

1. Department, Course Number, and Course Title:

ENGINEERING

ENGR 300 ECONOMICS FOR ENGINEERS

2. Designation: Required Elective
Lower Division Upper Division

3. Course Description: Basic economic concepts, relationships between economic and engineering problems, role of interest and capital in cost minimization, analysis of financial statements, original and alternative investments, capital depreciation and replacement problems.

4. Prerequisites: None

5. Text and Materials: Donald G. Newnan, Ted G. Eschenbach, and Jerome P. Lavelle, Engineering Economic Analysis, 9th Ed., Oxford Univ. Press, 2004.

6. Course Objectives:

Course Outcomes

- the ability to calculate time value of money.
- an appreciation for rational decision making process.
- develop capabilities for identification of feasible alternatives.
- the ability to perform present worth, annual cash flow, and rate of return analyses.
- the ability to use computer tools for capital allocation evaluations, incremental analysis, & study of alternatives
- the ability to perform before and after tax comparisons of investments taking into account depreciation, investment credits & income taxes.
- the broad education necessary to understand the impact of engineering economics in a global/societal context.
- an ability to communicate effectively.
- a desire to be a flexible and adaptable team player.

7. Topics Covered: (in Order of Presentation)

- Introduction to Engineering Economics Ch. 1
- The Decision-Making Process Ch. 1
- Engineering Costs and Cost Estimating Ch. 2
- Interest and Equivalence Ch. 3 & 4
- Present Worth Analysis Ch. 5
- Annual Cash Flow Analysis Ch. 6
- Rate of Return Analysis Ch. 7
- Incremental Analysis Ch. 8
- Other Analysis Techniques Ch. 9
- Depreciation Ch. 11
- Income Taxes Ch. 12

8. Class Schedule: Number of Sessions per week: 2
Duration of each session: 1 hour 40 minutes

9. Contribution of course to meeting the professional component:

This course is part of the 53 units of upper division required courses of the mechanical engineering program.
Other 4 units

10. Relationship of course to program objectives:

This course relates to the program objectives by contributing to the following measurable outcomes at the level

indicated for all engineering graduates:

Knowledge outcomes:

- an ability to apply knowledge of mathematics, science, and engineering (abet a)
- an understanding of professional and ethical responsibility (abet f)
- the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context (abet h)
- knowledge of current events and societal contemporary issues -- non-engineering related. (abet j)
- a knowledge of simulation software
- a knowledge of how mechanical engineering integrates into inter-disciplinary systems

Skill outcomes:

- an ability to function on multidisciplinary teams (abet e)
- an ability to communicate effectively (abet g)
- an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice (abet k)
- an ability to think in a logical sequential process

Attitudes Outcome:

- an understanding of professional and ethical responsibility (abet f)
- a recognition of the need for an ability to engage in lifelong learning (abet i)
- an understanding of responsibility and accountability
- a desire to be a flexible and adaptable team player (collaborative attitude)

11. Prepared by: Ram Manvi and Stephen F. Felszeghy

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