EGN 3613
Engineering Economy

Catalog Description:
Assist students to develop competency in the fundamentals of engineering economics for all engineering disciplines. The methods of economic analysis in general engineering applications include: decision analysis techniques, time value of money calculations, essential techniques in economic analysis of alternatives, depreciation, corporate income tax considerations, and criteria for decisions under various constraints.

Course Objectives:
This course introduces students to both the theory and practice of basic engineering economy principles. Emphasis is on the application of the techniques as well as the critical evaluation and interpretation of results. By the end of this course students will be able to:

1. Understand the concepts of equivalence, time value of money, nominal, and effective rate of interest.
2. Calculate present and future values of cash flows using single payment, uniform series and gradient transactions.
3. Be able to make economic decisions such as replacement analysis by applying Present Worth, Annuity, Internal Rate of Return, Benefit-Cost Ratio and Payback Period analysis methods.
4. Calculate depreciation using widely-used methods such as Straight Line, Sum of the Years, and Declining Balance depreciation methods.
5. Evaluate depreciation and its impact on income taxes.
6. Be familiar with before tax as well as after tax study methods used in engineering economics.
7. Be able to evaluate loans and investments.
8. Develop breakeven chart and perform the sensitivity analysis of alternatives.

Major Topics:
1. Introduction: Decision-Making Process & Cash Flow diagram, Interest & Equivalence
2. Interest Formulas
3. Economic Analysis of Alternatives: Present Worth Analysis
4. Annual Cash Flow Analysis
5. Rate of Return (ROR) Analysis
6. Incremental Rate of Return Analysis
7. Benefit/Cost Ratio Analysis & Payback Periods
8. Accounting and Depreciation Calculation
9. Depreciation & Tax Calculation
10. Breakeven Analysis/Sensitivity Analysis

Credit Hours:
3.
Prerequisite:

None

Textbook:

Engineering Economic Analysis, Edition 11th
D. G. Newnan, T. G. Eschenbach, J. P. Lavelle: Oxford Publisher:
ISBN# 978-0-19-977812-6

Relationship of Course Objectives to Program Learning Outcomes:

Objective 1 - Technical Proficiency: Our graduates will have ability to:

3a. Apply knowledge of mathematics, science, and engineering to solve general engineering problems.

Objective 3 – Responsible Citizenship: Our graduates will have an acceptable level of proficiency in:

3h. The impact of engineering solution in a global, economic environmental, and societal context.

Objective 5 – Ethical Behavior: Our graduates will have ability to:

3f. Have an understanding of professional and ethical responsibility.