

American University of Beirut
Faculty of Engineering and Architecture
Department of Industrial Engineering and Management

INDE 301 Engineering Economy

Spring 2021, CRN 21760, MWF 9:00 - 10:00 AM (online)

Instructor

Dr. Bacel Maddah

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Office hours: Thu 5 - 7 PM (on Zoom)

Course Description

This course deals with the economic evaluation of alternatives that arise during the design and operation of engineering and business systems. The objective is to choose a “good” alternative based on sound scientific (economic) criteria. The course will introduce the students to the concepts of **time value of money**, present and annual worth analysis, rate of return, benefit to cost ratio, inflation, capital budgeting, replacement analysis, and decision making under uncertainty, among others. Upon completion of this course, the student will be able to perform basic (but insightful) economic feasibility analysis of engineering and business projects.

Textbook

Blank, L. and A. Tarquin (2012). *Engineering Economy*, 7th Edition, McGraw-Hill, Inc.

Additional References

1. Clemen, R. T. (2000). *Making Hard Decisions*, Duxbury.
2. Fabrycky, W. J., G. J. Thuesen, and D. Verma (1998). *Economic Decision Analysis*, Prentice-Hall.
3. Luenberger, D. G. (1998). *Investment Science*, Oxford University Press.
4. Sullivan, W. G., E. Wicks and J. Luxhoj (2003). *Engineering Economy*, Prentice-Hall.

Tentative Schedule

- Foundations of Engineering Economy.
- Factors: How Time and Interest Affect Money.
- Combining Factors and Interest Rates.
- Present and Annual Worth Analysis.
- Rate of Return Analysis: Single and Multiple Alternatives.

- Benefit/Cost Analysis and Public Sector Economics.
- Introduction to accounting and setting the MARR.
- Selection from Independent Projects under Budget Limitation.
- Formalized Sensitivity Analysis and Expected Value Decisions.

Grading

Midterm Exam	30% - Friday March 12 at 5 PM
Final Exam	30% - As scheduled by the registrar's office
Homework	25%
Case Study	15% - Presentations on Friday April 23 at 5 PM

Homework

Homework problems will be assigned and graded frequently. Students are encouraged to spend plenty of time working on the homework problems and to discuss their solution with the the instructor and the GA. Assignments (except for HW0) will be done in groups of two. However, *you can work with the same partner only once. Doing the homework is the best way to excel in this course.*

Case Study

Working in groups of three, you will read, and answer the questions on, a case study illustrating the practical application of engineering economy. You will then do a 15-minute presentation including (i) a summary of the case, (ii) answers to the questions in the case, and (iii) critique, insights and further analysis. You will be graded for the quality and content of the presentation and the neatness of the slides.

Technology Requirement

A laptop computer, desktop, or similar device with a working internet connection is required for this course. Your device should have a webcam, a microphone and speakers. Exams will be proctored using video over Zoom. All students taking this course should read and accept the terms and conditions of AUB's Privacy Statement.

Examination Policy

A student is not allowed to miss an exam except for a valid medical excuse. However, no make-up exam will be given for the midterm exam. Instead, for students who miss the midterm exam, with a valid excuse, the weight of the final exam will be changed to 70%. Students who miss the final exam will be given an incomplete grade and will have to take a make-up exam at the beginning of the following semester. **The make-up exam is expected to be more challenging than the regular final exam.**

Course Website

sites.aub.edu.lb/bacel/inde301/

Look for class notes, assignments and other material there.