

CE 6210 Transportation System Modeling

Course Syllabus

Lecture: TBD

Instructor: Mahyar Amirgholy
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Office: M-162C Hours: Tue & Thu, 6:00 pm – 8:00 pm

Prerequisite: Calculus

Textbook

The primary course text will be the following book:

Sheffi, Y. Urban transportation networks. Prentice-Hall, Englewood Cliffs, NJ.

Available Online: <https://web.mit.edu/sheffi>

Additional readings and references will be posted as necessary to D2L Brightspace.

Description and Objectives

[3 credits] The course objectives are for students to understand mathematical transportation system modeling and optimization techniques. Upon completing the course, students should be familiar with the fundamental concepts of network modeling and traffic assignment. Students should be able to develop mathematical network models, demand generation, trip distribution, modal split, and traffic assignment models for urban networks. The student will leave the class with mathematical programming skills that have wide applications in the transportation engineering field.

Course Topics

- Transportation networks analysis
- Mathematical programming
- Optimization methods
- Demand generation
- Trip distribution
- Modal split
- Traffic assignment

Course Learning Outcomes

1. Formulate transportation network models as mathematical programs
2. Solve mathematical programs using numerical methods

3. Develop multimodal network models
4. Assign demand to transportation networks
5. Solve network assignment problems

Course Requirements and Grades

Course grades will be based on four components:

1. **Homework** [30%] In order to practice concepts from the class, some shorter exercises will be assigned as homework. Homework assignments must be submitted to the D2L website in a single PDF with a file name as "FirstInitial_LastName_HW#.pdf".
2. **Midterm Exam** [30%] The midterm exam evaluates your knowledge in the middle of the semester. The problems will be similar in size and scope to the assigned homework. Unless instructed otherwise, the midterm exam will be closed book.
3. **Term Project** [40%] The topic of your project must be related to network modeling. You will be expected to prepare a report in the format of a journal or conference paper on your term project. The project report must be submitted to the D2L website in a single PDF with a file name as "FirstInitial_LastName_TPR.pdf"

Microsoft Word Template: https://github.com/chiehrosswang/TRB_MSWORD

Course Communication

Course communications will be sent to the class using the D2L website. This site is where notes, videos, readings, assignments, and other announcements will be posted. It is important that if you are registered for the course, you are also on the roster for the D2L site.

Contacting Me

The best way to contact me is by email. Include "CE 6210" in the subject line to ensure your message receives timely attention. In general, homework and project questions are difficult to answer by email, so I may request that you come in for office hours.

Academic Integrity Policy

Homework assignments are designed to be an individual effort, and you are expected to submit only your own work. Semester projects must consist of your original analysis and writings. Ideas from other authors must be properly cited, and plagiarism will not be tolerated. All students are expected to adhere to the Kennesaw State University Codes of Conduct.*

* https://scai.kennesaw.edu/KSU_Codes_of_Conduct_2019-2020.pdf