

**Syllabus CCE 321 – Civil and Construction Engineering Materials (4 credits)
Fall 2014**

LECTURES: MWF 1100-1150, Kearney 305

LABS in MERRYFIELD 108 as follows:

Section 021: W 1400-1550

Section 022: R 1000-1150

Section 023: R 1600-1750

INSTRUCTOR

Dr. Erdem Coleri

Office: Owen Hall - 242

E-mail: erdem.coleri@oregonstate.edu

COURSE SPECIFICS

4 Credits

Pre-requisites: (ENGR 213 or ENGR 213H)
and (ST 314 or BA 276)

Office Hours:

Coleri MW 1300-1400

Owen 242 Also by appointment

GTA:

Jeffrey Knowles M 1400-1500

Owen 324

GRADUATE TEACHING ASSISTANTS

SYLLABUS OVERVIEW

This syllabus serves as a guideline for the course. It describes the planned course content and schedule, learning objectives, criteria for completing class assignments, information regarding examinations, and grading information. Listed course topics will be covered to the extent allowed by the schedule. The topics covered and the course schedule may change due to learning abilities, time conflicts and limitations, and other unforeseen circumstances.

EMAIL

When you send an email to the instructor or the TAs please include “CCE 321” in the subject line. This allows for easy searching to avoid missed emails pertinent to the class. If CCE 321 is NOT in the subject line I cannot guarantee that I will respond to your email in a timely manner.

COURSE DESCRIPTION

Civil and construction engineering materials; aggregate, portland cement concrete, asphalt concrete, wood, metals; standard test methods. Prerequisites: ENGR 213 and ST 314.

COURSE OBJECTIVES

The course provides instruction on civil and construction engineering materials used in the construction of highway structures such as pavements, bridges, retaining walls, box culverts, etc. In particular, the course concentrates on the engineering properties of aggregates, wood, metals, portland cement concrete (PCC) and hot-mix asphalt (HMA) as well as the mixture design of PCC and HMA. The course targets those interested in civil engineering or construction engineering and management.

COURSE LEARNING OUTCOMES

By the end of the course, you should be able to:

1. Identify key material properties important to the successful application of aggregates, asphalt concrete, portland cement concrete, wood and metals to a variety of civil works.
2. Prepare and test representative samples of these materials and their combinations in accordance with standardized procedures.
3. Record, interpret, and report test results in a manner consistent with professional engineering expectations.
4. Specify aggregates, concrete, and asphalt mixtures for typical applications.
5. Review project field data and determine compliance with specifications.
6. Design and conduct a simple experiment as well as analyze and interpret the data derived from the experiment.

COURSE RESOURCES**Required**

- A. *Design and Control of Concrete Mixtures*, Kosmatka, S.H. and Wilson, M.L., 15th Edition, Portland Cement Association, 2011
- B. Pavement Guide Interactive: <http://www.pavementinteractive.org/>
- C. Wood Products Handbook: Available free online from:
<http://www.fs.fed.us/research/forest-products/>
- D. Metals: Notes provided in class.

Additional

- Virtual Superpave Laboratory (<http://training.ce.washington.edu/VSL/>)
Portland Cement Association: www.cement.org
American Concrete Institute: www.aci-int.org

COURSE INFORMATION

The primary method for dissemination of course information will be through **Blackboard**. Additional handouts may be given during lecture or laboratory sections. Every effort will be made to post these additional materials to Blackboard as well. Occasionally, course-related information may be disseminated through the class e-mail list, which requires an ONID account; thus, it is advised that you check your ONID e-mail account daily.

SCHEDULE - The topics covered in the course are listed in the following schedule. Also listed are the minimum reading requirements for each topic.

Week	Topic	Lab	Minimum Reading*	
			Resource (PCA wk 1-5)	Dates
1 9/29	Course Overview, Writing, Aggregates	No Lab	p 95-116 (PCA Text) p 95-116 (PCA Text) p 95-116 (PCA Text)	M: Overview, Eval. W: Aggregates F: Aggregates
2 10/6	Concrete, fresh and hardened properties, mixture proportioning	Lab 1 Part 1: Aggregates	p 95-116 (PCA Text) p 1-28, p 231-262	M: Aggregates W: PCC Intro/ Mixture Prop. F: Mixture Prop.
3 10/13	Mixture Proportioning, Microstructure, Supplementary Cementitious Materials	Lab 1 Part 2: Aggregates	p 231-262 p 29-41, 48-61 p 67-86, p 117-136	M: Mixture Prop. W: Hydration F: SCMs, Chemical Admixtures
4 10/20	Volume Stability	Lab 2 Part 1: Concrete Batching & Mixing <i>Lab 1 Due</i>	p 153-174 p 153-174 p 195-224, Notes	M: Fresh Properties W: Hardened Properties F: Volume Stability
5 10/27	Concrete Durability Metals	Lab 2: Brief Resistivity Measure	p 195-224, Notes p 195-224, Notes Posted Reading/Notes	M: Durability W: Durability F: Metals Props.
Mid-Term Exam: Wednesday November 5, 2014 (Covers Aggregates and Concrete Only)				
6 11/3	Metals	Lab 3: Metals <i>No Lab Due</i>	Posted Reading/Notes	M: Metals Behavior W: Mid-Term Exam F: Asphalt Intro
7 11/10	Asphalt Intro; Binder Specifications; HMA Characterization	Lab 4 Pavement Evaluation/ Sensors <i>Lab 3 Due</i>	Pavement Types, HMA Pavement, Asphalt Concrete Base, Mix Types, Categories, Rating Systems HMA Distresses	M: Asphalt Response W: Distress F: Distress
8 11/17	Damage and Deterioration, Mixture Design	Lab 2 Part 2: Concrete Tests/DCP Worksheet <i>Lab 4 Due</i>	HMA Mix Design Fundamentals, Superpave Mix Design Procedure Specification Overview , Binder Tests: RV , RTFO , PAV ,	M: Binder Evaluation W: Binder Evaluation F: Mixture Design
9 11/24	Asphalt Mixture Design QA/QC	No Lab <i>Thanksgiving</i> <i>Lab 2 Due</i> <i>w/ DCP Data Sheet</i>	Quality Assurance, Quality Control, Independent Assurance, Acceptance	M: Mixture Design W: Mixture Design F: Mixture Performance Testing
10 12/1	Wood Wrap-Up/Review	Lab 5: Wood - <i>Data sheet due</i>	Posted Reading/Notes	M: Wood Structure W: Wood Behavior F: Wrap Up
Final Exam: Monday December 8th, 9:30 am (non-cumulative)				

*Assigned reading to be completed by class on the day indicated (M=Monday, W=Wednesday, F= Friday)

**All labs are due at the beginning of your respective lab groups lab day and time EXCEPT Lab 5 which is due Wednesday morning to the GTA by 12 pm.

ASSIGNMENTS AND GRADING

Homework assignments are due in class at the beginning of the period (11:00 am). Laboratory reports are due at the beginning of your respective regularly scheduled labs. During Thanksgiving week Laboratory 4 will be due between 12-1:00 pm on Wednesday to GTA Jeffrey Knowles.

Assignments submitted AFTER THE DUE DATE AND TIME AND UP TO ONLY ONE (1) DAY LATE will receive a 50% penalty, once graded.
This means a regular score of 90 will receive a score 45 if it is turned in up to 1 day late.
Absolutely NO assignments will be accepted after the 1-day late (50% reduction) policy.
These assignments will receive a score of 0 “zero”.

Homework

Homework assignments will be issued throughout the course. These are intended to help you grasp fundamental concepts and expose you to techniques and skills for applying these principles to real-life situations. Understanding how to do the homework problems will go a long way toward understanding how to do well on the exams. You may discuss homework problems with your classmates and work together. However, the submitted solution should be only your own work written up independently.

Use the following guidelines for assignment preparation (see also Course Grades below):

- Engineering paper is preferred; neatness is important and **required**. Work that is difficult to follow may not be graded, or will receive a reduced score. Typewritten work is also acceptable and must have the same headings as that shown below.
- Write on only one side of the paper, and start a new problem on a new sheet of paper (unless a problem only requires a short answer).
- Write the following in the upper part of each page: assignment number (e.g., HW #1) and due date, CCE 321, Lab Section and Group Number (e.g., Wed 10-12, G1), your name, and page number/total pages as follows:

	HW #1 October 6, 2010	CCE 321 Wed 10-12, Group 1	DOE, JOHN	1 / 4

- Provide a problem number before each problem. Provide sketches whenever appropriate. Show all of your work (i.e., calculations). For graphical solutions, label the axes of your graph and include units. Double underline or box your final answer(s).
- Securely staple all pages; **do not fold the corner or use a paper clip**.
- Homework will be graded according to a set grading rubric. Grading discrepancies should be **FIRST** discussed with the GTA then with the Instructor.

Labs

Your attendance at laboratory sessions is **MANDATORY**. If you **MISS** a laboratory **WITHOUT prior** arrangement with the Instructor **AND** the GTA, you will receive a score of **0 (zero)** for that entire laboratory report, even if it is a multi-week laboratory.

There will be four lab reports covering the topical areas of aggregates, portland cement concrete, metals and hot-mix asphalt. The wood laboratory report will be a very concise “mini-report” completed during lab and turned in at the end of the wood lab period since it occurs so near the end of the quarter. Instructions for completing lab exercises and reports will be provided throughout the term and posted to Blackboard. Lab exercises and reports are to be accomplished in groups determined during the lab session during the first week of the term.

The laboratory handouts will provide grading criteria and guidance for preparation of laboratory reports.

In-Class Assignments

There may be several in-class assignments throughout the term covering subject matter presented during lectures. In-class assignments will be due during the class period assigned and will count toward class participation.

Exams

The course will include one midterm exam and a final exam. These will cover material presented in the lectures, assigned reading, homework problems, and laboratory assignments. Exams will be closed book/closed notes, unless otherwise noted, and are to be done individually. Help sheets will be provided if warranted. The final exam is non-cumulative and will be given on the last class day.

If you must miss an exam for an emergency, please let the instructor **know as soon as possible**. If you skip an exam, you will **not** have an opportunity to make it up, you will receive a score of **0 (zero)**. If you have a valid (according to the instructor) time conflict and you let the instructor know in advance, there is the possibility of taking an exam at an alternate time.

COURSE GRADING

Grades will be based upon examination of course work. A breakdown is as follows:

- Homework/In-class assignments 25%
- Lab participation and reports 25%
- Midterm exam 25%
- Final exam 25%

CLASS PARTICIPATION

Each student is expected to participate in the class. Participation includes coming to class and laboratory sections **on time**, being prepared for class, participating in class discussions and laboratory assignments, and interacting in a courteous, respectful, and professional manner in accordance with the policies prescribed by the University. If you do miss class, it is your responsibility to find out what was covered and any administrative information presented.

STUDENT CONDUCT

It is expected that you will know and abide by the Oregon State University Student Code: <http://oregonstate.edu/studentconduct/http://%252Foregonstate.edu/studentconduct/code/index.php>

It is expected that you know and will abide by the CCE Honor Code posted at:

<http://cce.oregonstate.edu/node/258>

Two other documents are posted at the website above: CCE as a Professional Community and the Student Code of Conduct. You are also expected to know and abide by these conducting yourself in an according manner.

CCE Honor Code

While representing himself or herself as a member of the CCE community, the CCE student will maintain the highest standards of honesty and integrity. The student will strive for these standards in his or her representations, academic pursuits, research and scholarly activity, and respect for the property and individual rights of others; will uphold the specific principles described in the Code; and will actively support the Code.

In addition to this Honor Code, all CCE students are expected to know fully the OSU Student Conduct Regulations. Likewise, the CE student is expected to read and understand the [American Society of Civil Engineers \(ASCE\) Code of Ethics](#), and the [Oregon State Board of Examiners for Engineering and Land Surveying \(OSBEELS\) Rules of Professional Conduct](#). The CEM student is expected to read and understand the AIC, American Institute of Constructors, <http://www.professionalconstructor.org/code-of-ethics> and the [Construction Management Association of America \(CMAA\) Ethics Policy](#)

Disruptive Behavior

While the university is a place where the free exchange of ideas allows for debate and disagreement, all classroom behavior and discourse should reflect the values of respect and civility. Behaviors that are disruptive to the learning environment will not be tolerated. OSU's policy on disruptive behavior may be found at:

<http://oregonstate.edu/studentconduct/disruptive-behavior>

Academic or Scholarly Dishonesty

You are expected to be honest and ethical in your academic work. OAR 576-015-0005(2) (see <http://oregonstate.edu/studentconduct/>) states that, "The assumption upon which this Code is based is that all persons must treat one another with dignity and respect in order for scholarship to thrive." This document describes academic and scholarly dishonesty as follows:

- a) *Academic or Scholarly Dishonesty is defined as an act of deception in which a Student seeks to claim credit for the work or effort of another person, or uses unauthorized materials or fabricated information in any academic work or research, either through the Student's own efforts or the efforts of another.*
- b) *It includes:*
 - (i) *CHEATING - use or attempted use of unauthorized materials, information or study aids, or an act of deceit by which a Student attempts to misrepresent mastery of academic effort or information. This includes but is not limited to unauthorized copying or collaboration on a test or assignment, using prohibited materials and texts, any misuse of an electronic device, or using any deceptive means to gain academic credit.*

- (ii) *FABRICATION* - falsification or invention of any information including but not limited to falsifying research, inventing or exaggerating data, or listing incorrect or fictitious references.
- (iii) *ASSISTING* - helping another commit an act of academic dishonesty. This includes but is not limited to paying or bribing someone to acquire a test or assignment, changing someone's grades or academic records, taking a test/doing an assignment for someone else by any means, including misuse of an electronic device. It is a violation of Oregon state law to create and offer to sell part or all of an educational assignment to another person (ORS 165.114).
- (iv) *TAMPERING* - altering or interfering with evaluation instruments or documents.
- (v) *PLAGIARISM* - representing the words or ideas of another person or presenting someone else's words, ideas, artistry or data as one's own, or using one's own previously submitted work. Plagiarism includes but is not limited to copying another person's work (including unpublished material) without appropriate referencing, presenting someone else's opinions and theories as one's own, or working jointly on a project and then submitting it as one's own.

The administration of the classroom rests with the instructor. When evidence of academic dishonesty comes to the instructor's attention, the instructor will (a) document the incident, (b) permit the accused Student to provide an explanation, (c) advise the Student of possible penalties, and (d) take action. The instructor may impose any academic penalty up to and including an "F" grade in the course after consulting with his school head and informing the Student of the action taken. Using the standard form, the instructor will report the incident and the action taken to his school head, who, in turn, shall forward the report to his dean.

For Students not enrolled in the College of Engineering, the Dean of the College of Engineering shall forward the report to the dean of the college or school in which the student is enrolled for possible disciplinary action.

STUDENTS WITH DISABILITIES

Accommodations are collaborative efforts between students, faculty and Disability Access Services (DAS). Students with accommodations approved through DAS are responsible for contacting the faculty member in charge of the course prior to or during the first week of the term to discuss accommodations. Students who believe they are eligible for accommodations but who have not yet obtained approval through DAS should contact DAS immediately at 541-737-4098.

DAS e-mail address is: Disability.Services@oregonstate.edu and their website is:

<http://ds.oregonstate.edu/home/>