

School of Engineering and Applied Science
ENSC 300
Engineering Economics



AY	Revision History: Changes and Rationale	Progress Exam Affected?
07/08	Syllabus Created	N

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Catalog Description: Techniques of evaluating engineering decisions in the economic realm. Selected topics include: annual cost, present worth, future worth, rate of return, and benefit cost ratio analysis in engineering project alternatives.

Prerequisites by Topic: MATH 258 - Calculus and Analytic Geometry II

Textbook(s) / Require Mat'l: "Engineering Economy" by Leland Blank and Anthony Tarquin, Sixth Edition, 2005. McGraw-Hill.

Course Topics:

1. Time Value and Interest (Nominal and Effective) Affects on Money -- 15%
2. Economic Formulas and Factor Notation -- 15%
3. Gradient Series – Arithmetic and Geometric -- 10%
4. Present Worth, Annual Worth, and Future Worth Analyses -- 15%
5. Rate of Return and Benefit Cost Analyses -- 15%
6. Replacement and Retention Considerations (Sensitivity and Risk) -- 10%
7. Depreciation Methods and Before and After-Tax Economic Analyses -- 10%
8. Cost Estimation and Indirect Cost Allocation (Effects of Inflation) -- 10%

Course Objectives:

1. Implementing strategic planning and economic considerations to decision making processes with a focus on engineering projects both domestically and internationally
2. Assessing actual methods applied by organizations (both Private and Public Sectors) in planning and controlling their economic processes
3. Understanding economic issues associated with the utilization of human, material, and equipment resources to produce goods and/or services, and the financial considerations associated with a total integrated environment
4. Research and write a term paper on an engineering based project that incorporates and emphasizes economic analyses

Professional Components/ Course Outcomes:

By the end of this course the student will be able to:

1. Integrate economic considerations to the technical and time-based requirements for making correct decisions on engineering projects
2. Solve economic problems utilizing the applicable economic tools incorporated within an organization
3. Evaluate accurately the measures for economic decision making processes by considering the variations among projects through economic analyses with the goal of attaining the required deliverables/outcomes
4. Understand and apply economic computations to an engineering based project, including an in-depth written report

Class/Lab Schedule: 2 hours of lecture each week
2 credits

**Relation to
Program
Outcomes:**

- | | |
|---|---|
| <input checked="" type="checkbox"/> (a) Fundamental math, science, or engineering | <input type="checkbox"/> (b) Experimentation |
| <input type="checkbox"/> (c) Design | <input type="checkbox"/> (d) Teamwork |
| <input type="checkbox"/> (f) Professional ethics | <input checked="" type="checkbox"/> (e) Problem solving |
| <input type="checkbox"/> (i) Life-long learning | <input checked="" type="checkbox"/> (g) Communication |
| | <input type="checkbox"/> (h) Global awareness |
| | <input type="checkbox"/> (j) Contemporary issues |
| | <input type="checkbox"/> (k) Modern tools |

**Computer
Tools:**

Excel for sample problem solutions and graphical analyses

**Laboratory
Content:**

None

**Design
Content:**

Applying economic analysis to engineering design projects