

IE 58000 Special Topics in Industrial Engineering: Logistics and Transportation Planning - Spring 2019

Instructor : Bülent Çatay (FENS 1058)

Office Hour : TBA

Lectures : Mon 10⁴⁰ - 11³⁰ (FENS L030) & Wed 9⁴⁰ - 11³⁰ (FENS L061)

Objectives:

The objective of the course is to give the students a solid understanding of modeling approaches, analytical tools and techniques that are useful in the design and planning of logistics and transportation systems. The topics include logistics network design, facility location and allocation, long- and short- haul freight transportation, and vehicle routing and scheduling. We will discuss the theory, application methods, and techniques that are needed to successfully model, analyze, and solve these problems. We will develop and employ both exact and approximate methods to solve problems arising in logistics and transportation systems, and implement computerized applications. The course is designed for graduate students who have a solid background in mathematical programming. Proficiency in C/C++/C#/Java and IBM ILOG CPLEX is required.

Recommended Textbooks:

Introduction to Logistics Systems Management. G. Ghiani, G. Laporte and R. Musmanno. John Wiley & Sons, 2013. (eBook available online at the Information Center)

Introduction to Logistics Systems Planning and Control. G. Ghiani, G. Laporte and R. Musmanno. John Wiley & Sons, 2004. [TS161 .G45 2004]

Supply Chain Engineering. M. Goetschalckx. Springer, 2011. [HD38.5 .G586 2011] (eBook available online at the Information Center)

Grading Policy:

40% Exam + 20% Presentations + 30% Project + 20% Term Paper

- **Exams:** One in-class exams will be given individually and performed closed book and closed notes. A single comprehensive make-up exam will be offered after the final exams period to those who have missed an exam and have a medical report provided/approved by the Health Center. There is no make-up for the make-up exam!
- **Project:** A term project will be conducted individually throughout the semester. The project involves the development and implementation of a methodological/algorithmic approach to solve one of the problems discussed in the course or selected from the relevant literature. The implementation will be through IBM ILOG CPLEX optimization solver and a programming language (C, C++, Java, etc.). The outcome of the project will be a short paper which will also be presented in class.
- **Presentations:** Each student will make two presentations throughout the semester. The topic will be determined by the instructor and the content will include technical papers from the relevant literature, subject to the approval of the instructor.

Course Outline

- Short-Haul Freight Transportation: Vehicle Routing and Scheduling
- Long-Haul Freight Transportation: Freight Traffic Assignment and Service Network Design
- Logistics Network Design: Facility Location/Allocation

Disclaimer:

The instructor reserves the right, when necessary, to alter the grading policy, change exam dates, and modify the syllabus and course content. Modifications will be announced in class and at the SUCourse website. Students are responsible for the announced changes.

Academic Integrity:

Students in this course are expected to honor the academic integrity principles according to the SU rules and procedures. Non-compliance to [academic integrity](#) principles through plagiarism, using or accomplishing another person's work, and/or submitting previously used work will be penalized severely.