



ÇANKAYA UNIVERSITY
FACULTY OF ENGINEERING
Department of Industrial Engineering
IE 435
Decision Analysis
Spring 2024-2025



TENTATIVE COURSE SYLLABUS

Course Code : IE 435

Course Title : Decision Analysis

Credit Hours : (3 0 3) 4

Pre-requisites : ---

Students : IE

Year : 4

Semester : Spring 2025

Sections :

Instructors: **Dr.Erol YÜCEL**

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Catalog Data: This course is designed to cover quantitative decision analysis. The course is mainly divided into three parts, a review and general introduction to decision analysis, decision tree analysis with a single and multiple objectives and corresponding risk profiles; and introduction to utility theory including sensitivity analysis.

Course Outline: The following topics will be covered:

Weeks	Title
1	Introduction to Decision Analysis
2	Elements of Decision Problems
3	Structuring Decisions / Making Choices
4	Sensitivity Analysis / Organizational Use of Decision Analysis
5	Probability Basics
6	Subjective Probability / Theoretical Probability Models
7	Using Data
8	Simulation / Value of Information / Real Options
9	Risk Attitudes
10	Utility Axioms, Paradoxes, and Implications
11	Conflicting Objectives I / II
12	Project Presentations
13	Project Presentations
14	Effects of Inflation

Textbook: The course is based around the following textbook:

- Robert T. Clemen and Terence Reilly, "Making Hard Decisions with Decision Tools", Cengage Learning , (2014). ISBN 978-0538797573

References: The following useful reference books are available in the University Library:

- WWinston, Wayne L. Operations Research: Applications and Algorithms, Cengage Learning, (2003). ISBN 978-0534380588

Teaching Method: Teaching will be based on enabling the students to understand the concepts and procedures in each topic section and to be able to apply them.

Lectures: In lectures, the instructor will attempt to summarize and explain only selected important concepts and points as clearly as possible. To be familiar with the material presented in lectures and to participate in class discussions, the students are expected to read the material covered in the previous lectures prior to the class meeting. Students will then find the lectures more interesting, and will benefit from the discussion if they come well prepared.

Home Work: Students should work on two separate sets of assigned questions in order to get prepared for midterm and final exams. Students should form groups of at most **4 students** in order to perform both homework and case study.

Exams: All examinations will be based on lectures, tutorials, labs, and project work. To pass these exams students will need to have studied the material well in advance in order to understand the concepts, procedures and techniques. To discourage last minute cramming, the instructor and the assistants will not answer any questions from students on the day of an examination. Descriptions of these examinations are as follows:

Midterm Exam: There will be one midterm examination that covers all the material up to the date of the examination.

Final Exam: The Final Examination will cover all the material studied throughout the semester.

Make-up Exam: Make-up examination will only be offered (at the end of the semester) to students who missed the final examination or midterm exam and provided adequate documentations for the reason of their absence.

Attendance: Attendance requirements. Minimum required attendance is %45 to lectures. Please note that although this is the minimum requirements outlined for this course, it is best if you fully attend every hour. If you miss even a single hour, you will find it hard to understand the following course material since the topics are interrelated. Also note that attendance-related Çankaya University regulations will be applied.

Academic Dishonesty: Any act not suitable for a university student will not be tolerated and may lead to formal disciplinary action. Example of this are: getting someone else to take the examinations for you, misrepresentation of your own answer sheet as another's work, cheating, knowingly assisting other students to cheat, abusing the tolerance or breaking the discipline of the class.

Honor Code: Every student should declare her/his understanding and belief in the Honor Code stated by the department for the examinations and assignments:

Exam:

Please read the following Honor Code carefully. Then write I agree. [Kabul ediyorum.] and sign underneath to show your understanding and belief in the Honor Code.

I hereby declare that I have neither given nor received any aid during the exam. [Sınav sırasında hiç kimse den hiçbir şekilde yardım almadığımı ve hiçbir kimseye hiçbir şekilde yardım etmediğimi beyan ederim.]

Assignment:

For individual assignments, each student (for team work assignments, only one member of the study team) should write the following Honor Code with her/his own handwriting on the cover page of your assignment report, and each student should sign underneath.

I(We) hereby declare that, except where I(we) have indicated, the work I(we) am(are) submitting in this assignment (project, report, ...)is my(our) own work. [Sunmakta olduğum (olduğumuz) bu ödevin (projenin, raporun,...), belirttiğim (belirttiğimiz) kısımların haricinde, tamamen kendi eserim (eserimiz) olduğunu beyan ederim(ederiz).]

Grading Policy: Although the student's overall grade will be based on the general assessment of the instructor, the following percentages may give an idea about the relative importance of various assessment tools.

Complementary Project (25% and attendace 5%)	30 %
Midterm Exam	30 %
<u>Final Exam</u>	<u>40 %</u>
TOTAL	100 points

Note that the instructor reserves the right to modify these percentages in case he finds it necessary. Letter grade equivalents of numerical performances will be announced by the Registrar's Office after the last day for the submission of letter grades.

NA Grading: Conditions that might lead to "NA" grade:

1. Not attending **both Final Exam and Midterm Exam or their Make-up Exams without a valid excuse.**
2. **having an overall grading either "FF" or "FD" and the overall attendance to lectures/tutorials/labs/etc. less than 45%.**

Web page: Every student is responsible to check the web site of the course, at webonline.cankaya.edu.tr, regularly (at least twice a week). All the related announcements, lecture notes, grades, attendance and other information will be uploaded. You are responsible for all announcements made in class and on course web site, as well as for printing the materials from the web page.