

DEPARTMENT OF INDUSTRIAL AND SYSTEMS ENGINEERING
ISEN 302: ECONOMIC ANALYSIS OF ENGINEERING PROJECTS

REQUIRED or ELECTIVE: required for some non-ISEN majors

CATALOG DESCRIPTION (2-0) Credit 2

Principles of economic equivalence; time value of money; analysis of single and multiple investments; comparison of alternatives; capital recovery and after-tax analysis of economic projects.

PREREQUISITES

MATH 152

PROFESSIONAL COMPONENT

This course introduces students to the effective use of economic analysis techniques and their application to the evaluation and selection of project alternatives.

COURSE LEARNING OUTCOMES

At the end of the course, students should be able to

- Choose and calculate the appropriate measure(s) of merit.
- Understand and use the time value of money concepts.
- Understand economic analysis techniques.
- Build spreadsheet models that will aid performing economic analysis.

TEXTBOOK

Basics of Engineering Economy; Leland Blank and Anthony Tarquin; McGraw-Hill, 2008; ISBN 978-0-07-340129-4.

TOPICS COVERED

| Topic | Chapter |
|---|-------------|
| 1. Course Organization / Introduction | 1.1 – 1.3 |
| 2. Foundations of Engineering Economy | 1.4 – 1.9 |
| 3. Factors: How Time and Interest Affect Money | 2.1 – 2.5 |
| 4. Nominal and Effective Interest Rates | 3.1 – 3.7 |
| 5. Present Worth Analysis | 4.1 – 4.6 |
| 6. Annual Worth Analysis | 5.1 – 5.4 |
| 7. Rate of Return Analysis | 6.1 – 6.8 |
| 8. Benefit/Cost Analysis and Public Sector Projects | 7.1 – 7.4 |
| 9. Effects of Inflation | 10.1 – 10.5 |
| 10. Depreciation Methods | 12.1 – 12.7 |

CLASS AND LAB SCHEDULE

Two days a week, 50 minutes per day. No laboratory component.

CONTRIBUTION TO MEETING REQUIREMENTS OF CRITERION 5:

| Subject | Semester hrs | Subject | Semester hrs | Subject | Semester hrs |
|---------------|--------------|---------------------|--------------|---------|--------------|
| Mathematics | | Engineering Science | 2 | General | |
| Basic Science | | Engineering Design | | | |

RELATIONSHIP OF COURSE TO PROGRAM OUTCOMES:

| | ABET Program Outcome | | ABET Program Outcome |
|---|---|---|---|
| x | a. ability to apply knowledge of mathematics, science and engineering | | f. understanding of professional and ethical responsibility |
| | b. ability to design and construct experiments, as well as to analyze and interpret data | | g. ability to communicate effectively |
| | c. ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability | | h. broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context |
| | d. ability to function on multi-disciplinary teams | | i. recognition of the need for, and an ability to engage in life-long learning |
| x | e. ability to identify, formulate and solve engineering problems | | j. a knowledge of contemporary issues |
| | | x | k. ability to use the techniques, skills and modern engineering tools necessary for engineering practice |

PREPARED BY: Don Smith

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