

## Liverpool John Moores University

Title: ENGINEERING ECONOMICS  
Status: Definitive  
Code: **5501ICBTEG** (127010)  
Version Start Date: 01-08-2021

Owning School/Faculty: Engineering  
Teaching School/Faculty: ICBT, Colombo

Team	Leader
Alison Cotgrave	Y

**Academic Level:** FHEQ5  
**Credit Value:** 15  
**Total Delivered Hours:** 66  
**Total Learning Hours:** 150  
**Private Study:** 84

### Delivery Options

Course typically offered: Semester 1 and Summer

Component	Contact Hours
Lecture	45
Off Site	4
Tutorial	15

**Grading Basis:** 40 %

### Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Practice	AS1	Practice assignment/Field Visit - Coursework (1500 words)	30	
Exam	AS2	Exam	70	2

### Aims

*This module introduces and develops a comprehensive understanding of the principles of economic evaluation of decision alternatives in engineering applications.*

### Learning Outcomes

After completing the module the student should be able to:

- 1 Recognise the economic impact of engineering solutions and the application of the basic concepts and terminology used in engineering economics including single payment, uniform series, arithmetic gradient, and nominal and effective interest rates.
- 2 Evaluate alternatives based on basic analysis tools: Present Worth Analysis, Future Worth Analysis, Annual Worth Analysis, Rate of Return Analysis, Benefit/Cost Analysis, breakeven analysis for a single project and between two alternatives
- 3 Perform before and after tax analysis.
- 4 Understand the ways to calculate depreciations and the impact of inflation.

### **Learning Outcomes of Assessments**

The assessment item list is assessed via the learning outcomes listed:

Practical Assignment	4		
Exam	1	2	3

### **Outline Syllabus**

*Foundations of Engineering Economy (The Role of Engineering Economy in the Decision Making Process, Cash Flows, Interest Rates, Minimum Attractive Rate of Return).*

*Economic Equivalence (Single-Amount Factors, Uniform Series Present Worth Factor and Capital Recovery Factor, Sinking Fund Factor and Uniform Series Compound Amount Factor, Arithmetic Gradient Factors and Geometric Gradient Series Factors, Combining Factors, Nominal and Effective Interest Rates, Nominal and Effective Interest Rates Conversion, Relationships Between Payment Period and Compounding Period).*

*Basic Analysis Tools (Present Worth Analysis, Future Worth Analysis, Annual Worth Analysis, Rate of Return Analysis, Benefit/Cost Analysis).*

*Breakeven and Payback Analysis (Breakeven Analysis, Payback Analysis).*

*Effects of Inflation (Understanding the Impact of Inflation, Present Worth Calculations Adjusted for Inflation, Future Worth Calculations Adjusted for Inflation).*

*Depreciation and Taxation (Methods of depreciation, Income Taxes, After-Tax Economic Analysis).*

*Risk and Uncertainty (Interpretation of Certainty, Risk and Uncertainty, Decision Making Under Risk, Decision Making Under Uncertainty).*

## **Learning Activities**

Students will be supported in their learning, to achieve the above learning outcomes, in the following ways:

By a series of lectures and tutorials and through participation within practical sessions for problem solving.

A recommended resource list - indicating key reading, internet support and physical learning assistance, is provided to help enable students to undertake self-directed study.

## **Notes**

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