



**THE OHIO STATE UNIVERSITY**  
COLLEGE OF ENGINEERING

# Engineering Economics In-Person

## ISE 2040.01

**Credit Hours:**

2.00

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**Course Levels:**

Undergraduate (1000-5000 level)

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**Course Components:**

Lecture

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**Course Description:**

Economic analysis of engineering project alternatives. Cash flow modeling; time value of money; techniques for comparing project alternatives and making solid business recommendations; influence of financial accounting and cost accounting on cash flow models. Course uses MS Excel as primary business tool for modeling.

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**Prerequisites and Co-requisites:**

Prereq: Soph, Jr, or Sr standing in Engineering or BSET program.

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### **Course Goals / Objectives:**

- Understand a corporation's general business goals, and how they report their financial results to their shareholders.
  - Describe basic cost component behavior associated with engineering and manufacturing using common accounting terminology.
  - Understand the concept of 'minimal acceptable rate of return' (MARR), how it is used, and what factors influence it.
  - Use appropriate financial acumen in communications.
  - Model descriptions of engineering projects as discrete cash flows.
  - Use present worth, future worth, rate of return, simple payback period, discounted payback period, and break-even analysis to evaluate, compare and rank engineering projects.
  - Understand the advantages, disadvantages, and pitfalls associated with each of the analysis methods above, interpret the results from these methods, and understand the interrelations among the methods
  - Evaluate project financial outcomes and make recommendations based on proper calculations using MS Excel functions and good spreadsheet design.
  - Evaluate project risk using scenario analysis.
  - Understand and apply engineering economic analysis method(s) to a student selected case study.
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### **Course Topics:**

- Engineering Economic Introduction with Case Study Analysis
  - Corporate Objectives, Role of Engineers in Corporate Strategy, and minimal acceptable rate of return (MARR)
  - Financial Statements, terminology and basic financial ratios
  - Cost accounting terminology, cost behaviors, and applications of cost analysis in engineering
  - Time Value of Money Concepts - Present Value, Future Value of Single and Annuity (Repeating Cash flows)
  - Net Present Value Analysis Method
  - Annual Equivalent Worth Analysis method
  - Rate of Return Analysis Method
  - Risk Analysis
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### **Designation:**

Required

Elective