IE 424 Discrete Location Models and Applications (3 0 3) (ECTS: 5)

2016-2017 Spring – Tentative Syllabus

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Catalog Description:

Introduction and classification of location problems; overview of all the basic discrete facility location problems and the elements of location models; Single-Echelon Single-Commodity Location Models; Two-Echelon Multi-Commodity Location Models; Public Sector Location Models (Center, Median and Covering Problems); Hub Location Problems; basic Location-Routing Problems; modeling and solution methodologies for all location problem types covered.

Text Book:

- Mark S. Daskin, Network and Discrete Location, John Wiley & Sons Inc., 2nd Edition, 2013.
- Gianpaolo Ghiani, Gilbert Laporte and Roberto Musmanno, Introduction to Logistics Systems Planning and Control, John Wiley & Sons Inc., 2004.

Reference Books:

- Pitu B. Mirchandani and Richard L. Francis, Discrete Location Theory, John Wiley & Sons Inc., 1990.
- Richard L. Francis, Leon F. McGinnis Jr. and John A. White, Facility Layout and Location: An Analytical Approach, Prentice Hall, 1992.
- Zvi Drezner and Horst W. Hamacher, Facility Location: Applications and Theory, Springer, 2004.

Course Outline:

1. Introduction and Classification of Location Problems
2. Single-Echelon Single-Commodity Location Models: *Mathematical models*
3. Single-Echelon Single-Commodity Location Models: *Solution Methodologies and Applications*
4. Public Sector Location Models: *Covering Problems (Mathematical models)*
5. Public Sector Location Models: *Covering Problems (Solution Methodologies and Applications)*
6. Public Sector Location Models: *Center Problems (Mathematical models)*
7. Public Sector Location Models: *Center Problems (Solution Methodologies and Applications)*
8. Public Sector Location Models: *Median Problems (Mathematical models)*
9. Public Sector Location Models: *Median Problems (Solution Methodologies and Applications)*
10. Hub Location Problems (Mathematical models, Solution Methodologies, and Applications)
11. Location-Routing Problems (Mathematical models, Solution Methodologies, and Applications)
12. Two-Echelon Multi-Commodity Location Models (Mathematical models, Solution Methodologies, and Applications)
13. Review
14. Project Presentation

Class meeting hours: Wed. 14:20-17:10 (RA-02)

Office hour: To be announced later

Academic Integrity: All students admitted to Çankaya University are expected to act honestly and ethically. Therefore, any form of dishonesty will not be tolerated. Every student should declare his/her understanding and belief in the Honor Code stated by the department for the examinations and assignments.

Make-up Exams: If a student misses midterm exam or final exam and has a valid excuse for his/her absence, a make-up exam will be given. ***A make-up exam may have a different format and may contain different type of questions than the regular exam***.

Attendance: Attendance will be taken every lecture hour. It is strongly recommended to attend all the lecture hours to understand the course material.

Conditions that lead to the letter grade "NA":

- Not attending the *Midterm Exam* (or its makeup) or the *Final Exam* (or its makeup);
  - If you fail to take the midterm exam (or its makeup), you will NOT be able to take the final exam and you will receive the letter grade NA.
  - If you are eligible to take the final exam but fail to take it (or its makeup) you will receive the letter grade NA.

Course website:

- Communication will be made through course page at http://webonline.cankaya.edu.tr
- Announcements, lecture notes, grades, and other information will be uploaded to course page.
- Every student should check the course page regularly. They are also responsible for printing the course material (lecture notes, exercises, etc.) from the course web page.

Exams, Homework Assignments and Term Project:

- There will be one midterm exam, final exam, two homework assignments, and a term project (including oral presentation) in this course.
- In exams, you may bring and use your calculators (use of cellular phones instead of calculators will not be allowed).
- In homework assignments and project, you should work in teams of three or four people. It is your responsibility to find your team members.
- Each team should submit a single written report for the project and also make an oral in-class presentation. The details of the project will be announced later.

Tentative Grading:

% 30 Midterm Exam

% 35 Final Exam

% 15 Homework Assignments (2)

% 20 Term Project (%15 Report + 5% Presentation)

Letter grades will be mainly based on the catalogue grading system described in Çankaya University regulations.