UP 430/CEE 417: Urban Transportation Planning

Department of Urban and Regional Planning
Department of Civil and Environmental Engineering
University of Illinois at Urbana-Champaign
Fall 2024

Instructor:	Dr. Lindsay Braun lmbraun@illinois.edu M208 Temple Buell Hall (TBH)
Office Hours:	Tuesdays and Thursdays by appointment; please sign up at https://calendly.com/lmbraun/office-hours
Course Sessions:	Tuesdays and Thursdays 2:00–3:20 PM, 161 Noyes Laboratory
Teaching Assistant:	Amanda Merck, merck2@illinois.edu
TA Office Hours:	Wednesdays 11:00 AM–12:00 PM, 224 TBH + virtual (open "Zoom room" here)
Credit Hours:	4.00

Course Description

UP 430/CEE 417 provides a broad overview of urban transportation planning in the United States, including historic and emerging issues faced in the field and the tools that are available to address these challenges. The course is designed for students who intend to specialize in transportation planning or engineering, as well as for those who would like an introduction to the field. The course content is divided into 13 learning modules that cover the following major topics:

- Context, History, and Foundational Concepts (Modules 1–3). The first section of the course describes the context of urban transportation planning in the United States, including travel patterns and trends; major phases and developments in transportation history; and key challenges that transportation planners and engineers currently face. This section also introduces concepts that are foundational to a thorough understanding of transportation planning, including the distinction between mobility and accessibility and the relationship between transportation and land use.

- Institutions and Key Impacts (Modules 4–9). The second section of the course outlines the institutional structure of transportation planning in the United States. This section describes the transportation planning process; introduces key decision makers and legislation at the federal, state, and regional levels; and considers past, present, and future mechanisms for financing transportation investments. Additionally, this section explores several impacts of the transportation system, including congestion, environmental justice and equity, safety and security, public health, air quality, and greenhouse gas emissions.

- Standards and Methods (Modules 10–12). The third section of the course introduces technical methods that planners and engineers commonly use to evaluate and plan for urban transportation systems. In particular, this section focuses on standards and practices related to parking, street design, and travel demand modeling. These topics provide a strong skill basis for students interested in pursuing careers in transportation, in both the public and private sectors.

- The Future (Module 13). The final section of the course explores the future of transportation planning with a particular emphasis on connected and autonomous vehicles (CAVs). This section will examine CAV technology and regulations; key opportunities (benefits) and challenges (risks) associated with CAV development; and strategic paths forward for the transportation planning field.

Course Objectives

UP 430/CEE 417 is designed to establish a fundamental knowledge base for understanding and analyzing urban transportation systems. By the end of the semester, students will be able to:

- Explain the history and context of transportation planning in the United States
- Summarize travel patterns and trends in meaningful ways
- Interact with major secondary data sources in the transportation planning field
- Describe foundational concepts (e.g., transportation-land use connection, distinction between mobility and accessibility) and understand the implications of these concepts for policy and practice
- Recognize key decision makers and regulatory frameworks in the transportation planning process
- Understand how transportation investments are funded, the limitations of current finance structures, and potential alternatives to address these limitations
- Identify and describe key impacts of the transportation system (e.g., environment, health, safety, equity)
- Assess the effectiveness of MPO plans in addressing transportation impacts
- Understand the evolution and policy implications of parking and street design standards
- Describe and critique methods used to analyze urban transportation systems
- Summarize the challenges and opportunities associated with connected and autonomous vehicles
- Engage in meaningful dialogue about key policy issues and current events in transportation planning

Course Format

This course will be taught **in person** through a combination of lectures and in-class activities (e.g., exercises, discussions, debates). Students are expected and encouraged to actively engage in both lectures and in-class activities, contributing their questions, ideas, and experiences to a rich discussion of the course content.

Course Requirements

Participation. Active engagement with the course materials, with the instructor, and with other students in the class is essential for success in this course. In addition to strong attendance, engagement can be demonstrated in multiple ways. Students are expected to complete the assigned readings prior to class and to come to lectures prepared for thoughtful participation. Lectures will be interactive and students will be expected and encouraged to engage in active dialogue about key concepts and real-world examples. Additionally, all students can demonstrate engagement through proactive communication with the instructor and classmates. Note that regularly engaging in distracting behaviors (e.g., repeated tardiness, texting, laptop use unrelated to class) will result in a lower participation grade.

Projects. Students will complete three projects that require the use of analytical methods common in transportation planning. Two projects will be completed in small groups; peer evaluations of individual contributions will form part of the grade for these two projects. The remaining project will be completed individually. The projects will cover the following topics/techniques:

- Project 1 (group): Travel Data Analysis
- Project 2 (individual): MPO Plan Evaluation
- Project 3 (group): Vision Zero Strategy

Note that graduate students will serve as group leaders for Projects 1 and 3, and the specific requirements for Project 2 will differ for undergraduate and graduate students.

Homework assignments. Students will complete five homework assignments over the course of the semester. These assignments will consist of written responses and applied exercises designed to reinforce key course concepts. Discussion among students about these assignments is allowed (and encouraged!), but each student must turn in their own work. Whenever possible, class time will be given for students to discuss and ask questions about homework assignments.

Grading

Weights. Course requirements will be weighted in the final grade as follows:

Requirements	Weight (%)
Participation	15
Project 1 (group): Travel Data Analysis	15
Project 2 (individual): MPO Plan Evaluation	15
Project 3 (group): Vision Zero Strategy	20
Homework assignments (x5)	35
Total	**100%**

Grading Scale. Numeric grades will be converted into letter grades using the scale outlined below. The course will not be graded on a curve, and **there will be no rounding** applied to numeric grades.

A+: 97.0–100.0 **B+:** 87.0–89.99 **C+:** 77.0–79.99 **D+:** 67.0–69.99 **F:** Less than 60.0
A: 94.0–96.99 **B:** 84.0–86.99 **C:** 74.0–76.99 **D:** 64.0–66.99
A-: 90.0–93.99 **B-:** 80.0–83.99 **C-:** 70.0–73.99 **D-:** 60.0–63.99

Detailed instructions for completing each assignment will be provided. Submitted assignments will be graded and returned promptly with detailed feedback. The general grading rubric is as follows:

- An "A" assignment demonstrates original thought and synthesis of ideas and sophisticated, cogent analysis. It is clearly written and presented. Outstanding work.
- A "B" assignment includes above average analysis with appropriate evidence to support ideas. It is clearly written and presented. Good work.
- A "C" assignment shows a basic level of understanding, with analysis limited to obvious arguments. Writing is competent. Developing but adequate work.
- A "D" assignment misunderstands or misrepresents the material, or is so poorly written or presented as to obscure the analysis. Inadequate work.

Late Assignments. Students are expected to turn in all deliverables on time. However, I understand that challenges, unanticipated obligations, and illnesses happen. If you are unable to meet a particular deadline, it is your responsibility to **make prior arrangements** with me and your TA regarding the deliverable. Otherwise, work submitted past the deadline will receive a deduction of five percentage points per day, and work submitted later than five days past the deadline may not be considered for grading unless consent has

been given by the instructor. Please communicate with me and your TA proactively about any challenges, illnesses, or emergencies that arise—we are here to work with you and help you do your best!

Readings

There is no required text for this course. All readings will be posted on Canvas prior to the session in which they will be discussed.

Course Policies and Other Items/Resources

Attendance. Attendance and active participation are necessary for adequate performance in this course. Flexibility will be given for absences related to illness. However, students are expected to **notify the instructor and/or TA in advance** of any sessions that will be missed. It is the instructor's decision as to when a student's absences, without proactive communication with the instructor, become excessive and should be reported. If in the opinion of an instructor the attendance of a student becomes so irregular that their scholarship is likely to be impaired, the instructor may submit an irregular attendance form to the Associate Dean of the student's college. A copy is forwarded to the student, who should contact the instructor immediately to work out a solution. If irregular attendance continues without excuse, the instructor may request the student be withdrawn from the course. This request for withdrawal would result in a grade of E for the course. Extenuating circumstances will always be considered when supporting evidence is presented. See Rule 1-501 and Rule 1-502 in the Student Code for more information.

Academic Accommodations. This course will accommodate students with documented disabilities. To obtain disability-related academic adjustments and/or auxiliary aids, students should contact both the instructor and the Disability Resources and Educational Services (DRES) as soon as possible. You can contact DRES at 1207 S. Oak Street, Champaign, by phone at (217) 333-1970, or via email at disability@illinois.edu.

Academic Integrity. This course follows the guidelines set forth by the University Student Code. See http://www.admin.uiuc.edu/policy/code/article_1/a1_1-401.html for specific guidelines, examples, and punishment associated with academic dishonesty. In written work, any ideas that are not your own must be properly cited. The consequences for plagiarism may include receiving no credit for an assignment or, at the discretion of the instructor, failure of the course.

Counseling. The University Counseling Center is committed to providing a range of services intended to help students develop improved coping skills in order to address emotional, interpersonal, and academic concerns. The Counseling Center provides individual, couples, and group counseling. All of these services are paid for through the health services fee. The Counseling Center offers primarily short term counseling, but they do also provide referrals to the community when students could benefit from longer term services. https://counselingcenter.illinois.edu/.

Class Climate. The Department of Urban and Regional Planning (DURP) is committed to maintaining a learning environment that is rooted in the goals and responsibilities of professional planners. By enrolling in a class offered by DURP, students agree to be responsible for maintaining an atmosphere of mutual respect in all DURP activities, including lectures, discussions, labs, projects, and extracurricular programs. See Student Code Article 1-Student Rights and Responsibilities, Part 1. Student Rights: §1-102.

Safety and Security in the Classroom. Emergencies can happen anywhere and at any time. It is important that we take a minute to prepare for a situation in which our safety or even our lives could depend on our ability to react quickly. When we're faced with any kind of emergency—like fire, severe weather, or if someone is

trying to hurt you—we have three options: run, hide, or fight. For more information please refer to the General Emergency Response Recommendations at http://police.illinois.edu/emergency-preparedness/run-hide-fight/resources-for-instructors/.

Policy on Use of Generative AI Tools

Generative AI tools may be used in this course **ONLY** for the following activities:
- Brainstorming and refining your ideas
- Tweaking an outline that you have drafted yourself
- Improving the structure (e.g., organization, transitions) and clarity (e.g., grammar, syntax, style) of written text that you have drafted yourself

The use of generative AI tools is **NOT** permitted in this course for the following activities:
- Synthesizing documents (e.g., long-range transportation plans) as a substitute for reading them
- Writing a draft of an assignment
- Writing entire sentences, paragraphs, or papers to complete class assignments
- Any use in a group project that is not mutually agreed upon by all group members

When in doubt, think of generative AI tools as providing the type of assistance you might receive from a campus writing tutor: they may ask you questions as you brainstorm, help you avoid the passive voice, identify sentences and paragraphs where information is not coming across clearly—but they should never (and *would* never) do any of your writing directly for you. **Better yet**, get this assistance from a real-life human at the Illinois Writers Workshop here on campus! This is a free resource for our students, and it will always be better than ChatGPT.

Violations of this policy will be treated as academic dishonesty/plagiarism. If you choose to use generative AI tools in this course, I strongly recommend that you keep a detailed log of all prompts you enter and all responses you receive. You may be asked to show this documentation if improper AI use is suspected. Please note that additional requirements and policies related to AI use may be implemented for individual assignments (and may supersede this general policy); in this case, all new requirements/policies will be clearly outlined on the assignment prompt.

Course Schedule (subject to revision)

Module	Date	Topic	Notes
		Section I: Context, History, and Foundational Concepts	
0	Aug 27	Course Overview and Major Themes	
1	Aug 29	Transportation Data 1: Travel Patterns and Trends	
	Sep 3	Transportation Data 2: Sources and Methods	
2	Sep 5	Transportation History 1: Walking City + Transit	
	Sep 10	Transportation History 2: Rise of the Automobile	
3	Sep 12	Transportation and Land Use 1: T → LU	Homework 1 due
	Sep 17	Transportation and Land Use 2: LU → T	
		Section II: Institutions and Key Impacts	
4	Sep 19	Transportation Planning Process 1: Federal Role	
	Sep 24	Transportation Planning Process 2: MPOs and States	
5	Sep 26	Transportation Finance 1: Current Status	
	Oct 1	Transportation Finance 2: Future Alternatives	**Project 1 due**
6	Oct 3	Congestion: A Problem or a Solution?	
	Oct 8	Congestion: A Problem or a Solution? (continued)	
7	Oct 10	Equity, EJ, and Travel of Disadvantaged Groups	Homework 2 due
	Oct 15	Equity, EJ, and Travel of Disadvantaged Groups (continued)	
8	Oct 17	Transportation Safety and Public Health	
	Oct 22	Transportation Safety and Public Health (continued)	
9	Oct 24	Environmental Impacts of Transportation	Homework 3 due
	Oct 29	Environmental Impacts of Transportation (continued)	
		Section III: Standards and Methods	
10	Oct 31	Planning for Parking	
	Nov 5	Planning for Parking (continued)	**Project 2 due**
11	Nov 7	Street Design 1: Traditional Standards	
	Nov 12	Street Design 2: New Approaches	Homework 4 due
12	Nov 14	Transportation Modeling 1: Standard Practices	
	Nov 19	Transportation Modeling 2: Critiques and Alternatives	
	Nov 21	Project 3 Workshop (in-class work session)	Homework 5 due
—	Nov 26	**NO CLASS** – Fall Break	
	Nov 28	**NO CLASS** – Fall Break	
		Section IV: The Future	
	Dec 3	Project 3 Workshop (in-class work session)	
13	Dec 5	Autonomous Vehicles 1: Overview, Opportunities, Challenges	
	Dec 10	Autonomous Vehicles 2: Paths Forward	
—	Dec 13	Project 3 Due @ 5:00 PM	**Project 3 due**