

UNIVERSITY OF FLORIDA
Department of Civil and Coastal Engineering

TTE 6606 Urban Transportation Models
Spring 2020

1. **Catalog Description (including credit hours)** - Mathematical models for decision makings in planning and operation of urban transportation systems. (3 credit hours)
2. **Pre-requisites and Co-requisites** - TTE 4004, a computer programming course, and TTE4300/5305 or equivalent, or consent of instructor.
3. **Course Objectives**
 - To explore a set of quantitative models for urban transportation planning and operations;
 - To learn how to interpret the results of these models and foster a critical perspective of their limitations;
 - To develop the capability of modeling for a variety of applications.
4. **Instructor** - Dr. Lili Du
Office location: Weil Hall 512D
Telephone: 352-294-7805
Email: lilidu@ufl.edu
Web site: <https://faculty.eng.ufl.edu/lilidu/>
Office hours: by appointment or “drop in”

Teaching Assistant
Qiu, Jiahua
Office: Weil Hall 511A
Email: jq22@ufl.edu
Office Hours: **TBD**
5. **Meeting Times** – MW 10:15am – 11:30am
6. **Class Schedule** - Two sessions per week lasting 75 minutes each
7. **Meeting Location** – Zoom
8. **Material and Supply Fees** - None
9. **Recommended Reading**
Sheffi, Yosef. *Urban Transportation Networks: Equilibrium Analysis with Mathematical Programming Methods*, Prentice-Hall Inc, 1984, ISBN: 0-13-939729-9.

Patriksson, M. *The Traffic Assignment Problem: Models and Methods*, VSP, Utrecht, Netherlands, 1994.

Bell, M.G.H. and Iida, Y. *Transportation Network Analysis*, John Wiley, 1997. E-book available at UF libraries <http://cms.uflib.ufl.edu/>

Hensher, D. A. and Button, K. J. *Handbook of Transport Modeling*, Pergamon, 2000.

10. Course Outline (Tentative and will be changed along with the actual progress)

Week	Date	Topic	Assignment
1	1/11	Course Introduction	A#1 out
	1/13	Review Mathematical Programming	Paper reading assignment out
2	1/18	No Class	
	1/20	TRB, Annual Meeting, Class Canceled	May change it later
3	1/25	TRB, Annual Meeting, Class Canceled	May change it later
	1/27	Review Nonlinear Programming- Unconstrained	
4	2/01	Nonlinear Optimization Algorithms-Unconstrained	
	2/03	Nonlinear Programming- Constraint	
5	2/08	Nonlinear Optimization Algorithms- Constraint	
	2/10	Shortest Path- Model and Algorithm	
6	2/15	Shortest Path - Application	A#1 due A#2 out;
	2/17	Transportation Network Analysis	
7	2/22	Deterministic User Equilibrium (DUE)	Project out
	2/24	Solving for DUE	
8	3/01	System Optimal and Congestion Pricing-1	
	3/03	System Optimal and Congestion Pricing-2	A#2 due
9	3/08	Stochastic User Equilibrium	A#3 out
	3/10	Logit-based Stochastic User Equilibrium	
10	3/15	Equilibrium Analysis with Elastic Demand	
	3/17	Equilibrium Analysis with Elastic Demand	
11	3/22	Review of Network Equilibrium Analysis	
	3/24	Bi-level Programming Models	A#3 due A#4 out
12	3/29	Bi-level Programming Models	
	3/31	Network Reliability/Vulnerability Assessment	
13	4/05	Network Reliability/Vulnerability Assessment	
	4/07	Vehicle Routing/TSP or Seminar	
14	4/12	TBD	
	4/14	Paper Reading presentation	Paper reading due
15	4/19	Paper Reading presentation	due A#4 due
	4/21	Project Presentation	Project report

11. Attendance and Expectations

a. Attendance:

Class attendance is encouraged. Note that 10% of the grade for the class is based on class attendance and participation. Any absence should be coordinated in advance, if possible.

b. Late assignments (unless coordinated in advance) will be penalized by 10% per day in the first day and won't accept further later submission after one day.

c. Class Room Procedures:

Bring the course slides, assigned reading material, a calculator, and note taking material to each class period. Cell phone use during class is strictly prohibited, and all cell phones should be turned off during class.

d. Additional Instruction:

If you are having a difficult time understanding a concept, coordinate with me for additional instruction. You are allowed to discuss ideas and thoughts with other students about homework assignment. But students are not allowed to show solution to each other directly. You are expected to write down the homework solution independently.

e. Written Submissions:

A significant part of engineering is written communication. Heavy emphasis will be placed on the clarity, organization and readability of your work. It is preferable that the assignments and reports are typed, but in the event they are hand-written, they must be very neatly presented. All information extracted from external references (journals, books, etc.) must have appropriate notation and bibliographic citations. Assistance from other students or instructors must be properly acknowledged as a parenthetical note and a proper bibliographic citation.

12. Grading

Individual Assignments	35%
Project Report #1	20%
Paper Presentation (slides + presentation)	25%
Project Presentation	10%
Class Participation	10%
Total	<u>100 %</u>

13. Grading Scale

Less than 55 = D+; 55-60 = C-; 60-65 = C; 65-75 = C+; 75-80 = B-; 80-85 = B; 85-90 = B+; 90-95=A-; 95-100= A.

14. Make-up Exam Policy - None

15. **Honesty Policy** - All students admitted to the University of Florida have signed a statement of academic honesty committing themselves to be honest in all academic

work and understanding that failure to comply with this commitment will result in disciplinary action. This statement is a reminder to uphold your obligation as a UF student and to be honest in all work submitted and exams taken in this course and all others.

16. **Accommodation for Students with Disabilities** - Students requesting classroom accommodation must first register with the Dean of Students Office. That office will provide the student with documentation that he/she must provide to the course instructor when requesting accommodation.
17. **UF Counseling Services** - Resources are available on-campus for students having personal problems or lacking clear career and academic goals. The resources include:
 - University Counseling Center, 301 Peabody Hall, 392-1575, Personal and Career Counseling.
 - SHCC mental Health, Student Health Care Center, 392-1171, Personal and Counseling.
 - Center for Sexual Assault/Abuse Recovery and Education (CARE), Student Health Care Center, 392-1161, sexual assault counseling.
 - Career Resource Center, Reitz Union, 392-1601, career development assistance and counseling.
18. **Software Use** - All faculty, staff and student of the University are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against University policies and rules, disciplinary action will be taken as appropriate. We, the members of the University of Florida community, pledge to uphold ourselves and our peers to the highest standards of honesty and integrity.
19. **Diversity Statement** - The Herbert Wertheim College of Engineering (HWCOE) values a diverse and inclusive community. It is integral to success in every area of our college. Therefore, the College is committed to non-discrimination with respect to all areas of human differences, including but not limited to national and ethnic origin, race, age, sex, sexual orientation, gender identity and expression, beliefs and opinions, religion and faiths, culture, socio-economic background, level of physical or mental ability, and veteran's status. This commitment applies in all areas—to students, faculty, and staff and intends to reflect the College's belief that educational and employment decisions and access to University activities should be based on an individual's abilities and qualifications.

The HWCOE values broad diversity within our community and is committed to individual and group empowerment, inclusion, and the elimination of discrimination. We aspire to educate students to become future leaders capable of creating diverse and inclusive work cultures wherever their careers may take them.

20. **Privacy related issues statement for online lecture:** Our class sessions may be audio visually recorded for students in the class to refer back and for enrolled students who are unable to attend live. Students who participate with their camera engaged or utilize a profile image are agreeing to have their video or image recorded. If you are unwilling to consent to have your profile or video image recorded, be sure to keep your camera off and do not use a profile image. Likewise, students who un-mute during class and participate orally are agreeing to have their voices recorded. If you are not willing to consent to have your voice recorded during class, you will need to keep your mute button activated and communicate exclusively using the "chat" feature, which allows students to type questions and comments live. The chat will not be recorded or shared. As in all courses, unauthorized recording and unauthorized sharing of recorded materials is prohibited.