

TTE 5006 Advanced Urban Transportation Planning

Course Description

Overview of the “four-step” urban transportation planning process, estimation of the travel demand models of trip generation, trip distribution, mode choice, and traffic assignment, and the forecasting of travel patterns using the travel-demand models, state-of-the-art approaches.
(3 credits)

Pre-requisites

TTE 4004 or equivalent & some familiarity with probability and statistics

Course Objectives

1. Understand and critique the state-of-the-practice approach to transportation modeling and planning
2. Estimate and interpret the various types of models used for travel forecasting
3. Predict future travel patterns under different scenarios using the travel models
4. Understand the process of mathematical analysis of real-world problems

Instructor

Dr. Sivaramakrishnan (Siva) Srinivasan

513A Weil Hall

Tel. 352-294-7807

E-mail: siva@ce.ufl.edu

Office Hours: Stop by my office or send-me an e-mail to set up a meeting time.

Teaching Assistant

None

Meeting Times & Location

MWF 11:45-12:35 @ Little Hall 121

Material and Supply Fees

None

Text Books and Software Required

There is no text book or software that you are required to purchase. Lecture slides/notes and references to other reading material (such as journal publications, book chapters, and web sites) will be made available electronically via the course web site or provided as hand-outs in class. Statistical software is available in the Circa Labs and via UF Apps <http://info.apps.ufl.edu/>

Recommended Reading

Lecture slides will include references to additional reading material

Course Outline

- Transportation planning in the current-day context
- Overview of the “Four-Step” travel-demand forecasting procedure
- Trip Generation
 - Simple (Cross-classification) approaches
 - Regression models for trip productions
 - Specification and interpretation
 - Ordinary least squares (OLS) estimation (using SPSS software)
 - Hypothesis testing, goodness of fit, and model refinement
 - Market segmentation and nonlinearities
 - Empirical applications using travel-survey data
 - Aggregate models for trip attractions
 - Trip balancing
- Trip Distribution
 - Growth factor approaches
 - Gravity model
 - Calibration (determination of the friction factors)
 - Application for forecasting
 - Disaggregate location-choice models
- Mode Choice
 - Theory of random-utility maximization
 - Specification and estimation of logit models
 - Empirical applications using travel survey data
- Network Assignment
 - Creating OD matrices from PA matrices
 - Network representation and shortest-path concepts
 - User equilibrium
 - System optimum
- Florida Standard Urban Transportation Model Structure (FSUTMS)
- A critical assessment of the state-of-the-practice approach
- State-of-the-art: tour-based and activity-based approaches
- Scenario Planning: Dealing with Autonomous and Connected Vehicles.

Attendance and Expectations

1. Attendance is strongly encouraged and you are responsible for the material covered in class. Co-ordinate any absence with the instructor in advance.
2. Assignments (in hard copy) are due at the beginning of the class period on the date specified. Assignments will not be accepted after this time, except under extraordinary circumstances or when prior permission has been sought.
3. Students are expected to work on the assignments independently
4. As a courtesy to others, please turn off cell phones during the class

Grading

Grades will be based on two exams (20% each), a project (10%), and several assignments (50% total). The final grade will be based on your overall performance relative to that of others in the class.

NOTE: Undergraduate students, in order to graduate, must have an overall GPA and an upper-division GPA of 2.0 or better (C or better). Note: a C- average is equivalent to a GPA of 1.67, and therefore, it does not satisfy this graduation requirement. Graduate students, in order to graduate, must have an overall GPA of 3.0 or better (B or better). Note: a B- average is equivalent to a GPA of 2.67, and therefore, it does not satisfy this graduation requirement. For more information on grades and grading policies, please visit: <https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx>

Make -up Exam Policy

Requests for make-up exams are strongly discouraged. Such requests will be accommodated only under exceptional situations and when prior permission from the instructor has been sought adequately in advance.

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.

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.

UF Counseling Services

Resources are available on-campus for students having personal problems or lacking clear career and academic goals. The resources include:

1. University Counseling Center, 301 Peabody Hall, 392-1575, Personal and Career Counseling.
2. SHCC mental Health, Student Health Care Center, 392-1171, Personal and Counseling
3. Center for Sexual Assault/Abuse Recovery and Education (CARE), Student Health Care Center, 392-1161, sexual assault counseling.
4. Career Resource Center, Reitz Union, 392-1601, career development assistance and counseling.

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.