CE 473
Course Syllabus

Fall 2012
Part I Course Organization
Catalog Description: An examination of the legal, financial and ethical issues regularly considered by all practicing engineers and construction project managers.

Instructor: Dana Sherman, Esq. (BA, JD, MBA, MBT, MPA)
Associate Professor of the Practice,
Astani Department of Civil Engineering since 1979
Epstein Department of Industrial and Systems Engineering since 2007
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Meeting: ZHS 159 (Section 29676R)
Tues 6:30 to 9:10 p.m (a 10 minute break)

Office hours: OHE 530G: (a) After class,
(b) Mon, Tue and Thur afternoon BY APPOINTMENT
(c) By e-mail or telephone at any time

Prerequisites: Upper division or graduate standing or permission of the instructor.
The course is not limited to civil engineering majors. The course will be very demanding in the nature and amount of the material covered. No prior background is expected

Texts Required: BASICS of Engineering Economy by Blank and Tarquin (BEE)
Handout materials will be posted on Blackboard (H/O)

Grader: tba
Warning: This is not really one course, it is really three separate one semester courses that are combined into a single one semester course. You will be taught about the law, you will be taught about finance and engineering economics and you will be taught about basic concepts in ethics. There will be from 25 to 50 pages of reading each week. There will be quiz every week and a homework assignment/problem assignment due almost each week. The material is not hard, but for most of you it will be completely new. If this is the semester you are going to take 22 units, I suggest that this course not be one of them. If this is the semester you are going to have a baby or patent your invention or learn to socialize like a business student, this is not the semester to take this course. The class is not graded on a curve, but my expectations for what level of work constitutes an A are rather high. Oh, and if you are thinking about taking this course from someone else, sorry...I’m the only person who has ever taught the course.

Course Objectives:

The course is intended to provide the practicing engineer with an introduction to the knowledge and information necessary to engage in the daily practice of engineering and/or construction management. This includes an understanding of the legal context in which all firms must operate, contract principles, liability principles and risk management, as well as the principles of economics and finance utilized by engineers. The class will also make the student aware of ethical issues in engineering and business practice. The course material includes information necessary to pass the National Fundamentals of Engineering Examination.

Method of Instruction:

Lecture and class discussion will occupy the class period. Students are expected to participate in class and participation is considered when assigning final course grades. There will be no discussion sections or problem sessions.

Grading:

<table>
<thead>
<tr>
<th>Test</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>First Test</td>
<td>40% legal system, contracts, torts, ethics)</td>
</tr>
<tr>
<td>Second Test</td>
<td>40 (not cumulative: financial material)</td>
</tr>
<tr>
<td>Quiz/Assign</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>-----------</td>
</tr>
<tr>
<td></td>
<td>100%</td>
</tr>
</tbody>
</table>
There is no “forced curve” and cooperative learning is encouraged on homework assignments. Thus, it is to your benefit to help each other as much as possible. However, this does not mean that you should simply copy a homework assignment of another student. If it is determined that copying of assignments is taking place, all students involved will get negative (not just zero) the number of possible points on the assignment.

Weekly and cumulative class scores will be sent to each student frequently. You are also encouraged to contact the instructor if you are having problems as early in the course as possible and not wait until you are desperate condition.

Over the years, particularly in recent times, the quality of the USC students has improved considerably and I am certain that this class will not be an exception. The best students will be diligent in attending class and completing the homework assignments in a timely manner.

Assignments:

Assignments are due at the beginning of class. Late assignments are accepted up to one week late with a penalty of fifty percent of the actual score if the assignment is not discussed in class. Grading is done anonymously. Be sure to put your name on your written homework assignment papers and your STUDENT NUMBER. You should turn in the original assignment but retain a copy for yourself. We will attempt to post homework assignments within two weeks. Questions regarding the grading of a homework assignment should be brought to the attention of the instructor as soon as possible. Incorrect or erroneously omitted scores must be noted within two weeks. Unclaimed papers are discarded after 4 weeks.

Other Course Activities:

From time to time during the semester there may be additional activities relevant to the course which will not take place during regular class hours which are extra credit point opportunities. These points will be added to your total score after the letter grade cutoff points are established (that is these points really are extra credit). The maximum extra credit points available will be an additional 5% of the total points possible.
Quizzes and Examinations:

There will be a quiz and/or assignment due at almost every class. The quiz is based upon the lecture of the previous week and the reading material for that night’s class. You are expected to have read the material prior to class. There is no make-up of missed quizzes. Quiz and examination exercises are not cooperative. Examinations are closed book, closed note and closed mouth. Calculators may be used if appropriate. The first test covers legal issues. The second test/final exam covers ethics and economics. The date of the final exam is set by the university and cannot be changed.

Quizzes and examinations are given using scantron forms in a true-false/matching/multiple choice format. Some students complain that this does not allow for partial credit. However, I have found in advance that there is a very high correlation between students who do well on essay/problem type tests and those that do well on objective tests. The VERY large number of questions helps to assure that random luck or guessing will not be a factor.

Attendance:

Attendance is not mandatory and is not taken but your failure to attend class may result in a missed quiz score. Participation is considered in administering the final course grades. I understand that students often have personal, family or employment obligations that may result in a class being missed. To repeat, after 30 years at USC, I will advise you that the best grades uniformly go to students who attend each class and do the homework assignments timely.

Taping of lectures and class presentations or discussions is not allowed.

There is no term project or paper due either as a requirement or as “extra credit.”

Additional Important Information:

Academic Integrity

USC seeks to maintain an optimal learning environment. General principles of academic honesty include the concept of respect for the intellectual property of others, the expectation that individual work will be submitted unless otherwise allowed by the instructor, and the obligation both to protect one’s own academic work from misuse by others as well as to avoid using another’s work as one’s own. All students are expected to understand and abide by these principles. The Viterbi
School adheres to the University’s policies and procedures governing academic integrity described in the Student Conduct Code in section 11.00 of Scampus. The recommended violation sanctions are found at www.usc.edu/dept/publications/SCAMPUS/gov/. Students are expected to be aware of and observe the academic integrity standards applicable to all students and will be enforced in this course. Students will be referred to the Office of Student Judicial Affairs and Community Standards for further review, should there be any suspicion of academic dishonesty. The review process can be found at www.usc.edu/student-affairs/SJACS

**Disability Accommodations**

Any student requesting academic accommodations based upon a disability is required to register with the Disability Services and Programs Office (DSPO) each semester. A letter of verification for approved accommodations can be obtained from DSPO and should be delivered to the instructor as soon as possible. DSPO is located in STU 301 and the telephone number is 213-740-0776.

**Personal Matters**

Occasionally, a student will have a personal or family medical or other emergency, will have the necessity to travel for work related business, or will be compelled to miss a class due to a significant university sponsored event in which the student will participate including intercollegiate athletics (note: this does not include primarily social events....even if you are a business student). Contact the instructor as soon as the possible conflict is known and arrangements will be made, if appropriate, to the extent possible to allow the student to timely turn in homework assignments by fax or to take a quiz in advance.
<table>
<thead>
<tr>
<th>Date</th>
<th>Topic</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aug 28</td>
<td>Introduction: Sources of law regulating engineers including the legislative, judicial and regulatory systems</td>
<td>H/O</td>
</tr>
<tr>
<td>Sep 04</td>
<td>The legal system and legislative, judicial and administrative systems, criminal and civil law, etc.</td>
<td>H/O</td>
</tr>
<tr>
<td>Sep 11</td>
<td>Contract introduction: principles of contract formation</td>
<td>H/O</td>
</tr>
<tr>
<td>Sep 18</td>
<td>Contract parties, contract forms and purposes, effect of illegality performance and breach</td>
<td>H/O</td>
</tr>
<tr>
<td>Sept 25</td>
<td>Intentional torts and principles of liability</td>
<td>H/O</td>
</tr>
<tr>
<td>Oct 02</td>
<td>Negligence and Strict Liability, Insurance and Bonds-</td>
<td>H/O</td>
</tr>
<tr>
<td>Sep 09</td>
<td>Engineering Ethics,</td>
<td>H/O</td>
</tr>
<tr>
<td>Sep 16</td>
<td>Engineering Ethics</td>
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<tr>
<td>Oct 23</td>
<td>Test #1 on Legal Issues; lecture after exam</td>
<td>H/O</td>
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<tr>
<td>Oct 30</td>
<td>Understanding Financial Statements</td>
<td>H/O</td>
</tr>
<tr>
<td>Nov 13</td>
<td>How Time and Interest Affect Money</td>
<td>BEE 2; 3.1-3.2</td>
</tr>
</tbody>
</table>
Nov 20  Present Worth Analysis  
               BEE 4

Nov 27  Rate of Return Analysis  
               BEE 6.1-6.5

Dec 04  Breakeven and Replacement Analysis  
               BEE  8.1-8.2; 9.1-9.3

Dec 11  Study Day

Dec 18  Final Examination on Engineering Economics

H/O: Instructor prepared handout  BEE: Basics of Engineering Economy
Part II  Detailed Course Objectives
### Course Information, Textbook, and Supplementary Materials

**Course Description:**
An examination of the legal, financial and ethical issues regularly considered by all practicing engineers and construction project managers.

**Capstone Course for:** BSCE and BSCE Structural  
**Required for:** BSCE-ENE and BSENE

**Prerequisite:** Upper division or graduate standing or permission of the instructor. The course is not limited to civil engineering majors. The course will be very demanding in the nature and amount of the material covered.

**Co-Requisites:** None

**Required Textbook:** Park, Contemporary Engineering Economics (3rd Ed., Prentice Hall)  
Handout materials distributed by the instructor (Fee $30)

**Reference:** Optional: Friedman, *Hidden Order, the Economics of Everyday Life* (Harper Business)

### Topics Covered | Learning Outcomes
--- | ---
The legal context in which all firms must operate, contract principles, liability principles and risk management, as well as the principles of economics and finance utilized by engineers. | Students will have an understanding of the topics and how it applies to a professional engineering practice:

1. Introduction to the legal environment of engineering, sources of law regulating engineers including the legislative, judicial and regulatory systems H/O
2. The legal system and legislative, judicial and administrative systems, criminal and civil law, etc.; Introduction to Engineering Ethics H/O
3. Contract intro: principles of contract formation, parties, contract forms and purposes, effect of illegality H/O
5. (Wed) AGC SYMPOSIUM – Attend for extra credit
6. Negligence and Strict Liability, Insurance and Bonds H/O
7. Public protection, licensing and regulation of engineers; US v. NSPE H/O
8. Understanding Financial Statements
9. Interest Rate and Economic Equivalence
10. Present Worth Analysis
11. Cost Concepts
12. Project Risk and Uncertainty

*Note: The course material includes information necessary to pass the National Fundamentals of Engineering Examination.*
CE 473 Engineering Law, Finance and Ethics 3 Units

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Lecture and Lab Schedule

<table>
<thead>
<tr>
<th>Lecture</th>
<th>Lab</th>
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</thead>
<tbody>
<tr>
<td>Sessions per Week</td>
<td>Duration per Session</td>
</tr>
<tr>
<td>Sessions per Week</td>
<td>Duration per Session</td>
</tr>
<tr>
<td>1</td>
<td>3 hours</td>
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</tbody>
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Contribution of Course to Meeting the Professional Component

Engineering Topics
The course is intended to provide the practicing engineer with an introduction to the knowledge and information necessary to engage in the daily practice of engineering and/or construction management. This includes an understanding of the legal context in which all firms must operate, contract principles, liability principles and risk management, as well as the principles of economics and finance utilized by engineers.

The class will also make the student aware of ethical issues in engineering and business practice.

Relation of Course Objectives to Program Outcomes

The Civil Engineering program is designed to teach beyond the technical content of the curriculum and prepare the students to utilize what they learn in a professional setting.

This course contributes to the program outcomes as outlined in the adjacent table.

<table>
<thead>
<tr>
<th>Course Contribution to Program Outcomes (a-k)</th>
<th>Key</th>
</tr>
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<tbody>
<tr>
<td>f. An understanding of professional and ethical responsibility.</td>
<td>✓</td>
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<tr>
<td>g. An ability to communicate effectively.</td>
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<tr>
<td>h. The broad education necessary to understand the impact of engineering solutions in a global economic and environmental and societal context.</td>
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<tr>
<td>j. Knowledge of contemporary issues.</td>
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Prepared by: Professor Dana Sherman, JD, Senior Lecturer
Civil and Environmental Engineering

Date: Fall 2012