

Urban Transportation Planning

CEE6701/CP6701

Fall 2020

Tuesday/Thursday 12:30 - 1:45, Remote Synchronous via BlueJeans

| | | |
|--|--|---------------------------|
| <i>City Planning Professor</i> <i>Dr. Catherine L. Ross</i> 760 Spring Street, Suite 213 404-385-5130 catherine.ross@coa.gatech.edu | <i>Civil Engineering Professor</i> <i>Dr. Randall Guensler</i> 222 SEB 404-894-0405 randall.guensler@ce.gatech.edu | <i>Teaching Assistant</i> |
|--|--|---------------------------|

Course Overview:

Transportation facilitates the movement of goods and services, provides people with access to locations and activities, and shapes the form and structure of cities. Locations that are the easiest to access are usually the locations that grow most rapidly. The location and characteristics of transportation facilities, from ports, to turnpikes, to canals, to rail lines, to trolley lines, to modern limited-access highways, no matter how simple or sophisticated, have attracted development and spawned communities. The nature of the transportation network is often the most distinctive feature that characterizes a place and gives it a sense of uniqueness.

Urban transportation systems are dynamic by nature, changing as a function of economic growth, regional and national politics, land-use decisions, personal wealth, lifestyle, and many other factors. Transportation investment and fiscal policy affects travel choice, which in turn impacts our social structure and environment. The transportation system directly affects all sectors of the economy and all segments of the population. Stakeholder groups are abundant ... transportation policy is in the fundamental interest of all individuals (regardless of age, gender, income, race, etc.), all private industry, all government agencies, and all public interest groups. Construction and maintenance of transportation infrastructure (roads, rail lines, etc.) is costly, even compared with other capital-intensive infrastructure improvements such as water, gas, electricity, storm-water drainage, solid waste disposal, sewage treatment, etc. Major transportation investment decisions can increase economic prosperity or lead to a spiraling economic decline in urban areas. Disruptive transportation technologies, such as automated vehicles and car sharing, also have the potential to change the urban landscape. Finally, transportation system impacts on energy, the environment, and sustainability are significant and are important elements of the planning process.

This Introduction to Transportation Planning course familiarizes students with the theory and practice of transportation planning and examines the contexts in which transportation planning occurs. This course provides an overview of planning theory, transportation systems, current problems, decision-making frameworks, financial elements, environmental impacts, and current and future policy initiatives. Students are introduced to the transportation planning profession and the analytical methods employed through an applied transportation planning project.

The course is oriented around five subject areas: transportation systems, current transportation problems, transportation planning methods, transportation policy and decision-making, and the changing nature of transportation. This framework will enable students to achieve the following course objectives:

- Explain the basic concepts of transportation planning, engineering, and policy
- Analyze transportation plans, policy statements, and engineering assessments in light of regional and local transportation goals, objectives, and practical feasibility
- Propose and analyze transportation planning strategies that improve transportation efficiency, incorporate stakeholder analysis, enhance social benefits and quality of life, and acknowledge sustainability impacts
- Formulate research needs statements in transportation planning and engineering
- Work effectively in an interdisciplinary team to develop and analyze a relevant transportation planning research project from start to finish, presenting the final project findings to professional stakeholders

College-level Writing Skills Requirement:

Students must have mastered college-level writing prior to taking this course. Students who have not yet mastered college-level writing should delay taking the class until their second year, to provide time to take additional courses or otherwise obtain college-level writing skills. Grades for every assignment in this class (individual and group assignments) are based upon both technical content and technical writing quality. Our expectations are very high. Students in this class will be preparing research reports that are distributed to professional transportation planners and engineers in Georgia.

Academic Integrity:

Georgia Tech aims to cultivate a community based on trust, academic integrity, and honor. Students are expected to act according to the highest ethical standards. For information on Georgia Tech's Academic Honor Code, please visit <http://www.catalog.gatech.edu/genregulations/honorcode.php> and <http://www.catalog.gatech.edu/rules/18b.php>.

Accommodations for Individuals with Disabilities:

If you are a student with learning needs that require special accommodation, contact the Office of Disability Services (often referred to as ADAPTS) at (404) 894-2563 or <http://disabilityservices.gatech.edu/>, as soon as possible. Make an appointment to discuss your special needs and to obtain an accommodations letter. Please also e-mail Dr. Guensler as soon as possible.

Georgia Tech Honor Code

The members of the Georgia Tech community believe the fundamental objective of the Institute is to provide the students with a high-quality education while developing in them a sense of ethics and social responsibility. We believe that trust is an integral part of the learning process and that self-discipline is necessary in this pursuit. We also believe that any instance of dishonesty hurts the entire community. It is with this in mind that we have set forth a student Honor Code at Georgia Tech. Please visit <http://www.catalog.gatech.edu/policies/honor-code/>.

Class Absence Policy

This class follows the official Georgia Tech Absence Policy (<http://catalog.gatech.edu/rules/4/>).

Course Assignments:

Reading Quizzes Discussions (30%)

Required readings serve as the basis for online Canvas quizzes and student-led in-class discussions.

Final Term Project (50%)

The class will break into teams to undertake planning, research, and program evaluation project. Project topics will be assigned after the second full week of the semester. Teams will meet regularly with the instructors. Individual project elements are due throughout the semester. Expectations are high because teams present their projects to invited transportation professionals at the end of the semester. Final projects are typically 30 and 40 pages (1.5 line spacing) and are due on the last day of class.

Presentation of Term Project (20%)

Each team will prepare and present a draft PPT presentation (delivered online) and will make a final 20-minute presentation to a group of practicing Atlanta transportation professionals. Each student will be responsible for presenting a portion of the team's project.

Course Textbook:

Introduction to Transportation Planning (Meyer and Miller, 2016 Edition) is a required textbook for this class. You must purchase this book and bring it with you to class on specific days. The Regional Transportation Plan (ARC, 2020) is also a required reading, and students are encouraged to print a copy for reference. All of the other readings and references are available through the course website.

- Meyer, M. and E. Miller (2016). Transportation Planning: A Decision-Oriented Approach. Modern Transportation Solutions. 2016.
- Atlanta Regional Commission (2020). Atlanta Regional Transportation Plan

Urban Transportation Planning (CEE6701/CP6701)

Fall 2020 Course Schedule

Urban Transportation Systems, Problems, and Planning

Stakeholders and Intergovernmental Issues

Week 1 Tuesday, August 18. Thursday, August 20.

Readings: Meyer and Miller, Chapters 1 and 2.

Caro, Robert A. (1977). Robert Moses: Great Builder of the Twentieth Century. Civil Engineering. October 1977. pp. 121-126.

Altschuler, Alan A. (1965). The Goals of Comprehensive Planning. In: The City Planning Process. Edited by AIP. Cornell University. 1965. pp. 76-93.

Lindblom, Charles (1959). The Science of Muddling Through, Public Administration Review. Vol. 19, No. 2. Spring 1959. pp. 79-88.

References: USDOT. FAST Act Fact Sheets (2019). <https://www.fhwa.dot.gov/fastact/factsheets/>.

USDOT (2017). The Transportation Planning Process Briefing Book: Key Issues for Transportation Decisionmakers, Officials, and Staff (FHWA-HEP-18-015). https://www.fhwa.dot.gov/planning/publications/briefing_book/

Transportation Technology and System Evolution

Transportation Networks and Parking

Week 2 Tuesday, August 25. Thursday, August 27.

Readings: Meyer and Miller, Chapter 3.

Shoup, D. (2005). The High Cost of Free Parking. Chapter 1: The 21st Century Parking Problem. APA Planner's Press. 2005.

References: Pringle, Jeshua (2016). Summary Report for *Parking Policies for Resurging Cities: An Atlanta Case Study*. Atlanta, GA, 2016

Urban Economics, Regional Growth, Urban Spatial Structure, and Land Use Development

State and Local Transportation Plans, Programs, Project Funding, and Implementation

Week 3 Tuesday, September 1. Thursday, September 3.

Readings: Handy, Susan (2005). Smart Growth and the Transportation-Land Use Connection: What Does the Research Tell Us? International Regional Science Review. 28(2). pp. 146-167.

Muller, Peter O. (1995) "Transportation and Urban Form: Stages in the Evolution of the American Metropolis." The Geography of Urban Transportation

References: CARB (2014). Senate Bill 375 - Research on Impacts of Transportation and Land Use-Related Policies. <https://arb.ca.gov/cc/sb375/policies/policies.htm>

WSDOT (2007), Transportation and Land-Use Policy in Georgia, Washington State Department of Transportation. June 2007.

Title 23, Section 134 Metropolitan Planning, Part 450. Section 450.322, Section 450.324 Title 23, Section 135 Statewide Planning, Part 450. Section 450.216.

Infrastructure Management: Congestion, Data, and Decision Making

Transit Planning

Week 4 Tuesday, September 8. Thursday, September 10.

Readings: Meyer and Miller, Chapters 8 and 9.

References: APTA (2019). Public Transportation Fact Book (70th Edition.). American Public Transit Association.

APTA (1994). Glossary of Transit Terminology. American Public Transit Association.

Taylor (2002). Rethinking Traffic Congestion. Access Magazine.

Freight Transportation and Regional Impacts of E-Commerce

Week 5 Tuesday, September 15. Thursday, September 17

Readings: USDOT (2008). The Freight Story - A National Perspective on Enhancing Freight Transportation.
Dablanc, L., and C. Ross (2012). Atlanta: A Mega Logistics Center in the Piedmont Atlantic Megaregion.
Journal of Transport Geography, 24. pp. 432-442.

References: Zook, M. (2003). Hubs, Nodes and Bypassed Places: A Typology of E-Commerce Regions in the United States, Tijdschrift voor Economische en Sociale Geografie, 93. Pp.509-521. <https://rdcu.be/bORaQ>
How Online Shopping Snarls Traffic on City Streets. <https://www.curbed.com/2019/1/10/18177399/amazon-delivery-traffic-online-shopping-e-commerce>

Public Involvement in Transportation Decision Making

Lifestyles, Travel Demand, and Survey Data

Week 6 Tuesday, September 22. Thursday, September 24.

Readings: Meyer and Miller, Chapters 4.
Arnstein, S. (1969). A Ladder of Citizen Participation. JAIP, Volume 35, Number 4, July 1969, pp. 216-224.

References: Georgia Open Records Act and Public Hearing Requirements (find on your own)
USDOT, FHWA (2015). Public Involvement Techniques for Transportation Decisionmaking
http://www.planning.dot.gov/PublicInvolvement/pi_documents/toc-foreword.asp
TCRP Synthesis 85 (2010). Effective Use of Citizen Advisory Committees for Transit Planning and Operations, Washington DC. 2010.
SUNY (2016). Innovative Travel Data Collection Recommendations. December 2016

Travel Demand Modeling

Land-Use Modeling

Week 7 Tuesday, September 29. Thursday, October 1.

Readings: Meyer and Miller, Chapter 5.
FHWA (2004). Traffic Analysis Toolbox Volume I: Traffic Analysis Tools Primer

References: FHWA (2015) AASHTO Transportation Asset Management Guide.
<http://www.fhwa.dot.gov/asset/hif10023.cfm>.

Trip Generation and Trip Distribution

No Class Tuesday, October 6.

Week 8 Thursday, October 8.

Readings: Meyer and Miller, Chapter 6.

References: NCHRP (2010). Synthesis 406. Advanced Practices in Travel Forecasting. TRB. Washington D.C.

Mode Choice and Route Assignment

Week 9 Tuesday October 13. Thursday, October 15.

Readings: NA

Overview of the ARC Travel Demand Model and Demand Management

Group Check-in Meeting

Week 10 Tuesday, October 20. Thursday, October 22 (online check-in meetings).

Readings: Meyer and Miller, Chapters 7 and 8.

References: Rousseau, G., and T. Clymer (2014). Travel Demand Modeling and Conformity Determination: Atlanta Regional Commission Case Study. Transportation Research Record 1817. TRB. Washington D.C.
Georgia Commute Options Website (2018). <http://www.georgiacommuteoptions.org>.
GRTA (2008). DRI Review Checklist: Users' Guide. Georgia Regional Transportation Authority. Atlanta, GA.

ADA, Pedestrians, and Walkability Bicycles and the Built Environment

Week 11 Tuesday, October 27. Thursday, October 29.

Readings: USDOJ (1990). The Americans with Disabilities Act

References: USDOJ (2018). Information and Technical Assistance on the ADA (Website)
NACTO Urban Streets Design Guide (Website)

Transportation, Energy Futures, Air Pollution, and the Global Environment

Week 12 Tuesday, November 3. Thursday, November 5.

Readings: USDOE (2015). Transportation Energy Futures: Project Overview and Findings (NREL/PR-6A20-56270).
Pearce, F. (2006). Instant Expert: Climate Change. New Scientist, Environment.
Muller, R. (2012). The Conversion of a Climate-Change Skeptic. New York Times. July 28, 2012.
California Air Resources Board (2013). Transportation Conformity in a Nutshell.

References: USDOE (2015). Annual Energy Outlook.
FHWA (2010). Transportation Conformity. A Basic Guide for State and Local Officials.
FHWA (2014). [Section 4\(f\) Tutorial](#) (Website).
USEPA (2007). Plain English Guide to the Clean Air Act.
IPCC (2016). [The IPCC Fifth Assessment Report - Synthesis](#) (YouTube Video).
CLCCC (2014). [Columbia Law Center on Climate Change Website](#) (Website).

Environmental Justice

Context-Sensitive Design

Week 13 Tuesday, November 10. Thursday, November 12.

Readings: USDOT (2012). [Final DOT Environmental Justice Order, DOT Order 5610.2\(a\)](#).

References: FHWA (2012). [Department of Transportation Environmental Justice Strategy](#) (Website).
FHWA (2011). [Guidance on Environmental Justice and NEPA](#) (Website).
FHWA (2013). Environmental Justice and NEPA in the Transportation Arena: Project Highlights
NCHRP (2001). Guidebook for Assessing the Social and Economic Effects of Transportation Projects.

Megaregion Planning and Health Impact Assessment

Week 14 Tuesday, November 17. Thursday, November 19

Readings: Ross, C., and Woo (2010). M. Functional Relationships of Megaregions and Implications for Transportation Planning. 9th Symposium of the Intern. Urban Planning and Environ. Assoc. Guangzhou, China. August 2010.

References: Caltrans (2011); [Assessing Community Impacts \(Chapter 2 in Community Impact Assessment\)](#).
Stephen, L. (2010). Q&A with Catherine Ross on Megaregions. *Urban Land*. March/April.
Ross, C. ed. (2009). Megaregions: Planning for Global Competitiveness. Island Press.
Introduction and Chapters 4, 10, and 11.
Dannenbergh, et al. (2006). Growing the Field of Health Impact Assessment in the United States: An Agenda for Research and Practice. *American Journal of Public Health*, 96(2), 262-270.
Forkenbrock, et al. (2001). Assessing the Social and Economic Effects of Transportation Projects. NCHRP Project B25-19, Sections 1 and 2.
Caltrans (2011). [Community Impact Assessment, \(all chapters\), Standard Environmental Reference, Volume 4.](#)

Final Project Practice Presentations

Week 15 Tuesday, November 24.

No Class Thursday, November 26

Remote Preparation for Final Presentations

Week 16: Tuesday, December 1.

Readings: None.

Final Presentations

Final Exam Date and Time

Tuesday December 8, 11:20 A.M. - 2:10 P.M.

Important Project Dates:

| Item | Due Date |
|---------------------------------|--------------|
| Stakeholder Report | September 24 |
| Geographic Element (Not Graded) | October 15 |
| Group Check-in Meeting | October 22 |
| Final Report Literature Review | October 29 |
| Public Meeting Write-up | November 19 |
| Practice Final Presentations | November 24 |
| Final Presentations | December 8 |
| Final Project Report | December 8 |