



ÇANKAYA UNIVERSITY
Faculty of Engineering
Graduate Program in Industrial Engineering

COURSE SYLLABUS

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| Course Code | : IE 341 |
| Semester | : 2025-2026 Fall |
| Course Title | : Engineering Economic Analysis |
| Sections | : 02 |
| Credit | : (3 0 3), 5 ECTS |
| Type of Course | : Graduate Must Course |
| Website | : http://ie341.cankaya.edu.tr/ |

Instructor

Assist. Prof. Dr. Çiğdem Sıcakyüz
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Office: L-309

Course Schedule

Section 1: Tuesday 09:20- 10:10 (LB-05),
Friday 11:20- 13:10 (LB-05)

Section 2: Tuesday 10:20- 11:10 (LB-05),
Friday 09:20- 11:10 (LB-05)

Office Hours

(Will be announced)

Textbook:

Leland Blank, Anthony Tarquin, Engineering Economy, 8th Ed., McGraw-Hill, 2018.

Additional Resources:

1. William G. Sullivan, Elin M. Wicks, C. Patrick Koelling, Engineering Economy, 16th ed., Prentice Hall, 2014.
2. Donald G. Newnan, Jerome P. Lavelle, Ted G. Eschenbach, Engineering Economic Analysis, 12th ed., Oxford University Press, 2013.
3. Chan S. Park, Contemporary Engineering Economics, Pearson, 5th ed., 2011.
4. John A. White, Kenneth E. Case, David B. Pratt, Principles of Engineering Economic Analysis, Wiley, 2010.
5. William G. Sullivan, Elin M. Wicks, James T. Luxhoj, Engineering Economy, Prentice Hall, 2006.

Course Description:

This course provides students with a comprehensive introduction to the fundamental principles and applications of engineering economy. It emphasizes systematic methods for evaluating the economic feasibility of engineering projects and alternatives. Topics include the time value of money, factor notation, and cash flow diagrams; shifted cash flows and gradient series; nominal and effective interest rates; and present worth, annual worth, and rate of return analyses. Students will explore both single and multiple alternative comparisons, as well as benefit/cost analysis in public sector decision-making. Additional topics include project financing, replacement and retention strategies, breakeven and payback analysis, and the impact of inflation on economic evaluations. By the end of the course, students will have the ability to apply economic analysis techniques to real-world engineering and managerial decision problems, supporting rational, data-driven choices in practice.

Course Objectives:

The primary objectives of this course are to introduce students to the fundamental concepts of engineering economics and the time value of money, with an emphasis on economic equivalence. The course aims to develop the ability to perform benefit–cost analysis and to provide sufficient knowledge for evaluating engineering projects and selecting the best alternatives.

Course Learning Outcomes:

On successful completion of this course, all students will have developed:

1. knowledge of the effects of time, money, interest rate, and inflation on the value of money
2. ability to formulate engineering economic problems and make present/annual/future worth, rate of return, and benefit/cost analysis
3. skills in analyzing and comparing project alternatives using different evaluation methods
4. the capability to make replacement and retention analysis
5. understanding of sources of project financing, debt-equity mix, and cost of capital
6. skills in using online learning platforms, following instructions

On successful completion of the course, all students will be:

7. aware of ethical issues

Tentative Course Schedule:

| Week | Topic |
|-------------|---|
| 1 | Foundations of Engineering Economy |
| 2 | Factors: How Time and Interest Affect Money |
| 3 | Combining Factors |
| 4 | Shifted Cash Flows and Gradients |
| 5 | Nominal and Effective Interest Rates |
| 6 | Present Worth Analysis |
| 7 | Annual Worth Analysis |
| 8 | Rate of Return Analysis: Single Alternative |
| 9 | Rate of Return Analysis: Multiple Alternatives |
| 10 | Benefit/Cost Analysis and Public Sector Economics |
| 11 | Project Financing |
| 12 | Replacement and Retention Decisions |
| 13 | Breakeven and Payback Analysis |
| 14 | Effects of Inflation |

Course Web Page:

A course web page will be available at <https://webonline.cankaya.edu.tr>. Students should regularly access this page for updates on class announcements, lecture notes, and assignments. Lecture slides may not cover all in-class discussions and problem solutions, so students are encouraged to attend classes and take detailed notes.

Grading:

| Method | Number | Contribution (%) |
|-----------------------------|--------|------------------|
| Midterm | 1 | 30% |
| Final Exam | 1 | 45% |
| Assignments (includes quiz) | 5 | 25% |

Details:

Assignments are designed to assess students' understanding of key engineering economy principles. This component will contribute 25% of the total course grade. The assignment score will include **regular assignments (15%)** and **two unannounced quizzes (10%)**.

The unannounced quizzes may be given during any class without prior notice. It will serve to evaluate students' understanding of recently discussed topics and encourage continuous engagement. Students who miss the quizzes due to absence will not have the opportunity for a make-up. Regular attendance is essential for success in this course.

Classroom Policy:

Students are expected to maintain a professional and respectful environment in class. Disruptive behavior, including the use of mobile devices for non-course-related purposes, will not be tolerated. Participation in discussions and problem-solving exercises is highly encouraged to enhance learning.

Honesty Policy:

Academic integrity is expected of students of Çankaya University at all times, whether in the presence or absence of the faculty. All students should declare their understanding and belief in the Honor Code for the examinations and assignments. This statement is a reminder to uphold your obligation as a student and to be honest in all work submitted and exams taken in this course and all others.

If you conduct any dishonest act during an examination or for the completion of an assignment (i.e., cheating on an exam, using any extra material that you are not allowed to use during an exam, copying material off of someone else's homework or assignment, using solution keys from previous years, copying material from published and electronic sources without paraphrasing and/or citing appropriately), you will get a credit of zero on that particular exam or assignment. Necessary disciplinary action, as dictated by the rules of the University, will also be taken.

Make-up Policy:

A make-up examination for the midterm or final exam will only be given under exceptional circumstances (such as serious health problems). The student must contact the instructor as early as possible and provide proper documentation (e.g., a medical report certified by Çankaya University's Health Center).

Attendance:

Attendance will be recorded through in-class signature sheets. Students are expected to attend **at least 50% of the lecture hours** during the semester. If this minimum requirement is not met, students may receive the letter grade **NA (Not Attended)**, which means the course cannot be successfully completed.

While the official minimum is 50%, regular attendance is highly recommended. Because the topics build on each other, missing classes can make it harder to follow new material. Attending all lectures will help students better understand the subject, perform well in exams and assignments, and actively benefit from class discussions.

Conditions that Lead to an "NA" Grade:

Any of the following may lead to receiving the letter grade NA (Not Attended):

- If a student fails to attend at least 50% of the lectures,
- If a student fails to take the midterm exam or the final exam without valid documentation, they will receive the letter grade NA.

If a student achieves a grade of **DD** or **higher** after completing all exams, assignments, and projects but has less than the required attendance, they may still pass the course conditionally, depending on their overall GPA, as per university regulations.

Changes to the Syllabus:

The instructor reserves the right to make changes to the syllabus as necessary. Any changes will be announced on the course website.