UP 434: Pedestrian and Bicycle Planning  
Department of Urban and Regional Planning  
University of Illinois at Urbana-Champaign  
Fall 2019

Instructor: Dr. Lindsay Braun  
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M208 Temple Buell Hall (TBH)

Office Hours: Thursdays by appointment; please sign up at https://calendly.com/lmbraun/meeting

Course Sessions: Tuesdays and Thursdays 9:30–10:50 AM, 223 TBH

Credit Hours: 3.00

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. UP 434 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. Design and Planning: Fundamentals and Innovations.** The second section of the course introduces the fundamentals of multimodal facility design and plan creation/evaluation. 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 Emerging 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 describes international approaches to facility design and explores the impacts of autonomous vehicles on pedestrian and bicycle planning.

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 four assignments designed to provide an enhanced understanding of planning, data analysis, and facility design. Three of these assignments will be one-time submissions (A1, A2, A3), while the final assignment will be a semester-long project with interim deliverables (SP). These assignments are described in the table below; peer evaluations of individual contributions will form part of the grade for each group assignment.

<table>
<thead>
<tr>
<th>Assignment</th>
<th>Purpose</th>
<th>Format</th>
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</thead>
<tbody>
<tr>
<td>A1</td>
<td>Make the Case</td>
<td>Summarize the benefits of walking and cycling</td>
</tr>
<tr>
<td>A2</td>
<td>Walk the Walk</td>
<td>Observe pedestrian-vehicle interactions at a campus crosswalk</td>
</tr>
<tr>
<td>A3</td>
<td>Dig in the Data</td>
<td>Analyze local pedestrian and/or bicycle data</td>
</tr>
<tr>
<td>SP</td>
<td>Design a Change</td>
<td>Design improvements to a campus intersection</td>
</tr>
</tbody>
</table>

The interim deliverables for the semester-long project (SP) are as follows:

- **SP-1:** Existing conditions and context report (written)
- **SP-2:** Draft design recommendations (diagrams)
- **SP-3:** Final design recommendations (written + poster)

**Note:** Graduate students will serve as group leaders for the semester-long project (SP), and the specific requirements for Assignment 3 (A3) will differ for undergraduate and graduate students. These differences in expectations are reflected in the weighting of assignments in the final grade for undergraduate vs. graduate students, as noted in a later section of this syllabus.

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

**Grading**

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

<table>
<thead>
<tr>
<th>Course Requirements</th>
<th>Undergraduate Weight (%)</th>
<th>Graduate Weight (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attendance and Participation</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>A1: Make the Case (group)</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>A2: Walk the Walk (group)</td>
<td>20</td>
<td>15</td>
</tr>
<tr>
<td>A3: Dig in the Data (individual)</td>
<td>15</td>
<td>20</td>
</tr>
<tr>
<td>SP: Design a Change (group)</td>
<td>35</td>
<td>35</td>
</tr>
<tr>
<td>Labs</td>
<td>10</td>
<td>10</td>
</tr>
</tbody>
</table>

_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 assignments on time. Late work will receive a penalty of 5 percentage points per day beginning immediately after the assignment deadline (e.g., at 5:01 PM for an assignment due at 5:00 PM) _if the instructor is notified in advance of the deadline_. If the instructor is _not_ notified in advance, this penalty increases to 10 percentage points per day.

**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.

**Course Policies and Other Items/Resources**

_Attendance._ Attendance is mandatory and necessary for adequate performance in this course, and will be taken at every class session. Attendance will be reflected not only in the “Attendance and Participation” portion of the
final course grade as described above, 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.

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](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, and this policy may be revised if excessive violations occur. Additionally, students must silence or turn off their cell phones and put them away before the beginning of class.

**Academic Accommodations.** This course will accommodate students with documented disabilities. Please refer to [http://disability.illinois.edu/disability-resource-guide](http://disability.illinois.edu/disability-resource-guide) for more information and provide the appropriate documentation at the beginning of the semester.

**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/](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/](http://police.illinois.edu/emergency-preparedness/run-hide-fight/resources-for-instructors/).
## Course Schedule

*(Subject to revision)*

<table>
<thead>
<tr>
<th>Week</th>
<th>Date</th>
<th>Topic</th>
<th>Notes</th>
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</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td><strong>Section I. Introduction to Pedestrian and Bicycle Planning</strong></td>
<td></td>
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<tr>
<td>1</td>
<td>Aug 27</td>
<td>Course Overview and Motivations</td>
<td></td>
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<tr>
<td></td>
<td>Aug 29</td>
<td>History, Institutions, and Key Trends</td>
<td></td>
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<tr>
<td>2</td>
<td>Sep 3</td>
<td>Pedestrian and Bicycle Travel Behavior</td>
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<td></td>
<td>Sep 5</td>
<td>Land Use, Connectivity, and Urban Design</td>
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<tr>
<td>3</td>
<td>Sep 10</td>
<td>Data Sources and Collection Methods</td>
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<tr>
<td></td>
<td>Sep 12</td>
<td>Making the Case: Benefits of Walking and Cycling</td>
<td>A1 due</td>
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<tr>
<td></td>
<td></td>
<td><strong>Section II. Design and Planning: Fundamentals and Innovations</strong></td>
<td></td>
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<tr>
<td>4</td>
<td>Sep 17</td>
<td>Pedestrian Design</td>
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<td></td>
<td>Sep 19</td>
<td>Pedestrian Design (continued)</td>
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<tr>
<td>5</td>
<td>Sep 24</td>
<td>Bicycle Design</td>
<td></td>
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<tr>
<td></td>
<td>Sep 26</td>
<td>Bicycle Design (continued)</td>
<td></td>
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<tr>
<td>6</td>
<td>Oct 1</td>
<td>Multimodal Design: Streets, Sites, and Trails</td>
<td>Lab 1</td>
</tr>
<tr>
<td></td>
<td>Oct 3</td>
<td>Multimodal Design: Streets, Sites, and Trails (continued)</td>
<td></td>
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<tr>
<td>7</td>
<td>Oct 8</td>
<td>Anatomy of a Pedestrian/Bicycle Master Plan</td>
<td>Lab 2</td>
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<tr>
<td></td>
<td>Oct 10</td>
<td>Connections with Other Plans and Policies</td>
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<tr>
<td></td>
<td></td>
<td><strong>Section III. Data Collection and Analysis</strong></td>
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<tr>
<td>8</td>
<td>Oct 15</td>
<td><em>Guest Speaker:</em> Cynthia Hoyle, FAICP (Hoyle Consulting, CUMTD)</td>
<td>A2 due</td>
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<tr>
<td></td>
<td>Oct 17</td>
<td>Pedestrian and Bicycle Demand Estimation</td>
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<tr>
<td>9</td>
<td>Oct 22</td>
<td>Pedestrian and Bicycle Safety</td>
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<td></td>
<td>Oct 24</td>
<td><em>SP Work Session:</em> Preliminary Design Recommendations</td>
<td>SP-1 due</td>
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<tr>
<td>10</td>
<td>Oct 29</td>
<td>Facility Analysis Tools: Audits</td>
<td>Lab 3</td>
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<td></td>
<td>Oct 31</td>
<td>Facility Analysis Tools: Measures</td>
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<td>11</td>
<td>Nov 5</td>
<td>Facility Analysis Tools: Measures (continued)</td>
<td>Lab 4</td>
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<td></td>
<td>Nov 7</td>
<td><em>Guest Speaker:</em> Ben LeRoy (City of Champaign)</td>
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<td><strong>Section IV. Plan Implementation and Emerging Issues</strong></td>
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<tr>
<td>12</td>
<td>Nov 12</td>
<td><em>SP Work Session:</em> Review of Draft Design Recommendations</td>
<td>SP-2 due</td>
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<tr>
<td></td>
<td>Nov 14</td>
<td>Funding and Institutionalization</td>
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<tr>
<td>13</td>
<td>Nov 19</td>
<td>Advocacy, Outreach, and Social Equity</td>
<td>A3 Due</td>
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<tr>
<td></td>
<td>Nov 21</td>
<td>International Approaches</td>
<td></td>
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<tr>
<td>14</td>
<td>Nov 26</td>
<td>NO CLASS – Fall Break</td>
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<tr>
<td></td>
<td>Nov 28</td>
<td>NO CLASS – Fall Break</td>
<td></td>
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<tr>
<td>15</td>
<td>Dec 3</td>
<td>Autonomous Vehicles</td>
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<td></td>
<td>Dec 5</td>
<td>Autonomous Vehicles (continued)</td>
<td></td>
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<tr>
<td>16</td>
<td>Dec 10</td>
<td><em>SP Poster Session:</em> Final Design Recommendations</td>
<td>SP-3 due</td>
</tr>
</tbody>
</table>
Readings

Course Overview and Motivations
  https://www.activelivingresearch.org/ActiveTravelreview.

History, Institutions, and Key Trends

Pedestrian and Bicycle Travel Behavior
  https://www.saferoutespartnership.org/healthy-communities/101/6Es.

Land Use, Connectivity, and Urban Design

Data Sources and Collection Methods
  http://www.pedbikeinfo.org/resources/resources_details.cfm?id=5101.

Making the Case: Benefits of Walking and Cycling
- Group presentations; see Assignment 1 prompt for suggested readings for your group’s specific benefit.
Pedestrian Design


Bicycle Design


Multimodal Design: Streets, Sites, and Trails


Anatomy of a Pedestrian/Bicycle Master Plan


Connections with Other Plans and Policies

- Additional readings assigned as part of in-class activity/lab
Pedestrian and Bicycle Demand Estimation


Pedestrian and Bicycle Safety


Facility Analysis Tools: Audits

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

Facility Analysis Tools: Measures


Funding and Institutionalization

Advocacy, Outreach, and Social Equity


International Approaches


Autonomous Vehicles