

GENERAL INFORMATION			
Name:	Phone #:		
Course Prefix/Number: ETI3671	Course Title: Technical Economic Analysis		
Number of Credits: 3			
Degree Type	<input type="checkbox"/> B.A. <input type="checkbox"/> B.S. <input checked="" type="checkbox"/> B.A.S <input type="checkbox"/> A.A. <input type="checkbox"/> A.S. <input type="checkbox"/> A.A.S. <input type="checkbox"/> C.C.C. <input type="checkbox"/> A.T.C. <input type="checkbox"/> V.C.C		
Date Submitted/Revised: 02-26-2008	Effective Year/Term: 2009-2		
<input checked="" type="checkbox"/> New Course Competency <input type="checkbox"/> Revised Course Competency			
Course to be designated as a General Education course (part of the 36 hours of A.A. Gen. Ed. coursework): <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			
The above course links to the following Learning Outcomes: <table style="width: 100%; border: none;"> <tr> <td style="width: 50%; vertical-align: top;"> <input checked="" type="checkbox"/> Communication  <input checked="" type="checkbox"/> Numbers / Data  <input checked="" type="checkbox"/> Critical thinking  <input checked="" type="checkbox"/> Information Literacy  <input type="checkbox"/> Cultural / Global Perspective             </td> <td style="width: 50%; vertical-align: top;"> <input type="checkbox"/> Social Responsibility  <input type="checkbox"/> Ethical Issues  <input checked="" type="checkbox"/> Computer / Technology Usage  <input type="checkbox"/> Aesthetic / Creative Activities  <input type="checkbox"/> Environmental Responsibility             </td> </tr> </table>		<input checked="" type="checkbox"/> Communication <input checked="" type="checkbox"/> Numbers / Data <input checked="" type="checkbox"/> Critical thinking <input checked="" type="checkbox"/> Information Literacy <input type="checkbox"/> Cultural / Global Perspective	<input type="checkbox"/> Social Responsibility <input type="checkbox"/> Ethical Issues <input checked="" type="checkbox"/> Computer / Technology Usage <input type="checkbox"/> Aesthetic / Creative Activities <input type="checkbox"/> Environmental Responsibility
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Course Description (limit to 50 words or less, <b>must correspond with course description on Form 102</b> ):  This course is designed to cover the formulation and application of analytical techniques to reach cost effective solutions to engineering problems. Students will learn time based analysis of selection, replacement, and lease-or-buy decisions including multiple alternatives, uncertainty, and sensitivity analysis, using a problem-solving approach. Prerequisite: MAC1105. (3 hr. lecture)			
Prerequisite(s): MAC1105	Co requisite(s):		

### **Course Competencies:**

Competency 1: The student will demonstrate an understanding of how economic decisions affect engineering projects by:

1. Analyzing pertinent information and assembling relevant data.
2. Analyzing the economic requirements given a specific engineering project.
3. Comparing the economic impact of alternative designs when creating system models.
4. Establishing criteria to determine the best alternative.

Competency 2: The student will demonstrate the ability to calculate the expenses involved in the development and implementation of engineering systems by:

1. Analyzing complex and simple spreadsheets containing information about specific projects.
2. Calculating interest, labor force costs, down time and overhead involved given a specific engineering project.
3. Evaluating equivalence of economic decisions and the impact on system design.

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4. Computing cash flow through receipts or disbursements at different points in the engineering project cycle.
5. Using financial analysis techniques and methods to make decisions about economical approaches to research, development, and implementation of engineering projects.

Competency 3: The student will demonstrate the ability to use financial functions to conduct engineering project economic analysis by:

1. Computing the impact of various types of interest on engineering economic decisions, including nominal, effective, uniform series, etc.
2. Calculating compound amount, net present worth.
3. Analyzing continuous compounding to evaluate increases and decreases in duration periods.
4. Allocating expenses to appropriate budget accounts.

Competency 4: The student will employ methods of economic analysis to evaluate project alternatives by:

1. Selecting an appropriate analysis method to determine specific economic parameters of a project.
2. Calculating and analyzing project cash flow.
3. Calculating and analyzing the impact of labor force costs on engineering projects.
4. Calculating purchasing expenses and evaluating their impact on the engineering project.
5. Analyzing the impact of downtime on project decisions.
6. Calculating present worth analysis to establish project specifications.
7. Preparing a present worth analysis with benefit-cost graphs.
8. Computing the rate of return on project investments.
9. Calculating the costs and impact of repairs, defects, and warranties on a project.
10. Calculating future worth analysis, benefit-cost analysis, and pay back periods on engineering projects.
11. Computing the initial capital investment on equipment.

Competency 5: The student will demonstrate an understanding of basic and complex obsolescence and depreciation of engineered systems by:

1. Calculating the costs of depreciating assets in an engineering project.
2. Differentiating between straight line and double line depreciation and discussing the appropriate application of each type.
3. Defining, calculating, and explaining how the following impact engineering system projects including:
  - production depreciation
  - depletion
  - cost depletion
  - percentage depletion
  - double declining balance.

Competency 6: The student will demonstrate an understanding of the impact of taxes on engineering project by:

1. Discussing the types of taxes that impact the labor, materials, facilities, permits, licenses, etc. that comprise engineering projects.
2. Locating the correct tax tables and interpreting tax tables for specific expenditures.
3. Determining taxable income and after cash flow.
4. Creating spreadsheets and tables analyzing project costs.
5. Calculating solutions that include marginal tax data associated with keeping assets.
6. Describing the differences between marginal costs and data defender costs.

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Competency 7: The student will demonstrate an understanding of the key concepts used to determine costs and benefits by:

1. Determining minimum production machinery costs and life problem costs.
2. Utilizing the methods and techniques to establish the basis sign procedure.
3. Computing problems relating to inflation and deflation using the basis of goods and services.
4. Using replacement analysis techniques to determine the economic impact of replacing a system.
5. Preparing and presenting an economic impact report to justify a project.

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