

# Department of Civil Engineering

## CE 5355/CE4375/CE4376/CE4377– Advanced Civil Engineering Materials/Elective I/Elective II/Elective III

**Instructor:** Vivek Tandon, x-6924, vivek@utep.edu

**Office:** A-221

**Class Time:** MW 4:30-6:00 PM

**Room:** UGLC 340

**Office Hours:** MW 10:30 to 11:30 AM or scheduled

### Text/Reference Books

1. *Hot Mix Asphalt Materials, Mixture Design, and Construction*, (second edition) by F.L. Roberts, P.S. Kandhal, E.R. Brown, D.Y. Lee, and T.W. Kennedy; NAPA Research and Education Foundation, 5100 Forbes Blvd., Lanham, Maryland 20706-4413. Phone: 301-731-4748, 2<sup>nd</sup> ed., 1996.
2. *Highway Materials, Soils and Concretes (Third Edition)* by Harold N. Atkins, Prentice Hall
3. *Fundamentals of high-performance concrete 2nd edition*, by Edward G. Nawy, John Wiley, c2001
4. *Construction Methods and Management*, S.W. Nunnally, 8<sup>th</sup> Edition, Prentice Hall
5. *High-Strength concrete A Practical Guide*, M.A. Caldarone, 1<sup>st</sup> Edition, Taylor and Francis

### Catalog Description

Design, characterization, and construction of Portland cement concrete (PCC) including high performance and lightweight concrete; and design, characterization, and construction of asphalt concrete mixtures including Superpave.

### Course Content

The course will be taught in three parts. In the first part of the course, PCC design, High-Performance Concrete design, and Light Weight Concrete design will be covered. In the second part of the course, selection of asphalt, asphalt concrete mix design, and testing of asphalt concrete will be covered. In the last part of the course, concrete construction and concrete formwork design will be covered.

### Field Trip

To ensure proper understanding of materials, field trips are essential. In this course, one to two field trips will be organized. One of the first field trip will be to an asphalt concrete construction site, and it is expected that this field trip will be in **September, October or November**. In the other trip, students will visit Portland cement concrete construction site and it is expected that this field trip will be in **October or November**. In both trips, students will be able to visit the construction site and visualize application of topic learned in class.

## Homework

To complement the course content covered in the class, homework will be assigned on regular basis. All homework should be neat and of professional quality. The poor quality of homework will result in reduced grades. In addition to regular homework, some reading (technical papers) homework will be assigned to complement the course content. Each student will be expected to read them and provide a one-page summary of the things learned from the paper rather than summary of the papers.

## Grading

Homework and Reading Assignment	20%
Quizzes	30%
Project Report and Presentation:	20%
One Final Exam	30%

All homework should be returned on time. All materials handed-in should be typed, and all figures should be drafted on computer. Late homework problems will earn a maximum of 50% of the total grade; however, no grade will be given for missed reading assignments because the papers will be discussed in class.

## Project

It is quite common that the students do not have communication skills (oral as well as written). In this class, students will write a paper in ASCE format ([www.asce.org](http://www.asce.org)) and present that paper in the class. The purpose will be to make sure that the students are learning the science of communications. A list of the projects will be assigned shortly.

## Attendance

Students are expected to attend all lectures and laboratory sessions. Failure to attend the lectures, without prior excuses, will result in reduced grades.