measures consistent with University policies. Please refer to the College of Engineering Academic Integrity website for information regarding Academic Integrity. <http://tlt.its.psu.edu/plagiarism/facguide/policy>.

Spring 2010 Flu Protocols. In compliance with Pennsylvania Department of Health and Centers for Disease Control recommendations, students should NOT attend class or any public gatherings while ill with influenza. Students with flu symptoms will be asked to leave campus if possible and to return home during recovery. The illness and self-isolation period will usually be about a week. It is very important that individuals avoid spreading the flu to others.

Most students should be able to complete a successful semester despite a flu-induced absence. Faculty will provide students who are absent because of illness with a reasonable opportunity to make up missed work. Ordinarily, it is inappropriate to substitute for the missed assignment the weighting of a semester's work that does not include the missed assignment or exam. Completion of all assignments and exams assures the greatest chance for students to develop heightened understanding and content mastery that is unavailable through the weighting process. The opportunity to complete all assignments and exams supports the university's desire to enable students to make responsible situational decisions, including the decision to avoid spreading a contagious virus to other students, staff, and faculty, without endangering their academic work.

Students with the flu do not need to provide a physician's certification of illness. However, ill students should inform their teachers (but not through personal contact in which there is a risk of exposing others to the virus) as soon as possible that they are absent because of the flu. Likewise students should contact their instructors as quickly as possible to arrange to make up missed assignments or exams.

CE 583 - Bituminous Mixtures & Materials, Spring 2010

Session	Date	Subject
1	Tue 1/12	Introduction to Engineering Materials
2	Thr 1/14	Materials Behavior - Stress-Strain Relationships
3	Tue 1/19	Materials Behavior – Viscoelastic Properties
4	Wed 1/20	Aggregates for Construction – Properties & Tests
5	Mon 1/26	Aggregates – Gradation & Blending
6	Wed 1/27	Aggregates – Frictional Properties & Skid Resistance
7	Mon 2/1	Aggregates – Management & Stockpiling
8	Wed 2/3	Asphalt Binders – Properties and Production
9	Mon 2/8	EXAM No. 1 – Material Behavior & Aggregates
10	Wed 2/10	Asphalt Binders – Testing & Evaluation
11	Mon 2/15	Asphalt Binders – Testing & Evaluation
12	Wed 2/17	Asphalt Binders – Testing & Evaluation
13	Mon 2/22	Asphalt Binders – Grading & Specifications - I
14	Wed 2/24	Asphalt Binders – Grading & Specifications - II
15	Mon 3/1	Asphalt Binders – Grading & Specifications - III
16	Wed 3/3	LTPPBIND
17	Mon 3/8	SPRING BREAK – NO CLASSES
18	Wed 3/10	SPRING BREAK – NO CLASSES
19	Mon 3/15	EXAM No. 2 – Asphalt Binders
20	Wed 3/17	<i>Asphalt Concrete – Properties & Tests</i>
21	Mon 3/22	Asphalt Concrete – Volumetric Parameters
22	Wed 3/24	<i>Asphalt Concrete – Mix Design Concepts</i>
23	Mon 3/29	<i>Asphalt Concrete – Superpave Design</i>
24	Wed 3/31	Asphalt Concrete – Moisture Damage Considerations
25	Mon 4/5	Material Properties for MEPDG
26	Wed 4/7	Stone Mastic Asphalt
27	Mon 4/12	Warm Mix Asphalt
28	Wed 4/14	Visiting Asphalt/Pavement Laboratories
29	Mon 4/19	How Asphalt Plant Works - Video
30	Wed 4/21	Materials Management & Quality Control
31	Mon 4/26	Discussion of Term Project
32	Wed 4/28	EXAM No. 3 – Asphalt Mixtures

NOTE: This schedule is subject to change. The dates for delivering specific topics are tentative and may change as the course proceeds.