The Hong Kong University of Science & Technology

Department of Industrial Engineering & Decision Analytics

Course Title: Engineering Economics and Accounting

Course Code: IEDA 3230

No. of Credits: 3 credits

Semester: Fall 2025

Teaching Team

Instructor

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Teaching Assistants

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Class Schedule

Lecture: Tuesday & Thursday (16:30-17:50), Room 2502
Tutorial: Wednesday (11:00-11:50, Room 2302; 15:00-15:50, Room 4502)

Course Description

Objectives

To realize practical and affordable engineering designs, projects, and solutions, engineers must be equipped with the proficiency to make economically sound decisions. This course will cover the basic concepts and techniques useful for economic decision-making. The goal is to build a framework to systematically analyze the economic aspects of engineering solutions and to evaluate alternative designs by considering notions such as time value of money, economic equivalence, depreciation, and tax.

Course Materials

Textbook:
Engineering Economy, by William G. Sullivan, Elin M. Wicks, and C. Patrick Koelling, 17th edition, Pearson Education Limited 2020. (15th or newer editions are also okay.)

Notes and reading materials are available for download from Canvas course site.

List of Topics (tentative)

1. Introduction to Engineering Economy
2. Cost Concepts and Design Economics
3. Cost Estimation Techniques
4. The Time Value of Money
5. Evaluating a Single Project
6. Comparison and Selection among Alternatives
7. Depreciation and Income Taxes
8. Price Changes and Exchange Rates
9. Dealing with Uncertainty
10. Portfolio Management

Intended Learning Outcomes (ILOs)

By the end of this course, students should be able to:

1. Understand basic cost concepts, terminology, and methods to estimate and optimize cost of design projects.
2. Understand time value of money and apply this knowledge through various methods to evaluate alternative projects.
3. Apply the techniques to account for depreciation, tax, and inflation in the evaluation of engineering projects.
4. Apply the techniques to deal with uncertainty in decision making.

Assessment and Grading

This course will be assessed using criterion-referencing and grades will not be assigned using a curve. Detailed rubrics for each assignment are provided below, outlining the criteria used for evaluation.

Assessment Task	Contribution to Overall Course Grade (%)	Due Date
Assignments (4 in total. Count the highest 3)	20%	Week 3, Week 7, Week 10, Week 13
Midterm Exam	25%	Week 9
Final Exam	35%	Exam Week
Group Project	20%	Week 13

1. **Midterm Exam (1hr 20 mins)**: covers materials taught in the first half of the semester. Only one A4-size, double-sided and hand-written aid sheet is allowed.
2. **Final exam (2hrs 30 mins)**: covers all materials. Only two A4-size, double-sided and hand-written aid sheets are allowed.

3. **Project**: The main goal of the project is to learn more about engineering economics and accounting or to use the tools you have learnt in class to solve practical problems. You can extend the content on engineering economics and accounting and introduce new related topics. You can also study a specific management practice in a real organization. Please use the knowledge you learnt in class to identify and exploit opportunities for improvement in your chosen example.

Grading Rubics for Group Project

- Presentations: ~ 13 minutes per team. EACH team member needs to present during the presentation.
- The evaluation will be done by the entire class (30%) and the instructor (70%).

	Excellent	**Good**	**Satisfactory**	**Marginal**
Problem identification	Well defined and explained; a large amount of original thought;	Well defined and explained; some original thought;	Interesting problem identified, but there is little evidence of original thinking	It is not clear what the real problem is
Model and Data	Appropriate and rigorous model but yet not overly complicated; Excellent plan for data collection	Appropriate and rigorous model, but some fine-tuning is required; Some good ideas of how data can be collected	Appropriate model, but major adjustment is required; Little idea of how data can be collected	Inappropriate model, and/or major errors in the model; No idea on how data can be collected
Implementation Planning	Concrete and comprehensive plans; show considerations for all key issues; specific on how to measure the benefit	Good and realistic plan for data collection and improvement implementation	There are some good points in the plan, but the plan is either too vague or some ideas are unrealistic	No or little clue about what data is needed and how the improvement should be implemented; Or plans are unrealistic and illogical
Delivery	Excellent use of visuals; very clear and concise flow of ideas; demonstrate and stimulate passion	Good use of visuals; clear flow of ideas; demonstrate interest	Limited and/or not so good use of visuals; ideas presented but focus is lost at times; limited evidence of interest	No use of visuals; hard to follow ideas; lack of enthusiasm and interest
Response to questions	Excellent response; demonstrate in-depth consideration of all issues	Good response; demonstrate in-depth considerations of most issues	Satisfactory response; demonstrate considerations of some of the issues	Limited response; demonstrate a lack of considerations of significant issues

Mapping of Course ILOs to Assessment Tasks

Assessed Task	Mapped ILOs	Explanation
Homework Assignments	ILO1, ILO2, ILO3, ILO4	Homework are designed to assess students' foundational understanding of the basic concept, terminology (ILO1) and time value of money (ILO2). Furthermore, the skills to account for depreciation, tax (ILO3) and dealing with uncertainty (ILO4) are also evaluated.
Midterm Exam	ILO1, ILO2	Midterm exam evaluates students' ability to understand the cost concept, terminology (ILO1) and use time value of money to evaluate various projects (ILO2).
Final Exam	ILO3, ILO4	Final exam assesses students' ability to evaluate projects with consideration of depreciation, tax and inflation (ILO3), and make decisions when uncertainty is also involved (ILO4).
Group Project	ILO1, ILO2, ILO3, ILO4,	Group project allows students to work in group and use all knowledges (ILO1, ILO2, ILO3, ILO4) in practice when evaluating multiple projects.

Final Grade Descriptors:

Grades	Short Description	Elaboration on subject grading description
A	Excellent Performance	• Demonstrates a thorough understanding of engineering economics concepts, such as time value of money and cost-benefit analysis. • Applies accounting principles accurately in complex scenarios and produces high-quality financial reports. • Actively engages in discussions, contributes valuable insights, and collaborates effectively on group projects.
B	Good Performance	• Shows a solid understanding of core concepts like depreciation, budgeting, and financial statement analysis. • Effectively applies accounting methods to solve standard problems and participates in class discussions. • Completes assignments with good detail and accuracy, demonstrating a clear grasp of course material.
C	Satisfactory Performance	• Exhibits a basic understanding of fundamental topics such as cost estimation and financial ratios. • Can solve routine problems but may struggle with more complex calculations or analysis. • Meets assignment requirements but lacks depth in reasoning or clarity in presentations.
D	Marginal Pass	• Displays limited understanding of key concepts and struggles to apply basic principles in problem-solving. • Participates infrequently in class and has minimal collaboration with peers. • Assignments often lack coherence and detail, with frequent errors in calculations.

F	Fail	• Fails to demonstrate understanding of essential engineering economics and accounting principles. • Submits incomplete or poorly constructed assignments with significant errors. • Shows no engagement with the course material or participation in class activities.

Course AI Policy

There are no restrictions on use of generative AI for an assessment task in this course.

Communication and Feedback

Announcements will be made regularly via Canvas and / or via email. Please pay attention to those announcements/emails and reply when necessary.

Assessment marks for individual assessed tasks will be communicated via Canvas within two weeks of submission. Students who have further questions about the feedback including marks should consult the instructor within five working days after the feedback is received.

Academic Integrity

Students are expected to adhere to the university's academic integrity policy. Students are expected to uphold HKUST's Academic Honor Code and to maintain the highest standards of academic integrity. The University has zero tolerance of academic misconduct. Please refer to Academic Integrity | HKUST – Academic Registry for the University's definition of plagiarism and ways to avoid cheating and plagiarism.