

Syllabus

Course Overview

This course provides a practical outlook on cost-benefit analysis for engineering projects. Topics covered include conceptual foundations and economic background, valuation techniques, decision criteria, uncertainty and risk analysis, and environmental and social aspects of costs and benefits.

Course Objectives

Students who complete this class will ultimately gain the basic skills required to prepare a comprehensive cost-benefit. Specifically, students will:

- Become familiar with the foundations of cost-benefit analysis as a concept and as a decision-making tool,
- Become cognizant about the challenges related to identifying and quantifying costs and benefits,
- Learn how to perform sound cost-benefit analyses,
- Become familiar with various decision-making methods,
- Learn how to dealing with uncertainty and risk analysis,
- Become acquainted with methods to incorporate all three sustainability aspects in cost-benefit analyses, and
- Gain the basic skills required to prepare a comprehensive cost-benefit analysis.

Topics Covered

Topics covered in this class include:

- Introduction to Basic Economic Concepts
- Cost and Benefit Categories
- Cost Analysis Models and Decision Criteria
- Cost-Benefit Analysis: Theory and Steps
- Life Cycle Cost Analysis: Methods and Tools
- Uncertainty and Risk Analysis
- Life Cycle Assessment: Methods and Tools
- Framework for Integrated Sustainability Assessment

Texts and Supplementary Materials

Required Text:

- Quah E. and Toh R., Cost Benefit Analysis: Cases and Materials, Taylor and Francis, 2007.
- Handouts and articles provided on Moodle.

References:

- Quah E. and Toh R., Cost Benefit Analysis: Cases and Materials, Taylor and Francis, 2011.
- Rus G., Introduction to Cost-Benefit Analysis: Looking for Reasonable Shortcuts, Edward Elgar, 2010.
- Cassimatis P., A Concise Introduction to Engineering Economics, Chapman and Hall, 1992, ISBN: 0 419 15910.
- Chadderton, R.; Purposeful Engineering Economics, Springer, 2015, ISBN 978-3-319-18847-8.

Grading Policy

The grades in this class break down as follows:

Interaction and Participation in Online Forums	10 pts
Knowledge checks	20 pts
Individual Activities	30 pts
Group Activity	10 pts
Final Exam	30 pts
Total Points	100 pts