Instructors:	Geza Bottlik, E-mail: bottlik460@gezabottlik.com Virgil Adumitroaie, E-mail: adumitro@usc.edu
Office Hours:	TBD (USC office GER202, GER205)
	U.S. Phones 213 – 740 –5050 & 213 – 740 - 5383
Class time/place:	1:00 – 3:00 P.M. MTWTH

Web Pages: www.gezabottlik.com. and http://blackboard.usc.edu. Lecture notes, assignments, grades and notices will be available here for the last 3 weeks of the class.

Other useful websites;

4th Edition Website:	vig.prenhall.com/
Epstein Department	www.usc.edu/dept/ise
Institute of Industrial Engineers:	www.iienet.org
Business Week	www.businessweek.com/
The Economist	www.economist.com
Fast Company	www.fastcompany.com/homepage/index.html
Forbes	www.forbes.com
Harvard Business Review	www.hbr.com
Wall Street Journal	online.wsj.com/public/us
Financial Times of London	news.ft.com/home/us

Pre-Requisites

Upper division standing in any engineering major. Other students may be admitted on a case-by-case basis.

Quiz Schedule:

Weekly:	Usually Thursday, starting Week 2	Last hour of class

The quizzes will be based on problems similar to the ones assigned in the homework and the discussions in class. **All quizzes are open book open notes**. Students are expected to **apply** what they should have learned up to that point to analyzing situations, identifying the problems and applying the appropriate techniques to solve them or interpreting computer solutions.

Assignments:

Readings and Problems will be included in each week's assignment. Problems are assigned on Monday and Thursday in class and are due on the following Thursday and Monday. **All assignments are due at the start of class on the due date. Assignments turned in after the end of class will receive no credit.** (Homework 7 –12 due on Wednesday and Sunday at midnight, submitted through the assignment manager on Blackboard and will be returned electronically before the next week if points are deducted. Solutions will be posted after the assignment is due.) Reading assignments are due when the material will be covered in class. It is imperative that you **prepare for class** -- you will find it extremely difficult to follow the discussion if you have not read the material.

For homework 7 through 12: I will **not accept** late homework. Homework is to be a **digital Excel 97 or later file**. Do not type results into the spreadsheet – use formulas. The person's name, assignment number, the date and any one that you worked with must be in the **header**. Use a consistent template and format the output for a professional appearance. A sample will be available on the web site. File names must follow this format: ISE460_HWXX_Name.xls. There can only be one file per homework (no zip files).

The assignments should be as professional in appearance as if you were preparing reports at work

or for publication. Clearly label the problem number and your conclusions for each problem, followed by the supporting calculations. The problems must be in the order assigned. Out of sequence problems will receive no credit.

Homework is to be done individually. If you discuss or collaborate on a homework, you must indicate that on your paper. Each person must turn in a separate homework. Generated data and essay questions must be unique to each person. **If the answer is given in a book, don't just copy it, explain how you got it.**

No.	Topic (Park)	Due	
1	Chapters 1, 2	Monday	Week 2
2	Chapters 3	Thursday	Week 2
3	Chapters 3, 4	Monday	Week 3
4	Chapters 3, 4	Thursday	Week 3
5	Chapters 4, 5	Monday	Week 4
6	Chapters 5, 6	Thursday	Week 4
7	Chapters 5, 6, 7	Sunday	Week 5
8	Chapters 5, 6, 7	Wednesday	Week 5
9	Chapters 8, 9	Sunday	Week 6
10	Chapters 10	Wednesday	Week 6
11	Chapters 9, 10, 11	Sunday	Week 7
12	Chapters 9, 10, 11, 14	Wednesday	Week 7

(Problem sets will be assigned in class.)

Objectives and Content

Our objective is to prepare YOU (the student) to consider the economic dimensions of evaluating engineering alternatives.

The course focuses on the efficient allocation of scarce resources in circumstances in which alternatives can be enumerated. The course provides engineers with skills to assess the costs and benefits of engineering investments, such as product and technology development programs and capital purchases. It will also provide the framework for selecting among alternative designs, for managing technologies over their lifecycles, and for evaluating the finances of new ventures.

As in all other aspects of life, as an engineer you must be able to intelligently assess and evaluate choices. One aspect of that evaluation is economic. This is an important bridge between engineering and management. You must be able to "sell" your ideas to management. At some point in time, most of you will be managers and have to understand this material in great detail.

Economics should never be the sole consideration in any decision, but it is often a major component. By the end of the course, you should be prepared to analyze complex problems and have a sufficient background to perform well on the engineering economics section of the Engineer-in-Training Exam.

The course is divided into three parts. The first portion of the course concentrates on the basic computational elements critical to providing a quantitative method for economic analysis. These include the concepts of the *time value of money* and *equivalence*. Specifically, you will cover equivalent *present worth, future worth and annual worth*. Also introduced in this section are tools of evaluation such as *internal rate of return* and *net present value*. The second portion of the course **BUILDS** on the

first, and refines the economic model to include the effects of depreciation, taxes, variability and inflation. Finally, the course will cover project financing, capital budgeting and probabilistic outcomes. Specific Goals include:

1. Understanding the concepts of the time value of money and interest rates
2. Be able to analyze cash flow series using present worth, annual equivalent worth and internal rate of return methods of assessment.
3. Be able to develop cash flow sequences that include the effects of taxes, inflation, depreciation, loan principle payments and loan interest payments.
4. Be able to assess cash flows under risk with varying parameters.

It is up to you to become familiar with and learn the mechanics of the material in the text. We are here to explain things you don't understand, to add things that are not in the book, and to evaluate whether you can apply the material to real problems. The lecture is a supplement to what is contained in the book. It is NOT intended to be a duplication of what is contained in the book.

We are looking forward to an intellectually stimulating and rewarding summer with you.

Grading (final percentages will depend on the actual number of each item):

Homework	~30%	30 points	2.5 pts each
Participation - Students are expected to contribute to the class. A participation grade will be assigned based on your contributions to the class discussion.	~10%	10.4 points	0.4 pt. each
Quizzes	~60%	60 points	10 pts. each

Required Text:

Contemporary Engineering Economics 4th Ed. - C. S. Park. Menlo Park, CA, Addison Wesley Publishing Company (www.prenhall.com/park or www.eng.auburn.edu/~park/cee.html

Park is the primary text for the course, and the source of problem set material. There are many similar texts. All have advantages and disadvantages. You may wish to consult one for a different viewpoint or for background, but there is no requirement to do so.

ALWAYS BE SURE TO GIVE THE SOURCE OF ALL YOUR INFORMATION. ANYTHING TAKEN VERBATIM FROM SOMEONE ELSE MUST BE IN QUOTATION MARKS AND REFERENCED. (This includes partial sentences!)

This is intended to be an interactive class and your participation should increase as the semester progresses. Attendance at **all** classes for the **whole** class is expected of everyone. Frequent absences will result in a reduction in grade. Punctuality is expected. If you are late, be sure not to disturb the class as you enter.

PLEASE DO NOT BRING FOOD OR DRINKS TO THE CLASS. BEVERAGES IN PLASTIC CONTAINERS ARE OK.

NEATNESS, SPELLING, AND GRAMMAR COUNT. THEY ARE AN EXPRESSION OF YOUR COMMITMENT TO DO A GOOD JOB. USE THE TOOLS IN WORD AND EXCEL!

Most important:

The School of Engineering and the Department of Industrial and Systems Engineering adhere to the University's policies and procedures governing academic integrity as described in Scampus. Students are expected to be **aware** of and **observe** the academic integrity standards described in Scampus. I will **enforce** these standards -- in other words, if you cheat and get caught you will get an **F** in the class.

Any student requesting academic accommodations based on a disability is required to register with Disability Services and Programs (DSP) each semester. A letter of verification for approved accommodations can be obtained from DSP. Please be sure the letter is delivered to me (or to TA) as early in the semester as possible. DSP is located in STU 301 and is open 8:30 a.m. - 5:00 p.m., Monday through Friday. The phone number for DSP is (213) 740-0776.

Approximate Course Outline:

Week	Topics	Park chapters
Part 1: Financial and Cost Information, Microeconomics		
1 **06/03**	Engineering projects Technology Choice Economic Decisions Financial Statements	1, 2
2 **06/08**	Cost of Money Economic Equivalence Demand, Supply, Equilibria Producer Surplus, Consumer Surplus Spreadsheet Concepts; Economic Analysis Tools Interest Rates (nominal and effective) Interest Formulas	3,4
Part 2: Money and Investing		
3 **06/15**	Equivalence Calculations Debt Management Investing Project Cash Flows Payback Period	4, 5
Part 3: Evaluating Business and Engineering Assets		
4 **06/22**	Present Worth Analysis Annual Equivalent Worth Analysis Rate of Return Analysis	5, 6, 7
5 **06/29**	Cost Concepts Depreciation and After Tax Analysis Developing Project Cash Flows	8, 9, 10
Part 4: Development of Project Cash Flows		
6 **07/06**	Developing Project Cash Flows Inflation Review	10, 11
7 **07/13**	Economic Service life, Replacement Risk Analysis	14, 12
	¡Buen viaje!	