

PPD 633: Methods and Modeling Tools for Transportation Planning

DRAFT Syllabus (as of 1/12/2025) | Spring 2025

Instructor: Emily Finkel

Contact info: efinkel@usc.edu (will reply within 48 hours)

Class Time: Tuesdays, 6:00-9:20 PM (4.0 units)

Location: DMC 154

Office Hours: Tuesdays, 2:30-3:30 PM (virtually via Zoom) or by appointment

Course Description and Objectives

This is a class for graduate students with a focus on transportation planning, travel demand analysis, planning methods and strategies, online tool applications, and transportation data analysis. The class covers four major areas:

1. Developing transportation goals and evaluation metrics
2. Transportation data sources
3. Travel demand modeling and forecasting
4. Additional tools and methodologies for multimodal assessment of the transportation system

The latter half of the semester will focus on how to apply the tools and methods covered in the first half.

Most classes will follow this structure:

- Short presentations by students of homework or in-class assignments from previous week
- Lecture and discussion
- Introduction of homework or in-class assignment and in-class work time

All readings assigned will be available for free through Brightspace or online with your USC Library access.

Grading Breakdown

Assignment	Points	% of Grade
11 homework assignments @ 30 points each (lowest score will be dropped)	300	30%
Class Participation	100	10%
Midterm Project and Presentation	250	25%
Final Project and Presentation	350	35%
Total	1000	100%

Assignments are due at 3:00 PM on the due date shown in the Weekly Class Detail section. Points will be deducted for late assignments. Assignments turned in more than a week late will not be accepted. Class participation grade will be determined based on regular discussion participation – students with unexcused absences will not receive full credit for participation.

Grading Scale

Points	Letter
930+	A
900-929	A-
870-899	B+
830-869	B
800-829	B-
770-799	C+
730-769	C
700-729	C-
670-699	D+
630-669	D
600-629	D-
Below 600	F

Course Outline and Schedule of Topics

Week	Date	Unit
1	January 14	Introduction to transportation plans, policies, goals, metrics and evaluation
2	January 21	Transportation Data pt 1
3	January 28	Transportation Data pt 2
4	February 4	Multimodal Analysis Tools pt 1
5	February 11	Multimodal Analysis Tools pt 2
6	February 18	Travel Demand Modeling and Forecasting pt 1
7	February 25	Travel Demand Modeling and Forecasting pt 2
8	March 4	Traffic Operations Analysis Tools
9	March 11	Mid-term projects and presentations
10	March 18	Spring Break
11	March 25	Methods application: Guidance documents
12	April 1	Methods application: Local transportation assessment guidelines
13	April 8	Methods application: Decision making
14	April 15	Methods application: Grant applications
15	April 22	Final project in-class work time
16	April 29	Final projects and presentations

Weekly Class Detail

Week 1 (Jan 14): Introduction

Assignment due: None

Reading due:

SCAG Connect SoCal Draft Plan

<https://scag.ca.gov/sites/main/files/file-attachments/23-2987-connect-social-2024-draft-complete-110223.pdf?1698262706>

Chapters 1 and 5 only

Manaugh, K., Badami, M. G., & El-Geneidy, A. M. (2015). Integrating social equity into urban transportation planning: A critical evaluation of equity objectives and measures in transportation plans in North America. *Transport Policy*, 37, 167–176.

<https://doi.org/10.1016/j.tranpol.2014.09.013>

Week 2 (Jan 21): Transportation Data pt 1

Assignment due: Homework Assignment #1

Reading due:

Swift Streets? Ranking Stadiums for Traffic Management During Taylor Swift's Eras Tour

<https://www.streetlightdata.com/taylor-swift-traffic-trends-eras-tour/>

Week 3 (Jan 28): Transportation Data pt 2

Assignment due: Homework Assignment #2

Reading due:

Critique of ITE Trip Generation Rates and An Alternative Basis for Estimating New Area Traffic

Fred A. Reid, *Transportation Research Record* 874, 1982

<https://onlinepubs.trb.org/Onlinepubs/trr/1982/874/874-001.pdf>

Roughly Right or Precisely Wrong

Donald Shoup, *Access Magazine*, 2002

<https://www.accessmagazine.org/wp-content/uploads/sites/7/2016/02/access20-04-roughly-right-or-precisely-wrong.pdf>

Phantom Trips

Adam Millard-Ball, *Access Magazine*, 2014

<https://www.accessmagazine.org/wp-content/uploads/sites/7/2015/01/access45-Phantom-Trips-revise-links.pdf>

Innovations in Estimating Trip Generation Rates

Boston Region MPO

<https://www.ctps.org/data/html/studies/other/Innovations-Trip-Generation-Rates/Innovations-in-Estimating-Trip-Generation-Rates.html>

Week 4 (Feb 4): Multimodal Analysis Tools pt 1

Assignment due: Homework Assignment #3

Reading due:

Evaluating Accessibility for Transport Planning
Todd Litman, Victoria Transport Policy Institute
<https://www.vtpi.org/access.pdf>

Bearn, C., Mingus, C., & Watkins, K. (2018). An adaption of the level of traffic stress based on evidence from the literature and widely available data. *Research in Transportation Business & Management*, 29, 50–62. <https://doi.org/10.1016/j.rtbm.2018.12.002>

Week 5 (Feb 11): Multimodal Analysis Tools pt 2

Assignment due: Homework Assignment #4

Reading due:

Systemic Safety User Guide, FHWA (2024), Introduction and Chapters 1-2
<https://highways.dot.gov/sites/fhwa.dot.gov/files/2024-07/SystemicSafetyUserGuide.pdf>

Brozen, M., & Yahata Ekman, A. (2020). The Need to Prioritize Black Lives in LA's Traffic Safety Efforts.
<https://escholarship.org/content/qt0dm6x8k4/qt0dm6x8k4.pdf>

Week 6 (Feb 18): Travel Demand Modeling and Forecasting pt 1

Assignment due: Homework Assignment #5

Reading due:

NCHRP Report 716: Travel Demand Forecasting: Parameters and Techniques
Chapters 1-3
<https://nap.nationalacademies.org/catalog/14665/travel-demand-forecasting-parameters-and-techniques>

Week 7 (Feb 25): Travel Demand Modeling and Forecasting pt 2

Assignment due: Homework Assignment #6

Reading due:

NCHRP Report 716: Travel Demand Forecasting: Parameters and Techniques
Chapters 4 and 6

<https://nap.nationalacademies.org/catalog/14665/travel-demand-forecasting-parameters-and-techniques>

Bills, T. S., Sall, E. A., & Walker, J. L. (2012). Activity-Based Travel Models and Transportation Equity Analysis: Research Directions and Exploration of Model Performance. *Transportation Research Record*, 2320(1), 18–27. <https://doi.org/10.3141/2320-03>

The Broken Algorithm That Poisoned American Transportation
Aaron Gordon, *Vice Magazine*

<https://www.vice.com/en/article/v7qxy9/the-broken-algorithm-that-poisoned-american-transportation-v27n3>

Week 8 (Mar 4): Traffic Operations Analysis Tools

Assignment due: Homework Assignment #7

Reading due:

Highway Capacity Manual
Chapter 2: Capacity and Level-of-Service Concepts

Signal Timing Manual, 2nd Edition (2015)
NCHRP Report 812, <https://nap.nationalacademies.org/catalog/22097/signal-timing-manual-second-edition>

Week 9 (Mar 11): Mid-Term Projects and Presentations

Assignment due: Mid-term projects and presentations

Reading due: None

Week 10 (Mar 18): Spring Break

Assignment due: None

Reading due: None

Week 11 (Mar 25): Methods application: Guidance documents

Assignment due: None

Reading due:

Taylor, B. D., & Hong Hwang, Y. (2020). Eighty-Five Percent Solution: Historical Look at Crowdsourcing Speed Limits and the Question of Safety. *Transportation Research Record*, 2674(9), 346–357. <https://doi.org/10.1177/0361198120928995>

NACTO Statement on the Release of the 11th Edition of the MUTCD, Which Governs How Nearly Every Street in the U.S. Is Designed (click through and explore links)

December 2023

<https://nacto.org/2023/12/20/mutcd-11-reaction/>

FHWA Bikeway Selection Guide

https://safety.fhwa.dot.gov/ped_bike/tools_solve/docs/fhwasa18077.pdf

Week 12 (Apr 1): Methods application: Local transportation assessment guidelines

Assignment due: Homework Assignment #8

Reading due:

LADOT Local Transportation Assessment Guidelines, August 2022

https://ladot.lacity.gov/sites/default/files/documents/2020-transportation-assessment-guidelines_final_2020.07.27_0.pdf

Sections 1 and 3

Week 13 (Apr 8): Methods application: Decision making

Assignment due: Homework Assignment #9

Reading due:

Measure HLA and Mobility Plan Report, City of Los Angeles CAO, February 15, 2024:

https://clkrep.lacity.org/onlinedocs/2023/23-0600-S54_rpt_CAO_02-15-24.pdf

Supplemental report on Mobility Plan 2035 Implementation in Compliance with Measure

HLA, March 14, 2024: https://clkrep.lacity.org/onlinedocs/2015/15-0719-S26_rpt_dot_3-14-24.pdf

Measure HLA motion, Councilmember Traci Park:

https://clkrep.lacity.org/onlinedocs/2024/24-0131_misc_2-07-24.pdf

Measure HLA motion, Councilmember Nithya Raman:

https://clkrep.lacity.org/onlinedocs/2024/24-0173_misc_02-13-24.pdf

Week 14 (Apr 15): Methods application: Grant applications

Assignment due: Homework Assignment #10

Reading due:

Lowe, K., Reckhow, S., & Gainsborough, J. F. (2016). Capacity and Equity: Federal Funding Competition between and Within Metropolitan Regions. *Journal of Urban Affairs*, 38(1), 25–41. <https://doi.org/10.1111/juaf.12203>

Making Federal Funding Work for Cities

NACTO and Transportation for America, March 2021

<https://nacto.org/wp-content/uploads/2021/03/Making-Federal-Funding-Work-for-Cities.pdf>

Week 15 (Apr 22): Final Project In-Class Work Time

Assignment due: Homework Assignment #11

Reading due: None

Week 16 (Apr 29): Final Projects and Presentations

Assignment due: Final project and presentation

Reading due: None

Statements on Academic Conduct and Support Systems

Academic Integrity:

The University of Southern California is foremost a learning community committed to fostering successful scholars and researchers dedicated to the pursuit of knowledge and the transmission of ideas. Academic misconduct is in contrast to the university's mission to educate students through a broad array of first-rank academic, professional, and extracurricular programs and includes any act of dishonesty in the submission of academic work (either in draft or final form).

This course will follow the expectations for academic integrity as stated in the [USC Student Handbook](#). All students are expected to submit assignments that are original work and prepared specifically for the course/section in this academic term. You may not submit work written by others or "recycle" work prepared for other courses without obtaining written permission from the instructor(s). Students suspected of engaging in academic misconduct will be reported to the Office of Academic Integrity.

Other violations of academic misconduct include, but are not limited to, cheating, plagiarism, fabrication (e.g., falsifying data), knowingly assisting others in acts of academic dishonesty, and any act that gains or is intended to gain an unfair academic advantage.

Academic dishonesty has a far-reaching impact and is considered a serious offense against the university. Violations will result in a grade penalty, such as a failing grade on the assignment or in the course, and disciplinary action from the university itself, such as suspension or even expulsion.

For more information about academic integrity see the [student handbook](#) or the [Office of Academic Integrity's website](#), and university policies on [Research and Scholarship Misconduct](#).

Please ask your instructor if you are unsure what constitutes unauthorized assistance on an exam or assignment or what information requires citation and/or attribution.

AI-Generated Material

In this course, I encourage you to use artificial intelligence (AI)-powered programs to help you with assignments that indicate the permitted use of AI. You should also be aware that AI text generation tools may present incorrect information, biased responses, and incomplete analyses; thus they are not prepared to produce text that meets the standards of this course. To adhere to our university values, you must cite any AI-generated material (e.g., text, images, etc.) included or referenced in your work and provide the prompts used to generate the content. Using an AI tool to generate content without proper attribution will be treated as plagiarism and reported to the Office of Academic

Integrity. Please review the instructions in each assignment for more details on how and when to use AI Generators for your submissions.

Students and Disability Accommodations:

USC welcomes students with disabilities into all of the University's educational programs. [The Office of Student Accessibility Services](#) (OSAS) is responsible for the determination of appropriate accommodations for students who encounter disability-related barriers. Once a student has completed the OSAS process (registration, initial appointment, and submitted documentation) and accommodations are determined to be reasonable and appropriate, a Letter of Accommodation (LOA) will be available to generate for each course. The LOA must be given to each course instructor by the student and followed up with a discussion. This should be done as early in the semester as possible as accommodations are not retroactive. More information can be found at osas.usc.edu. You may contact OSAS at (213) 740-0776 or via email at osasfrontdesk@usc.edu.

Student Financial Aid and Satisfactory Academic Progress:

To be eligible for certain kinds of financial aid, students are required to maintain Satisfactory Academic Progress (SAP) toward their degree objectives. Visit the [Financial Aid Office webpage](#) for [undergraduate](#)- and [graduate-level](#) SAP eligibility requirements and the appeals process.

Support Systems:

[Counseling and Mental Health](#) - (213) 740-9355 – 24/7 on call

Free and confidential mental health treatment for students, including short-term psychotherapy, group counseling, stress fitness workshops, and crisis intervention.

[988 Suicide and Crisis Lifeline](#) - 988 for both calls and text messages – 24/7 on call

The 988 Suicide and Crisis Lifeline (formerly known as the National Suicide Prevention Lifeline) provides free and confidential emotional support to people in suicidal crisis or emotional distress 24 hours a day, 7 days a week, across the United States. The Lifeline consists of a national network of over 200 local crisis centers, combining custom local care and resources with national standards and best practices. The new, shorter phone number makes it easier for people to remember and access mental health crisis services (though the previous 1 (800) 273-8255 number will continue to function indefinitely) and represents a continued commitment to those in crisis.

[Relationship and Sexual Violence Prevention Services \(RSVP\)](#) - (213) 740-9355(WELL) – 24/7 on call

Free and confidential therapy services, workshops, and training for situations related to gender- and power-based harm (including sexual assault, intimate partner violence, and stalking).

[Office for Equity, Equal Opportunity, and Title IX \(EEO-TIX\)](#) - (213) 740-5086

Information about how to get help or help someone affected by harassment or discrimination, rights of protected classes, reporting options, and additional resources for students, faculty, staff, visitors, and applicants.

[Reporting Incidents of Bias or Harassment](#) - (213) 740-2500

Avenue to report incidents of bias, hate crimes, and microaggressions to the Office for Equity, Equal Opportunity, and Title for appropriate investigation, supportive measures, and response.

[The Office of Student Accessibility Services \(OSAS\)](#) - (213) 740-0776

OSAS ensures equal access for students with disabilities through providing academic accommodations and auxiliary aids in accordance with federal laws and university policy.

[USC Campus Support and Intervention](#) - (213) 740-0411

Assists students and families in resolving complex personal, financial, and academic issues adversely affecting their success as a student.

[Diversity, Equity and Inclusion](#) - (213) 740-2101

Information on events, programs and training, the Provost's Diversity and Inclusion Council, Diversity Liaisons for each academic school, chronology, participation, and various resources for students.

[USC Emergency](#) - UPC: (213) 740-4321, HSC: (323) 442-1000 – 24/7 on call

Emergency assistance and avenue to report a crime. Latest updates regarding safety, including ways in which instruction will be continued if an officially declared emergency makes travel to campus infeasible.

[USC Department of Public Safety](#) - UPC: (213) 740-6000, HSC: (323) 442-1200 – 24/7 on call

Non-emergency assistance or information.

[Office of the Ombuds](#) - (213) 821-9556 (UPC) / (323-442-0382 (HSC)

A safe and confidential place to share your USC-related issues with a University Ombuds who will work with you to explore options or paths to manage your concern.

[Occupational Therapy Faculty Practice](#) - (323) 442-2850 or otfp@med.usc.edu

Confidential Lifestyle Redesign services for USC students to support health promoting habits and routines that enhance quality of life and academic performance.