Ohio Articulation Number (OAN)
Course Submission Form
2005-2006

College/University  Lakeland Community College

Course(s) Submitted (Title & Course #)  ENGS 2820 Engineering Economics Cost Analysis
Ohio Articulation Number  OES005

Date  October 24, 2006  Course 1 of a 1 Course OAN mapping.

Name and title of individual submitting on behalf of the college/university

Name  Marilyn S. Jones  Title  Associate Provost
Address  Kirtland, Ohio 44094
E-mail  mjones@lakelandcc.edu  Phone  (440) 525-7828
Fax  (440) 525-7657

Credit Hours  3  qtr  ___  sem  X
Lecture Hours  3  (if applicable)
Laboratory Hours  (if applicable)
Pre-Requisites(s)  Course work (if applicable)
MATH 1101 Technical Mathematics I or MATH 1700 Trigonometry

Placement Score (if applicable)
(Name of test)
(Domain)  (Score)

Catalog/Course Description (Includes Course Title and Course #)
ENGS 2820 Engineering Economics Cost Analysis: This course will introduce students to the methods that are routinely utilized to make economic decisions in real-world engineering problems. Topics include cash flow analysis, time value of money calculations, replacement decisions, depreciation schedules, economic analysis of engineering proposals, costing in engineering projects, and
optimizing profitability.

Texts/Outside Readings/Ancillary Materials


Course Objectives and/or Plan of Work

GENERAL COURSE GOALS:
1. Introduce processes for data collection to help assess the economic decision making process.

2. Develop the ability to perform compound interest calculations.

3. Develop the ability to perform cash flow analysis to break-even and pay-back time calculations.

4. Develop the ability to perform time value of money calculations, including the effect of knowing the present and future value of alternative solutions.

5. Develop the ability to perform benefit/cost analysis when considering alternative solutions.

6. Develop the ability to evaluate replacement, and make vs. buy decisions.

7. Develop the ability to incorporate after tax, inflation, and depreciation schedules in making economic decisions.

8. Develop the ability to do costing analysis in engineering projects, including the cost of capital, materials, and labor.

9. Develop the ability to maximize and optimize the profitability of a project by minimizing costs and the number of inputs.

__________________________________________

COURSE OBJECTIVES:
Upon completion of the course, the student should be able to:

1. Demonstrate how to make compound interest calculations.

2. Demonstrate the importance of cash flow, and time value of money analysis in engineering economic decisions.

3. Describe how to perform alternative, replacement, and make vs. buy decisions.

4. Demonstrate how to incorporate after tax analysis, and depreciation schedules into economic analysis.

5. Demonstrate how the concepts learned in the class can be incorporated into the costing of engineering projects.

6. Demonstrate how to optimize the profitability of a project.
### Description of Assessment and/or Evaluation of Student Learning

**Suggested Grading Procedures:**
- Tests and homework assignments
- Group project
- Case studies

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**Suggested Course Evaluation Procedure:**
- A: 90% or greater
- B: 80-90%
- C: 70-80%
- D: 60-70%
- F: below 60%

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### Master Syllabi and Working Syllabi (if both are used)

**Lakeland Community College - Course Outline Form**

<table>
<thead>
<tr>
<th>ORIGINATION DATE:</th>
<th>12/05/05</th>
<th>APPROVAL DATE:</th>
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<td>EFFECTIVE TERM/YEAR:</td>
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**Printed:** 10/12/06

**Course Number:** ENGS2820

**Course Title:** Engineering Economics Cost Analysis

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**Prerequisites:**

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THIS IS A VERSION OF THE COURSE OUTLINE THAT HAS BEEN APPROVED, AND WILL BE EFFECTIVE AS OF FALL 06

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MATH1101 OR MATH1700

PROGRAMS & CERTIFICATES FOR WHICH THIS COURSE IS REQUIRED:
NONE

PROGRAMS & CERTIFICATES FOR WHICH THIS COURSE IS AN ELECTIVE:
NONE

COURSE ACCEPTED AS TRANSFER CREDIT BY:

RECOMMENDED CLASS SIZE: 30   RATIONALE: CLASSROOM RESTRAINTS

FREQUENCY OF OFFERING: 2 X YEAR  TERMS NORMALLY OFFERED: FALL SPRING

LAB FEE: NONE

RATIONALE FOR COURSE:
The course is designed to meet the requirements of the Ohio Board of Regents Transfer Applicability Guide for Engineering Economic, OES-005. Also, it introduces students to the methods that are routinely utilized to make economic decisions in real-world engineering problems.

COURSE DESCRIPTION:
This course will introduce students to the methods that are routinely utilized to make economic decisions in real-world engineering problems. Topics include cash flow analysis, time value of money calculations, replacement decisions, depreciation schedules, economic analysis of engineering proposals, costing in engineering projects, and optimizing profitability.

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5. Demonstrate how the concepts learned in the class can be incorporated into the costing of engineering projects.

6. Demonstrate how to optimize the profitability of a project.

COURSE OUTLINE:
I. The Decision Making Process
II. Compound Interest Calculations
III. Present and Future Value
IV. Comparing Alternative Proposals
V. Break-Even and Pay-Back Analysis
VI. Optimization of the System
VII. Benefit/Cost Analysis
VIII. Taxes and Depreciation
INSTRUCTIONAL PROCEDURES THAT MAY BE UTILIZED:
Lectures
Group projects
Case Studies

SUGGESTED GRADING PROCEDURES:
Tests and homework assignments
Group project
Case studies

SUGGESTED COURSE EVALUATION PROCEDURE:
A: 90% or greater
B: 80-90%
C: 70-80%
D: 60-70%
F: below 60%

[ End of Course Outline for 'ENGS2820' ]

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COURSE OUTLINE -- GENERAL EDUCATION OUTCOMES
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COURSE ID: ENGS2820                                      PRINTED:
10/12/06
TITLE: Engineering Economics Cost Analysis

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<tbody>
<tr>
<td>General Education of Assessment</td>
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<td>Methods</td>
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<td>*** KNOWLEDGE ***</td>
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<tbody>
<tr>
<td>1. Arts and Literature</td>
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<td>2. Complexities of Human Behavior</td>
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<td>3. Complexities of Social Institutions</td>
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<td>4. Math and Science</td>
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<td>5. Past and Present Cultures</td>
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<td>6. Technology</td>
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<tr>
<th>*** CRITICAL THINKING ***</th>
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| 7. Identify Personal Assumptions | | | | |
|   | | | |
| 8. Identify Ethical Dimensions | | | | |
|   | | | |
|   | | | |
| 10. Evaluate Issues from Various Perspectives | | | | |
|   | | | |
| 11. Collect, Analyze, Interpret Information | 1|2| | |
|   | | | |
| 12. Support Hypotheses | | | | |
|   | | | |
| 13. Synthesize Information | 1|2| | |
|   | | | |
| 14. Draw Conclusions | 1|2| | |
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<th>*** COMMUNICATION SKILLS ***</th>
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| 15. Speak Clearly and Effectively | | | | |
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<tr>
<td>16. Read with Comprehension</td>
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<td>19. Listen Actively and with Understanding</td>
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<td>20. Practice Effective Interpersonal Skills</td>
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<td>21. Interpret/Use Graphic Communication</td>
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<td>22. Use Technology-Based Communication</td>
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Methods of Assessment codes:

1. Test/Examination | 4. Collaborative Writing | 7. Portfolio |
2. Homework/Written | 5. Oral Presentation | 8. Demonstration of Skills |

*** THIS COURSE OUTLINE WILL BE EFFECTIVE FALL 06

Additional Documentation
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