



Syllabus ENGR/EC 225 Engineering Economics

COURSE CODE / COURSE LEVEL: ENGR/EC 225

Decided and approved by the Department in line with existing course coding; this is done prior to submission to Academic Council

COURSE NAME: *Engineering Economics*

TOTAL NO. OF CONTACT HOURS: 45

CREDITS: 3

PREREQUISITES: MA 198

COURSE DESCRIPTION

This course provides engineering students with the foundational tools of economic evaluation to assess and compare engineering alternatives effectively. Topics include interest and time-value of investments, break-even cost analysis, and the impact of depreciation and income taxes on project valuation. Through hands-on examples and case studies, students will learn to apply these economic principles to make informed and financially sound engineering decisions.

SUMMARY OF COURSE CONTENT

The course begins by introducing economic evaluation principles to provide students with the analytical skills needed to assess engineering alternatives. Key topics include interest calculations and the time-value of investments, focusing on how these financial factors affect the feasibility and desirability of engineering projects. Students will explore the impact of different interest rates and investment periods, learning how to forecast project cash flows over time.

Following this foundation, the course examines cost analyses essential for engineering decision-making. Students will learn to calculate break-even points for projects, enabling them to identify cost-effective solutions under various conditions. Emphasis is placed on understanding both fixed and variable costs and the way these influence decisions about project continuation or modification.

Finally, students will explore the role of depreciation and income taxes in project evaluation. By examining how tax policies and depreciation schedules impact project costs and profitability, students gain a practical understanding of how to structure projects to optimize financial

outcomes. Throughout the course, students will apply these tools to real-world engineering scenarios, preparing them for financially responsible decision-making in professional practice.

Required course materials/study visits and expected expenditure for the students

There is no requirement for specific equipment or for study visits.

LEARNING OUTCOMES

Upon completion of this course, the student will be able to:

- Select the best of a set of engineering alternatives.
- Analyze and make rational engineering or business decisions.
- Evaluate the net present value of an all-monetary situation, such as a loan.
- Evaluate an investment that includes initial cost, out-year costs, and revenues.

TEXTBOOK

Newnan, D.G., T.G. Eschenbach, and J.P. Lavelle (2020). Engineering Economic Analysis, (14th ed.), Oxford University Press.

(Any recent edition will suffice for the course.)

GRADING POLICY

Assessment methods:

Assignment	Guidelines	Weight
Homework	Homework is an opportunity for students to practice. These individual assignments are designed to apply the skills that are covered in the reading and in-class activities. There are 10 Homework in this course.	25
Group project	A project designed to apply skills/ideas acquired in the course in a practical way. There is a limit of four members per group.	15
Group quizzes	Students are assigned to groups of four/five, to work on exercises together.	5
Midterm exam	Verification of the knowledge acquired by the student in the first half of the course.	25
Final exam	Verification of the knowledge acquired by the student in the entire course.	30

Assessment criteria:

Grade A characteristics:

Work of this quality directly addresses the question or problem raised and provides a coherent argument displaying an extensive knowledge of relevant information or content. This type of work demonstrates the ability to critically evaluate concepts and theory and has an element of novelty and originality. There is clear evidence of a significant amount of reading beyond that required for the course

Grade B characteristics:

This is highly competent level of performance and directly addresses the question or problem raised. There is a demonstration of some ability to critically evaluate theory and concepts and relate them to practice. Discussions reflect the student's own arguments and are not simply a repetition of standard lecture and reference material. The work does not suffer from any major errors or omissions and provides evidence of reading beyond the required assignments

Grade C characteristics:

This is an acceptable level of performance and provides answers that are clear but limited, reflecting the information offered in the lectures and reference readings.

Grade D characteristics:

This level of performances demonstrates that the student lacks a coherent grasp of the material. Important information is omitted and irrelevant points included. In effect, the student has barely done enough to persuade the instructor that s/he should not fail.

Grade F characteristics:

This work fails to show any knowledge or understanding of the issues raised in the question. Most of the material in the answer is irrelevant.

Grade scale

A	=	94- 100%	B	=	84-86%	C-	=	70-73%
A-	=	90-93%	B-	=	80-83%	D+	=	67-69%
B+	=	87-89%	C+	=	77-79%	D	=	60-66%
			C	=	74-76%	F	=	0-59%

ATTENDANCE REQUIREMENTS:

Attendance is to be considered mandatory and will be part of the final grade. Students will be granted 2 absences without penalty. Any other absences will only be excused with medical certificates or permission from the Dean's Office.

Examination policy

A major exam (midterm or final) cannot be made up without the permission of the Dean's Office. The Dean's Office will grant such permission only when the absence was caused by a serious impediment, such as a documented illness, hospitalization or death in the immediate family (in which you must attend the funeral) or other situations of similar gravity. Absences due to other meaningful conflicts, such as job interviews, family celebrations, travel difficulties, student misunderstandings or personal convenience, will not be excused. Students who will be absent from a major exam must notify the Dean's Office prior to that exam. Absences from class due to the observance of a religious holiday will normally be excused. Individual students who will have to miss class to observe a religious holiday should notify the instructor by the end of the Add/Drop period to make prior arrangements for making up any work that will be missed.

ACADEMIC HONESTY

As stated in the university catalog, any student who commits an act of academic dishonesty will receive a failing grade on the work in which the dishonesty occurred. In addition, acts of academic dishonesty, irrespective of the weight of the assignment, may result in the student receiving a failing grade in the course. Instances of academic dishonesty will be reported to the Dean of Academic Affairs. A student who is reported twice for academic dishonesty is subject to summary dismissal from the University. In such a case, the Academic Council will then make a recommendation to the President, who will make the final decision

STUDENTS WITH LEARNING OR OTHER DISABILITIES

John Cabot University does not discriminate on the basis of disability or handicap. Students with approved accommodations must inform their professors at the beginning of the term. Please see the website for the complete policy

SCHEDULE

Week 1	Syllabus Review & Course Introduction Intro to Engineering Economic Cash Flow Diagrams / Time Value of Money Interest and Equivalence	
Week 2	Equivalence for Repeated Cash Flow Present Worth Analysis Annual Cash Flow Analysis	
Week 3	Rate Of Return Analysis Benefit-Cost Ratio Analysis	
Week 4	Equivalence Calculations Under Inflation Depreciation	
Week 5	Income Taxes for Corporations Case Study Presentation	