ENGINEERING AND PROJECT MANAGEMENT
CE 167

Instructor: **Professor William Ibbs**
  Home Page: http://www.ce.berkeley.edu/~ibbs/
  Email: ibbs@ce.berkeley.edu
  Phone: (510) 643-8067
  Office: 213 McLaughlin Hall, Berkeley, CA 94720-1712
  Office Hours: TuTh 9:35 to 10:30 am, by appt.

Graduate Student Instructor:
  Email:
  Office: TBD
  Office Hours: TBD

SCOPE AND PURPOSE
Introductory aspects of project management including lifecycle cost analysis, economic feasibility considerations, optimization techniques and legal issues. Basic introduction of the engineering-construction industry, including industry structure and organization. Tools and techniques used by engineers and managers to profitably and effectively supervise projects. Design-construction interface, cost estimating and control, scheduling and resource allocation techniques, decision-making under uncertainty. Legal aspects of the Architecture-Engineering-Construction industry.

COURSE REQUIREMENTS
Grades will be determined from:

o	Homework problems:	25%
o	Two mid-term exams:	35%
o	Class participation:	10%
o	Final exam:	30%

Final Exam is TBD

Grades are not negotiable. The grade assigned in this course reflects my subjective assessment of each student's performance. The grade is based on objective data from problem assignments and examinations. The exams must demonstrate thorough mastery of the concepts presented in this course and an ability to apply the concepts insightfully, creatively, clearly and accurately in engineering analysis.

You will be graded relative to your standing against other students.

REQUIRED TEXTS
1. Reader to be made available at later date.
2. Course slides, handouts and reference materials posted online.

GENERAL NOTES

Observe university rules on cheating. Late homework is not accepted except under extreme conditions. No opportunities for extra credit or makeup exams are available. Effort doesn't count; results do. Raise questions about received grades within one week.

LECTURE OUTLINE

Session 1: Introduction to course. Expectations of students. *Reader 1. Slides Chapter 1.*

Sessions 2-3: Characteristics, size and role of A-E-C in global economy. Project lifecycle concept. Strategic issues and trends. The nature of the Design-Construction process. Owners, general contractors, subcontractors, suppliers. Delivery systems. *Reader 2. Slides Chapter 2-3.*

Sessions 4-8: Basic principles of engineering economics. Cash flow concepts and diagrams. Present versus future worth. Net present value method. Annuities. Benefit-Cost method. Return on Investment method. Depreciation. Project feasibility analysis. Payback method. Sensitivity analysis. *Reader 3-8. Chapters 4-8* **Bring calculators to class.**

Sessions 9-11: Project feasibility studies. Risk Management: Identification, Analysis, Mitigation, Lessons Learned techniques. Expected value calculations. Decision trees. The value of information. *Reader 9-11.*

Session 12: Exam #1. The exact date will be set as we proceed.

Sessions 13-15: Management and organizational issues. Contractual relationships. Tendering procedures. Project organizational structures. *Reader12*

Session 16-17: Management and organizational issues. Contractual relationships. Tendering procedures. Project organizational structures. *Reader 16.*

Sessions 18-19: Estimating and construction planning. Estimating-cost control lifecycle. Overview of various estimating and bidding procedures. Labor, Materials, Subcontractor, Equipment, General Conditions elements of a cost estimate. *Reader 20-22.*

Sessions 20-23: Planning procedures. Various scheduling techniques. Barcharts, CPM, Precedence methods. Float, lead-lag. Learning curves. Resource management. Project Control, Earned value concepts. *Reader 13-14, 17.*

Session 24: Exam #2. The exact date will be set as we proceed.

Sessions 25-26: Legal issues. Insurance and surety bonds. Contracts and contract disputes. Forums for resolving disputes: courts, appeal boards, arbitration, mediation. Breach of Contract. Changes and changed conditions. Force Majeure. *Reader 18-21.*

Session 27: Using schedules to allocate responsibility & quantum for delay, disruption or acceleration. Documentation and Records. *B 263-294, 307-334.*

Session 28: TBD.