

ECE 314 – ENGINEERING ECONOMY

Type (check one): Required: X Elective:

Catalog Data: ECE 314 Engineering Economy (Formerly ECE 314 Economic Factors in Design).
2005-2006 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. Currency exchange rates. Prerequisite: Junior standing. (Same as ChE 314, CE 314, ME 314) *One semester; three credits.*

Prerequisite: Junior standing

Co-Requisite: None

Textbook: Blank, Leland and Tarquin, Anthony, (2005). *Engineering Economy* (6th Edition) McGraw-Hill: New York, NY. ISBN: 0-07-320534-6.

Other Required Materials: None

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

Instructor: Dr. Fred Terry, Professor, Electrical and Computer 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 including tax implications and perform calculations using Excel
6. Ability to make 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

Prerequisites by Topics: Junior standing

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 75-minute sessions per week

Prepared by: Fred H. Terry, Ph.D., P.E. **Date:** October 2005

**PROFESSIONAL COMPONENT:
ECE 314 – ENGINEERING ECONOMY**

Category (check one)	<input type="checkbox"/> Math/Basic Science <input type="checkbox"/> Engineering <input type="checkbox"/> General Education <input checked="" type="checkbox"/> Other
Design (check one)	<input type="checkbox"/> Significant <input type="checkbox"/> Some <input checked="" type="checkbox"/> None
Realistic Constraints (check all that apply)	<input checked="" type="checkbox"/> Economic <input type="checkbox"/> Environmental <input type="checkbox"/> Sustainability <input type="checkbox"/> Manufacturability <input type="checkbox"/> Ethical <input type="checkbox"/> Health & Safety <input type="checkbox"/> Social <input type="checkbox"/> Political

Relationship to Program Outcomes:

Check all that apply:

- (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
- (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
- (k) an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice