ME 314 – ENGINEERING ECONOMY

Type (check one): Required: X Elective: _____

2005 - 2006
Catalog Data: ME 314. Engineering Economy. (Formerly ME 314 Economic Factors in Design) Fundamentals of engineering economy. Cost concepts. Time value of money and equivalence. Economic analysis of alternatives. Replacement analysis. Depreciation and after-tax analysis. Effects of inflation on economic analysis. (Same as ChE 314, CE 314, ECE 314) *One semester; three credits.*

Prerequisite: Junior standing.

Co-Requisite: None.

Textbook: Blank, Leland and Tarquin, Anthony, (2005). *Engineering Economy* (6th ed.). McGraw-Hill: New York, NY.
ISBN: 0-07-291863-2

Other Required Materials: None.

Other References: Park, Chan S., (2002). *Contemporary Engineering Economics*(3rd ed.). Prentice Hall: Upper Saddle River, NJ.
ISBN: 0-13-089310-2

Instructor: Dr. L. Michael Santi, Professor, Mechanical Engineering

Course Objectives:
1 Understanding of the "time value of money" concept.
2. Ability to apply interest equations to equivalence calculations.
3. Ability to apply various methods for economic analysis of alternatives.
4. Basic understanding of depreciation and ability to estimate corporate taxes for typical engineering projects.
5. Ability to develop project cash flows for design alternatives that include tax implications and to perform calculations using Excel.
6. Ability to apply economic analysis for replacement decisions.
7. Basic understanding of project risk and uncertainty using sensitivity and break-even analyses.
8. Basic understanding of inflation and its impact on engineering economic decision-making.

Topics Covered:
1. Engineering economic decisions, financial statements and cost concepts.
2. Development of interest formulas and equivalence calculations.
3. Nominal and effective interest rates. Personal debt management.
4. Annual equivalent worth analysis, present worth analysis, capitalized equivalent cost, rate of return analysis, benefit – cost analysis, replacement analysis, sensitivity analysis and break-even analysis.
5. Depreciation methods and estimation of corporate income taxes.
6. Development of project cash flows for alternatives and analysis using Excel.
7. Inflation and its impact on project cash flows.

Class schedule: Two seventy-five minute sessions per week.

Prepared by: L. Michael Santi, Ph.D. **Date:** August 19, 2005

Professional Component:
ME 314 ENGINEERING ECONOMY

Category (check one)	____ Math/Basic Science ____ Engineering ____ General Education __x__ Other
Design (check one)	____ Significant ____ Some __x__ None
Realistic Constraints (check all that apply)	__x__ Economic ____ Environmental ____ Sustainability ____ Manufacturability ____ Ethical ____ Health & Safety ____ Social ____ Political

Relationship to Program Outcomes:

Check all that apply:

__x__ (a) an ability to apply knowledge of mathematics, science, and engineering
____ (b) an ability to design and conduct experiments, as well as to analyze and interpret data
____ (c) an ability to design a system, component, or process to meet desired needs
____ (d) an ability to function on multi-disciplinary teams
__x__ (e) an ability to identify, formulate, and solve engineering problems
____ (f) an understanding of professional and ethical responsibility
____ (g) an ability to communicate effectively
____ (h) the broad education necessary to understand the impact of engineering solutions in a global and societal context
____ (i) a recognition of the need for and an ability to engage in life-long learning
____ (j) a knowledge of contemporary issues
__x__ (k) an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice