I. GENERAL INFORMATION

Semester & Year: FALL / 2023

II. COURSE INFORMATION

COURSE OBJECTIVES
Operations research can roughly be defined as the science of decision making. The object of this course is to provide the students with the fundamentals of linear programming, a decision making tool which sets the ground for and paves the way to more advanced mathematical programming models to be studied in IŞL 214. The students who take this course will gain an understanding about and will hopefully become skilled to some extent at using mathematical models in decision making.

COURSE DESCRIPTION
Employing the linear programming model as a decision making tool involves three consecutive stages: (1) formulation of the model, (2) solution of the model and (3) interpretation of the solution. Within the context of this course, these stages will be presented in reverse order. Covering the last two stages prior to the first one is the pedagogically correct approach. Accordingly, the course will start with the second stage. Upon learning how to solve the linear programming models the third stage will come into play. Interpretation of the solution means determining the range of validity of the optimum solution and entails sensitivity analysis and the closely related concept duality. The last three weeks will be devoted to model building. It will be much easier for the students who have gained a good understanding about the simplex method and sensitivity analysis to convert real world decision problems into linear programming models.

COURSE METHODOLOGY
The course will be conducted in primarily lecture format. The students will be encouraged to raise questions and make comments whenever they wish. Experience in solving and interpreting the solutions of linear programming models will be acquired through computer based practices to be carried out in class.

COURSE REQUIREMENTS
This is a course with no prerequisite. Neither mathematical background nor experience on computers is expected. It will not be difficult for the students to learn how to use the LINDO and LINGO package programs. A midterm exam and a final exam is mandatory. Homeworks will be assigned; all will involve the use of computer. Attendance will be taken throughout the semester. It is compulsory to attend at least 80% of the classes.

GRADING INFORMATION & CRITERIA
The course grade will be based upon the performance of the student on midterm exam, final exam, homeworks and class participation. The weights of the grades received in the midterm and the final exams are 0.4 and 0.6 respectively. Properly done homeworks and active class participation will have a positive impact on the course grade.

REQUIRED & PROPOSED MATERIALS
The Major Text:
Cemal Özgüven, Linear Programming, (Available in the book store.)
Supplementary Readings:
EXTRA INFORMATION
No office hours. The students can find the instructors anytime and anywhere in the school building.

COURSE OUTLINE
The topics to be covered and the number of weeks to be allocated to each one of them during the semester are as follows:

Introduction to Linear Programming/Graphical Solution Method (One Week)
Simplex Method- The Case of Maximization (Two weeks)
Simplex Method- The Case of Minimization (Two weeks)
The Technical Difficulties Encountered in Solving Linear Programming Models (Two Weeks)
Duality (Two weeks)
Sensitivity Analysis (Two weeks)
Applications of Linear Programming Model (Three Weeks)
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The Major Text:
Cemal Özgüven, Linear Programming, (Available in the book store.)
Supplementary Readings:
You are welcomed to borrow these book from me and take the photocopies of the relevant chapters.
LINDO and LINGO (Available in the computer laboratory.)

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