
UP 494-LB: Pedestrian and Bicycle Planning

Department of Urban and Regional Planning

University of Illinois at Urbana-Champaign

Fall 2018

Instructor:	Dr. Lindsay Braun lmbraun@illinois.edu Temple Buell Hall M208
Office Hours:	Tuesdays and Thursdays 11:00–11:45 AM, Temple Buell Hall M208
Course Sessions:	Tuesdays and Thursdays 9:30–10:50 AM Temple Buell Hall 225

Course Description

Walking and cycling are becoming increasingly important in efforts to promote health, sustainability, and livability in cities across the globe. Planning for pedestrian and bicycle transportation is complex: these modes of travel are influenced by micro-scale environmental characteristics such as sidewalks, bike lanes, traffic safety, and urban design, and by macro-scale conditions such as regional land use patterns. Supporting pedestrian and bicycle transportation therefore requires collaboration across multiple disciplines, including urban planning, civil engineering, design, public health, and others. UP494-LB introduces key concepts and methods that will help this collaboration to take place in support of healthier, more sustainable communities. The course is divided into four major sections:

- *Section I. Introduction to Pedestrian and Bicycle Planning.* The first section of the course describes the context of pedestrian and bicycle planning in the United States, including its history, recent trends, and key policies and decision makers. This section also introduces foundational concepts such as the determinants of travel behavior, the diverse benefits of walking and cycling, and the value of a comprehensive approach to pedestrian and bicycle planning.
- *Section II. Planning and Design: Fundamentals and Innovations.* The second section of the course introduces the fundamentals of plan creation/evaluation and multimodal facility design. This section covers both basic design approaches and recent innovations, with a consideration of implementation costs.
- *Section III: Data Collection and Analysis.* The third section of the course focuses on technical issues in pedestrian and bicycle planning, including data collection, safety evaluation, and methods for assessing facility performance and user demand.
- *Section IV: Plan Implementation and Other Issues.* The final section of the course addresses issues of plan implementation, including funding and institutionalization, advocacy and outreach, and social equity. This section also introduces trail/park planning and describes international approaches to pedestrian and bicycle planning and facility design.

Course Format

This course will be taught through a combination of interactive lectures, discussions, and hands-on activities both within and beyond the classroom. A series of individual and group assignments will engage students in relevant issues, encourage critical thinking, build written and oral communication skills, and provide opportunities to apply

course concepts to real-world community projects and needs. Guest speakers from the C-U community will also visit to share their experiences in pedestrian and bicycle planning and advocacy, providing insight into how the ideas discussed in class are translated into on-the-ground action.

Course Objectives

By the end of the semester, students in this course will be able to:

- Summarize the benefits and challenges of planning for walking and cycling
- Describe the roles of plans, policies, and infrastructure in supporting walking and cycling
- Understand the fundamentals of pedestrian and bicycle facility design, as well as emerging innovations
- Implement methods to assess pedestrian and bicycle use, safety, and facility performance
- Explain the processes of creating, implementing, and evaluating plans and programs
- Recognize both national and international perspectives on planning and facility design

Course Requirements

Attendance and participation. Active participation in class and effective collaboration with classmates is essential in this course. Students are expected to complete the assigned readings prior to class and to come prepared for thoughtful discussion. Lectures will be interactive and students will be expected and encouraged to contribute their questions, ideas, and experiences to a rich discussion of the course content.

Assignments. Students will complete five assignments that are designed to provide an enhanced understanding of planning, data analysis, and facility design. Two assignments will be completed individually and three will be completed in groups; peer evaluations of individual contributions will form part of the grade for each group assignment. The five assignments are described in the table below. **All assignments are due to Compass at 5:00 PM on the date indicated.**

Assignment	Purpose	Format	Due	
1	<i>Make the Case</i>	Summarize the benefits of walking and cycling	Group (oral)	Sep. 13
2	<i>Talk Strategy</i>	Evaluate/critique a pedestrian or bicycle plan	Individual (written)	Oct. 4
3	<i>Dig in the Data</i>	Analyze local pedestrian and/or bicycle data	Group (written)	Nov. 8
4	<i>Get Engaged</i>	Attend/analyze a public meeting or outreach event	Individual (written)	Nov. 29
5	<i>Design a Change</i>	Design improvements to a high-crash intersection	Group (written + oral)	Dec. 11

In-class activities/labs. In addition to active discussions during lectures, students will participate in three in-class activities/labs designed to reinforce technical skills in planning (plan evaluation), design (walkability audit), and analysis (bicycle facility analysis). Make-up sessions for these activities/labs will not be offered; students who miss class on these days can earn credit by completing the activity on their own and submitting a written summary (instructions to be provided by the instructor) within one week of the missed class period.

Readings

There are no required textbooks for this course; all readings will be posted on Compass. Readings for each session are listed at the conclusion of this syllabus.

Grading

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

Course Requirements	Weight (%)
Attendance and participation	10
Assignment 1: <i>Make the Case</i> (group)	10
Assignment 2: <i>Talk Strategy</i> (individual)	10
Assignment 3: <i>Dig in the Data</i> (group)	20
Assignment 4: <i>Get Engaged</i> (individual)	10
Assignment 5: <i>Design a Change</i> (group)	30
In-class activities/labs	10

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	

Late assignments. Students are expected to turn in all assignments on time. However, I understand that challenges arise in the busy lives of students. To accommodate these challenges, I will allow each student one “free pass” in which an assignment can be submitted up to one day (24 hours) late without penalty, regardless of the reason—no excuse or notification needed. This free pass is not divisible; it must be used in full if the assignment is submitted at any time past the deadline (i.e. at 5:01 PM or later on the due date). If the late submission is a group assignment, all group members must use their free passes. Once the free pass is used, late submissions will incur a penalty of 10 percentage points per day barring extraordinary circumstances (e.g., prolonged documented illness, family emergency); these circumstances may not be used to avoid use of the initial free pass. Use your free pass wisely, and communicate with me proactively about any challenges, illnesses, or emergencies that arise—I am here to work with you and help you do your best!

Course Policies and Other Items/Resources

Attendance. Attendance is mandatory and necessary for adequate performance in this course. Attendance will be reflected not only in the participation portion of the final course grade, but also in the quality of work submitted throughout the semester. Students are expected to notify the instructor in advance of any sessions that will be missed. Make-up lab sessions will not be offered.

It is the instructor’s decision as to when a student’s absences become excessive and should be reported. If in the opinion of an instructor the attendance of a student becomes so irregular that his or her 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 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.

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 the Department of Urban and Regional Planning, 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.

Electronic devices. Research shows that students who use laptops in the classroom are distracting not only to themselves, but also to the students around them (Sana, Weston, and Cepeda, 2013). Furthermore, students who take notes by hand tend to retain information better than those who take notes by laptop (Mueller and Oppenheimer, 2014). To create a mutually beneficial learning environment, students are encouraged not to use their laptops in class. However, recognizing that everyone learns differently, I will allow laptops for classroom purposes only; all other programs, including Internet browsers and email, **must be turned off** before class begins. Students who use their laptops for non-classroom purposes will be asked to stop using them during class time. Additionally, students must silence or turn off their cell phones before the beginning of class.

Academic accommodations. This course will accommodate students with documented disabilities. To obtain disability-related adjustments and/or auxiliary aids, students with disabilities must contact the course instructor and the Disability Resources and Educational Services (DRES) as soon as possible. To contact DRES, you may visit 1207 S. Oak St., Champaign; call 217.333.4603; email disability@illinois.edu; or go to the DRES website (<http://disability.illinois.edu/>). Please also schedule a private meeting with the course instructor to discuss your needs and requirements. All accommodations will try to be met once you self-identify. Please note accommodations are not retroactive to the beginning of the semester but begin the day you contact your professor with a current letter of accommodation from DRES. Please refer to <http://disability.illinois.edu/disability-resource-guide> for more information.

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/>.

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/>.

Course Schedule

(Subject to revision)

Week	Date	Topic	Notes
Section I. Introduction to Pedestrian and Bicycle Planning			
1	Aug 28	Course Overview and Motivations	
	Aug 30	History, Institutions, and Key Trends	
2	Sep 4	Pedestrian and Bicycle Travel Behavior	
	Sep 6	Land Use, Connectivity, and Urban Design	
3	Sep 11	Comprehensive Walking/Cycling Promotion: The 6 “Es”	
	Sep 13	Making the Case: Benefits of Walking and Cycling	Assignment 1 due
Section II. Planning and Design: Fundamentals and Innovations			
4	Sep 18	Anatomy of a Pedestrian/Bicycle Master Plan	
	Sep 20	Connections with Other Plans and Policies	In-class activity/lab
5	Sep 25	Pedestrian Design	
	Sep 27	Pedestrian Design (continued)	
6	Oct 2	Bicycle Design	
	Oct 4	Bicycle Design (continued)	Assignment 2 due
7	Oct 9	Multimodal Design: Streets and Sites	
	Oct 11	Cynthia Hoyle, FAICP: Hoyle Consulting, CUMTD	Guest speaker
Section III. Data Collection and Analysis			
8	Oct 16	Data Collection and Performance Measures	
	Oct 18	Pedestrian and Bicycle Safety	
9	Oct 23	Facility Analysis Tools: Audits	In-class activity/lab
	Oct 25	NO CLASS – Group Work Session	
10	Oct 30	Facility Analysis Tools: Measures	
	Nov 1	Facility Analysis Tools: Measures (continued)	In-class activity/lab
11.1	Nov 6	Pedestrian and Bicycle Demand Estimation	
Section IV. Plan Implementation and Other Issues			
11.2	Nov 8	Funding and Institutionalization	Assignment 3 due
12	Nov 13	Advocacy, Outreach, and Social Equity	
	Nov 15	Jeff Yockey, Champaign County Bikes	Guest speaker
13	Nov 20	NO CLASS – Fall Break	
	Nov 22	NO CLASS – Fall Break	
14	Nov 27	Trail and Park Planning	
	Nov 29	International Approaches	Assignment 4 due
Course Wrap-Up			
15	Dec 4	Ben LeRoy: City of Champaign	Guest speaker
	Dec 6	Group Presentations	
16	Dec 11	Group Presentations + Course Wrap-Up	Assignment 5 due

Readings

Course Overview and Motivations

- Buehler, R., Gotschi, T., and M. Winters. (2016) “Moving Toward Active Transportation: How Policies Can Encourage Walking and Bicycling.” Active Living Research Review. <https://www.activelivingresearch.org/ActiveTravelreview>.

History, Institutions, and Key Trends

- FHWA. (2016). “Strategic Agenda for Pedestrian and Bicycle Transportation.” FHWA-HEP-16-086. https://www.fhwa.dot.gov/environment/bicycle_pedestrian/publications/strategic_agenda/ (read pages 8-21).
- Pucher, J., R. Buehler, and M. Seinen (2011). “Bicycling Renaissance in North America? An Update and Re-Assessment of Cycling Trends and Policies.” *Transportation Research Part A* 45 (6), 451-474.

Pedestrian and Bicycle Travel Behavior

- Schneider, R.J. (2013). “Theory of Routine Mode Choice Decisions: An Operational Framework to Increase Sustainable Transportation.” *Transport Policy* 25, 128-137.
- NHTSA. (2008). “National Survey of Bicyclist and Pedestrian Attitudes and Behavior.” DOT HS 810 971. <https://one.nhtsa.gov/Driving-Safety/Research-&-Evaluation/National-Survey-of-Bicyclist-and-Pedestrian-Attitudes-and-Behavior> (skim “Volume I: Summary Report”).
- Dill J. and N. McNeil. (2016). “Revisiting the Four Types of Cyclists: Findings from a National Survey.” *Transportation Research Record* 2587, 90-99.

Land Use, Connectivity, and Urban Design

- Frank, L., Kavage, S., and T. Litman. (2006). “Promoting Public Health through Smart Growth.” Vancouver, BC: SmartGrowthBC. http://www.vtpi.org/sgbc_health.pdf (read “Land Use Impacts on Travel Behavior,” pages 10-20).
- Ewing, R., and R. Cervero. (2010). “Travel and the Built Environment: A Meta-Analysis.” *Journal of the American Planning Association* 76(3), 265-294.
- McConville, M.E., Rodriguez, D.A., Clifton, K., Cho, G., and S. Fleischhacker. (2011). “Disaggregate Land Uses and Walking.” *American Journal of Preventive Medicine* 40(1), 25-32.

Comprehensive Walking/Cycling Promotion: The 6 “Es”

- Safe Routes to School National Partnership. (2018). “The 6 E’s.” <https://www.saferoutespartnership.org/healthy-communities/101/6Es>.
- League of American Bicyclists. (2018). “Attributes of a Bicycle Friendly Community.” http://bikeleague.org/sites/default/files/Attributes_of_BFC.pdf.
- Fesperman, C.E., Evenson, K.R., Rodriguez, D.A., and D. Salvesen. (2008). “A Comparative Case Study on Active Transport to and from School.” *Preventing Chronic Disease* 5(2), 1-11.

Making the Case: Benefits of Walking and Cycling

- Group presentations; see Assignment 1 for suggested readings for your group’s specific benefit.

Anatomy of a Pedestrian/Bicycle Master Plan

- Roughton, C., van Hengel, D., Duncan, A., Weigand, L., and M. Birk. (2012). “Creating Walkable & Bikeable Communities: A User Guide to Developing Pedestrian and Bicycle Master Plans.” Initiative for Bicycle and Pedestrian Innovation. Center for Transportation Studies, Portland State University. https://ppms.trec.pdx.edu/media/project_files/IBPI%20Master%20Plan%20Handbook%20FINAL.pdf.

Connections with Other Plans and Policies

- Aytur, S.A., Rodriguez, D.A., Evenson, K.R., Catellier, D.J., and W.D. Rosamond. (2007). “Promoting Active Community Environments through Land Use and Transportation Planning. *Health Promotion* 21(4), 397-407.
- Additional readings assigned as part of in-class activity/lab.

Pedestrian Design

- Zegeer, C.V., Sandt, L., Scully, M., Ronkin, M., Cynecki, M., and P. Lagerwey. (2008). “How to Develop a Pedestrian Safety Action Plan.” https://safety.fhwa.dot.gov/ped_bike/ped_focus/docs/fhwasa0512.pdf (read pages 54-67).
- AASHTO. (2004). “AASHTO Guide for the Planning, Design, and Operation of Pedestrian Facilities.” First Edition (read assigned sections, TBD).
- Thomas, L., Thirsk, N., and C.V. Zegeer. (2016). “Application of Pedestrian Crossing Treatments for Streets and Highways.” NCHRP Synthesis 498. <http://www.trb.org/Publications/Blurbs/175419.aspx> (read pages 35-60).
- Zegeer, C.V., Stewart, J.R., Huang, H., Lagerwey, P., Feaganes, J., and B.J. Campbell. (2005). “Safety Effects of Marked Versus Unmarked Crosswalks at Uncontrolled Locations.” FHWA-RD-04-100. <https://www.fhwa.dot.gov/publications/research/safety/04100/04100.pdf> (read pages 1-11, 51-61).

Bicycle Design

- AASHTO. (2012). “AASHTO Guide for the Planning, Design, and Operation of Bicycle Facilities.” Fourth Edition (read “Chapter 4: Design of On-Road Facilities”).
- NACTO. (2011). “NACTO Urban Bikeway Design Guide.” <https://nacto.org/publication/urban-bikeway-design-guide/> (browse designs).
- APBP. (2015). “Essentials of Bike Parking.” http://c.ymcdn.com/sites/www.apbp.org/resource/resmgr/Bicycle_Parking/EssentialsofBikeParking_FI_NA.pdf.
- FHWA. (2015). “Separated Bike Lane Planning and Design Guide.” FHWA-HEP-15-025. https://www.fhwa.dot.gov/environment/bicycle_pedestrian/publications/separated_bikelane_pdg/page00.cfm (read pages 11-18, 25-34; skim other sections).

Multimodal Design: Streets and Sites

- NACTO. (2013). “NACTO Urban Street Design Guide.” <http://nacto.org/publication/urban-street-design-guide/> (browse designs).
- FHWA. (2014). “Road Diet Informational Guide.” FHWA-SA-14-028. https://safety.fhwa.dot.gov/road_diets/guidance/info_guide/rdig.pdf (read pages 1-12, 19-20; skim rest).

Data Collection and Performance Measures

- Griffin, G., Nordback, K., Gotschi, T., Stolz, E., and S. Kothuri. (2014). “Monitoring Bicyclist and Pedestrian Travel and Behavior.” Transportation Research Circular E-C183. <http://onlinepubs.trb.org/onlinepubs/circulars/ec183.pdf>.
- FHWA. (2016). “Strategic Agenda for Pedestrian and Bicycle Transportation.” FHWA-HEP-16-086. https://www.fhwa.dot.gov/environment/bicycle_pedestrian/publications/strategic_agenda/ (read pages 24-25).
- Alliance for Biking and Walking. “Bicycling and Walking in the United States: 2016 Benchmarking Report.” <http://bikingandwalkingbenchmarks.org/> (read pages 10-17, skim rest).
- Zegeer, C.V., Sandt, L., Scully, M., Ronkin, M., Cynecki, M., and P. Lagerwey. (2008). “How to Develop a Pedestrian Safety Action Plan.” https://safety.fhwa.dot.gov/ped_bike/ped_focus/docs/fhwasa0512.pdf (read pages 26-37).

Pedestrian and Bicycle Safety

- Zegeer, C.V., Sandt, L., Scully, M., Ronkin, M., Cynecki, M., and P. Lagerwey. (2008). “How to Develop a Pedestrian Safety Action Plan.” https://safety.fhwa.dot.gov/ped_bike/ped_focus/docs/fhwasa0512.pdf (read pages 38-53).
- Jacobsen, P.L. (2003). “Safety in Numbers: More Walkers and Bicyclists, Safer Walking and Bicycling.” *Injury Prevention* 9, 205-209.
- Marshall, W.E. and N.W. Garrick. (2011). “Evidence on Why Bike-Friendly Cities Are Safer for All Road Users.” *Environmental Practice* 13(1), 16-27.

Facility Analysis Tools: Audits

- Audit tools assigned as part of in-class activity/lab.

Facility Analysis Tools: Measures

- Dowling, R., D. Reinke, A. Flannery, et al. (2008). “Multimodal Level of Service Analysis for Urban Streets.” NCHRP Report 616. <http://www.trb.org/Publications/Blurbs/160228.aspx> (read pages 3-16, 82-91).
- Mekuria, M.C., Furth, P.G., and H. Nixon. (2012). “Low-Stress Bicycling and Network Connectivity.” Mineta Transportation Institute, Report 11-19, <http://transweb.sjsu.edu/PDFs/research/1005-low-stress-bicycling-network-connectivity.pdf> (read pages 1-29).

Pedestrian and Bicycle Demand Estimation

- Clifton, K.J., Singleton, P.A., Muhs, C.D., and R.J. Schneider. (2016). “Representing Pedestrian Activity in Travel Demand Models: Framework and Application.” *Journal of Transport Geography* 52, 111-122.
- Schneider, R.J., T. Henry, M.F. Mitman, L. Stonehill, and J. Koehler. (2012). “Development and Application of the San Francisco Pedestrian Intersection Volume Model.” *Transportation Research Record* 2299, 65-78.
- Strauss, J. and L.F. Miranda-Moreno. (2013). “Spatial Modeling of Bicycle Activity at Signalized Intersections.” *Journal of Transport and Land Use* 6(2), 47-58.

Funding and Institutionalization

- FHWA. (2015). “Bicycle and Pedestrian Funding, Design, and Environmental Review: Addressing Common Misconceptions.” https://www.fhwa.dot.gov/environment/bicycle_pedestrian/guidance/misconceptions.cfm.
- Roughton, C., van Hengel, D., Duncan, A., Weigand, L., and M. Birk. (2012). “Creating Walkable & Bikeable Communities: A User Guide to Developing Pedestrian and Bicycle Master Plans.” Initiative for Bicycle and Pedestrian Innovation. Center for Transportation Studies, Portland State University. https://ppms.trec.pdx.edu/media/project_files/IBPI%20Master%20Plan%20Handbook%20FINAL.pdf (read pages 69-76).
- Zegeer, C.V., Sandt, L., Scully, M., Ronkin, M., Cynecki, M., and P. Lagerwey. (2008). “How to Develop a Pedestrian Safety Action Plan.” https://safety.fhwa.dot.gov/ped_bike/ped_focus/docs/fhwasa0512.pdf (read pages 117-124).

Advocacy, Outreach, and Social Equity

- Roughton, C., van Hengel, D., Duncan, A., Weigand, L., and M. Birk. (2012). “Creating Walkable & Bikeable Communities: A User Guide to Developing Pedestrian and Bicycle Master Plans.” Initiative for Bicycle and Pedestrian Innovation. Center for Transportation Studies, Portland State University. https://ppms.trec.pdx.edu/media/project_files/IBPI%20Master%20Plan%20Handbook%20FINAL.pdf (read pages 31-39).

- Zegeer, C.V., Sandt, L., Scully, M., Ronkin, M., Cynecki, M., and P. Lagerwey. (2008). “How to Develop a Pedestrian Safety Action Plan.” https://safety.fhwa.dot.gov/ped_bike/ped_focus/docs/fhwasa0512.pdf (read pages 141-143).
- League of American Bicyclists. (2014). “The New Majority: Pedaling Towards Equity.” https://bikeleague.org/sites/default/files/equity_report.pdf.
- People For Bikes and Alliance for Biking and Walking. (2015). “Building Equity: Race, Ethnicity, Class, and Protected Bike Lanes: An Idea Book for Fairer Cities.” <https://peopleforbikes.org/wp-content/uploads/2017/07/EquityReport2015.pdf> (skim).

Trail and Park Planning

- AASHTO. (2012). “AASHTO Guide for the Planning, Design, and Operation of Bicycle Facilities.” Fourth Edition (read “Chapter 5: Design of Shared Use Paths”).

International Approaches

- Fischer, E.L., Rousseau, G.K., Turner, S.M., et al. (2009). “International Scan Summary Report on Pedestrian and Bicyclist Safety and Mobility.” http://www.pedbikeinfo.org/data/international_scantours.cfm.
- Pucher, J. and R. Buehler. (2008). “Making Cycling Irresistible: Lessons from the Netherlands, Denmark, and Germany.” *Transport Reviews* 28, 1-56.
- Additional readings TBD.