

ENG207e Engineering Economics and Analysis

Level: 2

Credit Units: 5 Credit Units

Language: ENGLISH

Presentation Pattern: EVERY JULY

E-Learning: BLENDED - Learning is done MAINLY online using interactive study materials in Canvas. Students receive guidance and support from online instructors via discussion forums and emails. This is supplemented with SOME face-to-face sessions. If the course has an exam component, this will be administered on-campus.

Synopsis:

Engineers regularly have to choose between different engineering project proposals. e.g. Which projects are worthwhile? Which project should have higher priority? Is one design better than another in terms of long term and short term cost trade-off's?

Projects require money that has to be disbursed at different times to design and build, and after they are built, revenues or benefits occur, usually for years. Engineering Economic Analysis aims to help engineers understand the implications of their decisions on the use of limited capital resources, taking into account the time-value of money, and provides techniques for engineers to perform analyses and comparison between different alternatives.

This course also gives the engineer a basic knowledge to understand financial statements, ratio analysis, depreciation and alternative analysis methods in judging if a project is worthwhile.

The course is specifically tailored and approached from an engineering perspective for engineers, and therefore will differ from the conventional economic courses usually offered to business students.

Topics:

- Economic decision criteria in engineering choices
- Interest and equivalence cashflows
- Present worth analysis
- Rate of return analysis
- Incremental analysis
- Selecting and adjusting the minimum annual rate of return (MARR)
- Depreciation
- Income Taxes
- Replacement analysis

Textbooks:

Donald G. Newman, Ted G. Eschenbach, Jerome P. Lavelle: Engineering Economics Analysis (Alt ISBN: 9780195366433) 10th edition Oxford University Press
ISBN-13: 9780198069010-AA

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Learning Outcome:

- Discuss the pros and cons in using various analysis methods in engineering economics.
- Analyze projects based on various financial parameters.
- Identify the different types of projects based on the given information.
- Employ incremental analysis / cashflow analysis / present worth analysis / payback period / NPV / IRR to rank and select the projects.
- Use taxation rules, depreciation and other expenses in financial calculations.
- Present the cash flow table and financial analysis on a project / company.
- Solve problems using breakeven analysis.
- Calculate marginal cost, average cost, salvage value, payback period, NPV, IRR, net income, net cashflow and other financial parameters.

Assessment Strategies:

Continuous Assessment Component	Weightage (%)
CLASS TEST	12
CLASS TEST	12
PRE-CLASS QUIZ	2
PRE-CLASS QUIZ	2
PRE-CLASS QUIZ	2
Sub-Total	30

Examinable Component	Weightage (%)
Written Exam	70
Sub-Total	70

Weightage Total **100**