IE 201 – FINANCIAL INEERING

Designation as a 'Required' or 'Elective' course

TYPE OF COURSE: Required for BSCME, BSME and BSIE Majors

Course (catalog) description

COURSE DESCRIPTION: IE 201 Financial Engineering, 3 Hours. Principles and techniques of economic analysis in engineering and management science. Basic probability theory and decision problems under risk and uncertainty.

Prerequisite(s)

PREREQUISITE(S): Math 181

Textbook(s) and/or other required material

SAMPLE SOURCES AND RESOURCE MATERIALS: Engineering Economy by L. Blank and A. Tarquin, 7th edition, McGraw-Hill Science Publishers, 2011.

Course objectives

COURSE OBJECTIVES: This course introduces students to various aspects of financial analysis that are necessary for all engineering programs. It introduces such topics as interest rates, cash flows, project financial analysis, rate of return and alternatives comparison.

Topics covered

MAJOR TOPICS:		Hrs
1	Economic decision making processes, concepts of cash flows, interest rate, equivalence, minimum attractive rate of return	5
2	The time value of money	6
3	Shifted uniform and gradient series	4
4	Nominal and effective interest rates	6
5	Present worth analysis	6
6	Annual worth analysis	4
7	Rate of return analysis (single alternative)	5
8	Rate of return analysis (multiple alternatives)	5
12	Examinations	2
13	Final exam	2
	Total	45

Class/laboratory schedule, i.e., number of sessions each week and duration of each session

CREDIT HOURS: 3 hours

TYPE OF INSTRUCTION:

Type of Instruction	Contact Hours/Week
Lecture/Discussion	2
Recitation	1

Contribution of course to meeting the professional component
This course prepares students for financial transactions necessary for everyday life. It also prepares them to be able to sell a project to management in industry. It makes them aware that the financial end of a corporation, sometimes looked down on by engineers, is really very important and helping the company to make a profit is an important goal.

Relationship of course to student outcomes
As shown in the BSIE Course Outcomes Matrix:

A	Ability to apply knowledge of mathematics, science and engineering
E	Ability to formulate and carry out mathematical solutions
H	The broad education necessary to understand the impact of engineering solutions in global and societal context

Comments on outcomes
Following are possibly approaches to incorporating specific student learning outcomes into this course:

A	Use of mathematical calculators and computers to carry out calculations
E	Students are required to formulate engineering problems based on scientific and engineering principles
H	Students learn to measure the economical impact of different engineering solutions on large systems (e.g society, countries, public, etc.)

These outcomes are what students are expected to gain from this course.

Person(s) who prepared this description and date of preparation
Pat Banerjee, Professor of Industrial Engineering, August 16, 2013.