CE 330L
Engineering Materials Laboratory

Syllabus

Spring, 2014

Dr. Jianwei Huang, P.E.
Class time:  CE330L-001: Wed; 6:00p.m. – 8:50p.m. in EB0044

Instructor:  Dr. Jianwei Huang.  Office: EB 2067 (Tel.: 650-2498, Email: jiahuan@siue.edu)
Office Hours: M & W; 11:00 am – 12:30 pm, and by appointment.

TA:  Mr. Josh Nieman, Office: EB0050 (Tel.: 217-690-3870, E-mail: joniema@siue.edu)
Office Hours: T: 12:00pm-3:00pm, R: 10:00am-12:00pm and 3:00pm-5:00pm.


The lab course materials listed under the CE330L course web site.
(http://www.siue.edu/engineering/civilengineering/courses.shtml)

“Books of Standards”, American Society for Testing and Materials (ASTM), the most up-to-date version reserved in the Love Joy Library.

“Highway Materials”, Part I and II, American Association of State Highway and Transportation Officials (AASHTO), 2008. (Reserved in Mr. Brent Vaughn’s office in the CE Department)

Course description:  This 1-credit laboratory provides a hands-on experience with the testing and evaluation of civil engineering materials, including steel, aggregates, concrete, asphalt, and wood. The objectives are:
(1) To study the physical and mechanical properties of major construction materials, and be able to effectively evaluate, select and apply them in civil engineering practice.
(2) To have hands-on experience with testing of materials.
(3) To develop effective data interpretation and report writing skills.
(4) To develop effective communication skills.

Tentative Lab Schedule:

Week 1 (1-15)  Introduction to Lab (Items include: Understanding syllabus, dividing into various groups and familiarizing lab operational rules)
Week 2 (1-22)  Metal Tension and Torsion tests
Week 3 (1-29)  Aggregate Lab – Data will be used later for Concrete & Asphalt Design Labs.
Week 4 (2-5)  Aggregate Lab – Data will be used later for Concrete & Asphalt Design Labs.
(Due date for Individual Summary Reports (Report Type R-4) on Metal Tests)
Week 5 (2-12)  Superpave Asphalt Mixing Lab
Week 6 (2-19)  Superpave Asphalt Mixing Lab
Week 7 (2-26) Concrete Mix Design – Each group is expected to meet to discuss and design an appropriate Portland cement concrete mix

Week 8 (3-5) Concrete Mix Design – Each group is expected to meet to discuss their mix design with instructor/TA

*(Due date for Individual Summary Reports (Report Type R-4) on Superpave Asphalt Mixing Lab)*

Week 10 (3-19) Concrete Mixing Lab – Sample Cylinders Making, Unit Weight, Slump Testing, and Air Content Testing

Week 11 (3-26) Concrete 7-Day Compressive Strength Lab

Week 12 (4-2) Concrete 14-Day Compressive Strength Lab

Week 13 (4-9) Wood Flexural and Compressive tests

Week 14 (4-16) Concrete 28-Day Compressive Strength Lab

*(Due date for Individual Comprehensive Reports (Report Type R-3) on Wood Flexural and Compression Tests)*

Week 16 (4-30) *(Due date for Group Reports (Report Type R-1) on the Portland Cement Concrete Project)*

*(Schedule subject to change)*

**General Requirements:**

1. You need to take CE330L course if you take CE330 course for the first time.
2. You are required to register on the CE 330L course website in order to get access to the restricted area on the web site. Please follow the instruction on the web site to perform the registration, and contact Mr. Brent Vaughn if you have problems for the registration.
3. Attendance in all sessions of the lab is expected. Inform the instructor well in advance if you expect to be absent in a giving lab class. If you cannot attend a lab class due to an emergency, please immediately inform the instructor when you are available. Absence without an acceptable excuse will result in an "Incomplete" grade. Absence with acceptable excuse, a special written report on the experiment you missed is required.
4. Students in each experiment will be divided into groups of 3 to 5 students. A group leader will be assigned for each experiment and will be responsible for:
   a. Directing the experiment
   b. Cleaning the equipment up afterwards
   c. Posting the master data sheets on the web
   (The group leader needs to obtain a set of master data sheets from the CE330L website before the beginning of each lab.)
5. Each student is expected to read the upcoming experiment in the textbook or on the course website prior to each experiment. Group leaders are encouraged to let T.A. proofread the completed data sheets from the previous week for the correctness of data.
6. A quiz will be given on the collection date of each lab report to test student’s comprehension of the experiments covered in each report. A total of four quizzes
will be given during the semester. Each quiz will take 20 minutes to complete. T.A. will provide information regarding the time and place of the quizzes.

7. All written reports have to be turned in on time. Any delay without acceptable excuses will not be allowed. Deduction will be made to the report if an excuse is determined to be acceptable. The deduction points are decided by the instructor.

**Report Requirements:**

Two **individual summary** (Metal & Asphalt) reports (R-4), one **individual comprehensive** (Wood) report (R-3) and one **group** (Cement Concrete project) report (R-1) are required for the semester.

Each report will cover one or two experiments. Students are required to use MS-WORD and MS-EXCEL to type their reports, perform calculations, and make graphs. Please read the Report Requirements listed on the course website for the format requirements of each report. Specific format requirements for the individual and group reports are described below.

The **R-4** report includes the written part and the appendix part. The appendix part should have the same components as in the **R-3** report (see the report format from the course website). The written part should have the answers to the following questions:

1. Who are responsible for these experiments? When were these experiments conducted?
2. What are the purposes of these experiments?
3. What are the references used for conducting these experiments?
4. Did you exactly follow the experimental steps listed from these references for your experiments? If not, what are the deviated steps that you took?
5. What were the mistakes (or possible mistakes) you made (could make) during the experiments?
6. Are the results of these experiments within the anticipated values? What are these anticipated values and where did you obtain them?

The **R-1** report is a company-to-client report. This formal report will also have a written part and an appendix part, but it requires more information than an individual report. Students are required to use his/her best judgment for conveying relevant information to the client for the results of the experiments. Special instructions will be given to students in the cement concrete project statements regarding the information needed in the Group (Cement Concrete) report.

The written part of the individual report should be less than 2 pages in length, and should be no more than 3.5 pages for the group report. Each graph is required to have a title block as you learned from CE 207L course. Significant figures are required to be applied to all the data sheets. Please review the graphs and data presented in the examples posted on the CE330L web pages. Cheating or plagiarism (see statement below) in any form will not be tolerated.

**Plagiarism**

Deliberate plagiarism is a serious act of academic misconduct. Students may be suspended from the University if they are found to have plagiarized their course work. Whether inadvertent or deliberate, plagiarism includes the following:
(a) word-for-word copying of sentences or whole paragraphs or presenting of substantial extracts from either paper-based or electronic sources the work or data of others that are published or unpublished (such as books, internal reports, and lecture notes or tapes) without clearly indicating their origin
(b) using very close paraphrasing of sentences or whole paragraphs without due acknowledgement in the form of reference to the original work
(c) submitting another student’s work in whole or in part
(d) use of another person’s ideas, work or research data without acknowledgement
(e) copying computer files, algorithms or computer code without clearly indicating their origin
(f) submitting work that has been written by someone else on the student’s behalf
(g) submitting work that has been derived, in whole or in part, from another student’s work by a process of mechanical transformation (e.g., changing variable names in computer programs).

Student evaluation on individual contributions to the Group Report:
In composing group reports, a group report leader/coordinator is elected from group members. The descriptions of this group leader/coordinator’s responsibility as well as the group members’ responsibility are listed under “Report Requirement” button on the right-hand side of the CE330L course web page. Please carefully review the description before turning in the assigned group reports. Each member in the team will have the opportunity to rank every member in the team for the “team participation” portion of the final group report grade. A computer web database is designed to use your input points for the computation of the results of “team participation” grades. This team participation grade is counted as 30% of your final group report grade. Each member is required to input these “team participation” grades right after submitting the group reports.

Grading:

<table>
<thead>
<tr>
<th>Report Type</th>
<th>Grade</th>
<th>Percentage</th>
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</thead>
<tbody>
<tr>
<td>Metal Report</td>
<td>-----</td>
<td>15 %</td>
</tr>
<tr>
<td>Asphalt Report</td>
<td>-----</td>
<td>18 %</td>
</tr>
<tr>
<td>Wood Report</td>
<td>-----</td>
<td>15 %</td>
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<tr>
<td>PCC Group Report</td>
<td>-----</td>
<td>30 %</td>
</tr>
<tr>
<td>Quizzes</td>
<td>-----</td>
<td>22 %</td>
</tr>
<tr>
<td><strong>Total</strong></td>
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<td><strong>100 %</strong></td>
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(10% of the overall lab grade will be included in the CE 330 course grade)

Final course grade is assigned as: 90.00% - 100% = A, 80.00% - 89.99% = B, 70.00% - 79.99% = C, 60.00% - 69.99% = D, and below 60.00% = F.

Students with Disabilities:
Please notify me no later than the end of the first week of class concerning any academic accommodations you will need. You must have a documented disability and an ID CARD from Disability Support Services. If you need accommodations not indicated on the Disability Support Services ID CARD, please contact me or the Disability Support Services office as soon as possible so arrangements can be made for the additional equipment or accommodations.
Outcomes for successfully completing CE330L course:
Successful completion of this course will contribute towards satisfaction of the requirements pertaining to the following ABET (ABET is the accrediting agency for engineering programs in the U.S.) outcomes established for the civil engineering curriculum:

(b) an ability to design and conduct experiments, as well as to analyze and interpret data
(g) an ability to communicate effectively
(k) an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice
(m) the ability to apply knowledge of four technical areas appropriate to civil engineering
(n) the ability to conduct civil engineering experiments and analyze and interpret the resulting data

For the complete list of departmental objectives and outcomes, please visit the Civil Engineering Department web pages at www.ce.siue.edu.