TOBB ETÜ
END294 Operations Research 1
Autumn 2016-2017 Syllabus

Lecturer:
Assistant Prof. Ayşegül Altın Kayhan
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Office: Z76
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Class: *Section 1:* Monday 8:30-10:20 (Room:108) ; Tuesday 13:30-15:20 (Room:108)

Section 2: Thursday 16:30-18:20 (Room:178) ; Friday 16:30-18:20 (Room:178)

Course Web Page: To be announced soon...

Course Book: W. Winston, "Operations Research, Applications and Algorithms", 4th edition, Thomson, 2004.

Reference Books:

- D. Bertsimas and J. N. Tsitsiklis, "Introduction to Linear Optimization", Athena Scientific, 1997.
- H. Taha, "Introduction to Operations Research", 7th edition, Prentice Hall, 2003.
- F.S. Hillier and G.J. Lieberman, "Introduction to Operations Research", Holden-Day, 1967.

Course Assistants: Zeynep Bülbül (zbulbul@etu.edu.tr), Tech. Center 116

Tuğçe Yücel (t.efeoglu@etu.edu.tr) , Tech. Center 115

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Course Objectives: This is an introductory course at undergraduate level to mathematical modelling and optimization. The primary objective of the course is to help students have a general perspective about operations research and its methods. The main focus will be on constructing the mathematical models of real life problems and solving them using linear programming techniques. At the end of the course, students are expected to have the ability to exploit mathematical modelling techniques to solve decision making problems they face in their career as industrial engineers.

Course Content: Operations Research and its history, linear programming, linear programming models, optimization with linear programming, simplex algorithm, computer based linear programming, duality and sensitivity analysis.

Tentative Course Outline:

1. Introduction to Modeling
2. Linear Programming Examples
3. Geometry of Linear Programming
4. Simplex Method
5. Computer Based Solution Methods (Cplex OPL)
6. Duality and Sensitivity Analysis in Linear Programming

Grading: There will be one midterm exam with 35% weight during the term and a comprehensive final exam of 40% weight at the end of the semester.

Quizzes: There will be 4-5 quizzes each with 4-5% weight during the term. The main purpose of them is to help motivate students to study the course content regularly, to understand the level of the class and to prepare student to exams.

Homework: Some self-study questions will be assigned regularly. They will not be graded but students are definitely advised to try to solve them so as to be prepared to quizzes and exams as well as to improve their mathematical modeling capabilities.

Attendance: The weight of this part will be 5%.

Exam Schedule: There will be quiz in almost every two weeks. The exact date of quizzes and the midterm exam will be announced according to the exam schedule of the University.

Rules:

1. Please check your emails regularly. All announcements will be made via emails and you would be responsible for them without any exception.
2. You are expected to come to the class **right on time**.
3. You can take a makeup exam only if your request is accepted by the Executive Committee of the university. In such a case, you **must** contact me **at most in one day** after the exam date and provide me a valid health report or university certified permission as soon as possible. A **comprehensive** make up exam covering all course contents will be made **right after the final exam**.
4. **Honesty** is the key virtue in this course! In case of cheating in any occasion (quiz/exam) **whoever involved is responsible**. Disciplinary action will be taken.
5. Please do turn off your laptops and mobile phones in the class**.**