

TTP 289A-006:

Bicycle and Pedestrian Planning (and Design)

Syllabus

Winter 2021 (CRN: 42937)—4.0 Credits
W/F, 9-10:50 am, Zoom Room TBD

Course Instructor: Dillon Fitch (dtfitch@ucdavis.edu)
Office Hours: TBD

Course Overview

Walking and bicycling are essential travel modes that provide numerous societal benefits. However, cities across the globe have struggled to foster walking and bicycling. In the US, the problem is severe, with few cities claiming more than a few percent of trips made by walking and bicycling. In this course, you will explore and critique the practice of bike and pedestrian planning and examine current research on walking, bicycling, and emerging forms of micromobility.

The course will focus on three primary themes (justice, safety, and behavior) as they intersect with the planning and designing of cities for walking, bicycling, and emerging micromobility. The course will focus on the local city-scale but will also include some discussion of the regional/state, non-profit, and private sector roles in planning for walking and bicycling. In this course, we will primarily consider the US context for bike/ped planning, but plenty of examples outside the US will be used, especially from countries and cities which have shown more progress with integrating walking and bicycling into their cities in the past century.

You can expect a mix of lectures (by me and guests), discussion, project-based work, and field trips.

Course Objectives

By completing this course, you should be able to:

- Explain how justice, safety, and behavior all intersect with the planning of streets for walking and bicycling.
- Explain historical and institutional policies for planning and funding roads for walking and bicycling in the US.
- List specific benefits of pedestrian and bicycle transportation and understand their magnitudes and methods of measurement.
- Understand roadway design in general, and more specifically standard pedestrian and bicycle facility design practices as well as the debates surrounding new, innovative pedestrian and bicycle facilities.
- Evaluate the existing pedestrian and bicycle planning and engineering methods critically and develop ideas for improving professional practice.

Readings and Class Participation

A different topic from the pedestrian and bicycle planning field will be covered each class session. The readings listed under each session below are required readings which will be available on the class

website at least one week in advance of the class. All students are expected to read all the assigned readings **before** class and to actively participate in the discussion. Two students will be selected to summarize the readings (with a 10-15 minute presentation) and lead discussion each week.

Active participation in class is an important component of this course. Being able to express concepts and opinions clearly and ask good questions are critical skills in the professional world. Class participation grades are based on the quality of active participation in class discussion, not simply on attendance.

Class Assignments

The three assignments are designed to give practical experience with elements of the active transportation realm, including policy development, research, and design. All work should have a practical focus. For example, work should be done with the intention of presenting findings to planners and engineers at a municipal agency. Writing and producing graphics to communicate ideas are important skills in transportation planning, and the clarity and organization of all assignments will be evaluated as a part of the grading process. Sources should be referenced in all assignments. Any reference style is acceptable. All assignments should be uploaded to the course Canvas site by their due date and time.

Assignment #1: Read and Critically Review a Local or Regional Bicycle and/or Pedestrian Plan (2-page summary memo & 5 minute in-class presentation with Q&A)

This assignment is designed as a practical application of lecture and discussion content. The final product should be a two-page, single-spaced memorandum in a standard memo form with a critical summary and analysis of the plan. Your memo should be framed as a constructive critique of the plan written by a resident of the subject community and addressed to the City Council or County Board of Supervisors.

You will submit the plan you would like to review on Canvas. Once approved, you will write your memo and make a brief presentation (5 minutes) containing the following three sections/elements:

- A brief description of the content of the plan. (about 1 paragraph)
- A short summary of the purpose and intent of the plan. Why did the agency develop the plan? What motivated them to develop the plan? (about 1-2 paragraphs)
- Your detailed comments on the following questions: What were the plan's strengths and weaknesses? Make sure to give examples to support your arguments. How could the plan be improved the next time it is updated? Try to use examples from other plans or cities you know about to suggest improvements. (1 to 1.5 pages)

You will answer questions in class about the plan and their presentation as part of the assignment. Following the presentations and Q&A a full class discussion will address:

- Common strengths & weaknesses of the plans
- Differences between local and regional plans

Assignment #2: Asynchronous field trip and photo essay

The goal of field trip is to experience the environment and get a first-hand look at a variety of urban designs that either facilitate or hinder walking and bicycling. Because we are not likely to all be in the

same city during class, we will conduct independent field trips and document them with a photographs and a narrative. The steps are as follows:

- (1) Route planning: Using local knowledge, bike infrastructure maps, OpenStreetMaps, and Google street view, design a field trip route that allows you to visit numerous examples of bike and pedestrian infrastructure in a variety of contexts near where you live. Expect to spend 3-4 hours in the field. At a minimum (more are encouraged), you will need to visit:
 - a. Three different corridor bike/ped treatments (consider varying them by land use)
 - b. Three different signalized intersections with varying bike/ped treatments
 - c. Two different unsignalized intersections with varying bike/ped treatments

The goal is to find streets that have key infrastructure elements for walking and bicycling. You may need to travel to a nearby city or town to ensure you find these elements in your field trip. You may break up your field trip into multiple field trips even in multiple cities. The goal is to examine a variety of street environments, not to form impressions of any specific city or neighborhood.

- (2) Walk or ride your route, document, and comment on the following features:
 - a. Street design (including sidewalks, trees, benches, etc.)
 - b. Land use
 - c. Bike/ped behavior
 - d. Driver behavior
 - e. Personal impressions (comfort, safety, security, aesthetics, etc.)
 - f. Nearby destinations and local accessibility
- (3) Use of an audit tool is encouraged (see below), but it is not mandatory.

Hoehner, C. and R. Brownson. "Active Neighborhood Checklist and Protocol," http://activelivingresearch.org/sites/default/files/Protocol_ActiveNeighborhoodChecklist.v2.pdf, 2011.

Be critical and provide thoughts about potential improvements. Your documentation should be in the form of photos, hand or digital sketches, and notes. Be creative! Your use of media is not constrained, please include as many photographs, sketches, maps (good for showing connectivity), etc. as you need to describe the environment. For the writing portion, please limit yourself to 1,000 words. Because of the word limit, you will probably need to organize your narrative in themes (not as a chronology of your field trip). Use figure captions to describe every photograph, sketch, map you use and embed them into the narrative in appropriate locations (after the paragraph for which they are referenced). You can include additional figures that are not directly referenced in the narrative as an appendix but be sure to organize them appropriately. For example, if you are talking about pedestrian crossing behavior and you have 6 photographs to reference, you can cite one in your narrative and at the same time cite the additional photographs in the appendix (e.g. See Figure 4 and Appendix Figures A1-A5). This has the benefit of not cluttering the narrative but shows that you have strong evidence for your claim.

Assignment #3 (Final Exam): Intersection/corridor analysis and re-design

This assignment will act as the final exam and take considerably more time and effort than the other two assignments. The project should be conducted in groups of two (It may also be conducted independently or in a group of three if needed, but expectations will be revised). Groups of two will need to clearly articulate the division of labor in producing the final product.

The goal of the assignment is to recommend, illustrate, and justify a set of pedestrian and bicycle improvements in your current city of residence. This location must be of community interest and NOT a location that already accommodates pedestrians and bicyclists well. The project will involve several **field visits, so an accessible location is very important.**

The final product will be a 15-minute professional presentation (with 15 additional minutes for questions) that is delivered during the last week of class. Time limits on presentations will be strictly enforced. The presentation should be given from a carefully-constructed presentation file (e.g. PowerPoint, google slides). This presentation file will be the main product of this assignment, but it should be accompanied by necessary supporting documentation (appendices). A separate report document is not required; the presentation file is the main deliverable for this assignment.

Before starting, you **must submit your study location for approval.** This is a brief (1/2-1 page) proposal describing the intersection or corridor you would like to study and why it is important to study and re-design. Include the concepts you have learned in the course, and **local plans and documents that include the location on their list to improve** to support your decision. You are not expected to use data at this step but including a map can help articulate how the project fits into the bike/ped network. Make sure to describe how re-designing the location is critical for improving justice and safety, and for encouraging more active travel. This request will not be graded, but I must approve your study, so if you don't make a good case, I will ask you to submit a new request.

Required components of the project to be included in the final presentation include:

- A brief discussion of why the intersection/corridor should be improved for pedestrians and bicyclists. For the sake of this assignment, we will assume that the community already supports the need for re-design at this location. You must include the use of existing data to support the need for re-design such as available crash data, socio-economic data, travel behavior data (surveys or regional models), or other sources that highlight the need for change.
- Discussion of the project process for engaging the community to build consensus for the re-design. Consider potential conflicts (between residents and you as a planner, but also between residents) and plans for resolving them. Note: deliberative democracy/participatory planning is messy. It is generally not possible to build unanimous consensus—this is especially true if that process includes residents from nearby neighborhoods—so articulate your strategy for moving forward.
- An illustration of the current design of the intersection and approaching street segments (or corridor) in plan view, including key roadway and sidewalk measurements. If a corridor project is selected, you must include the intersections by which that corridor connects to other bike/ped facilities in your study. **WARNING: Corridor plans will be more complex because they will require study of multiple intersections**
- An illustration of the cross-section existing conditions (on at least one of the approaches for an intersection study), including key roadway and sidewalk measurements.
- Two-hour traffic counts for autos, pedestrians, and bicyclists during a morning or afternoon “peak” travel period. You can usually conduct bike/ped counts at once, but many locations will require a separate car count.
- An illustration of the proposed redesign of the intersection and approaching street segments (or corridor) in plan view, including key roadway and sidewalk measurements.

- An illustration of the cross-section of the proposed redesign of at least one of the approaches (or corridor), including key roadway and sidewalk measurements.
- Rough, order-of-magnitude cost estimates for the improvements. See reading references on cost estimation.
- Other education or enforcement strategies that may complement the physical changes.
- Justification of the design changes: 1) appropriate for surrounding roadway and land use context (e.g., does the improvement improve route network connectivity, access to transit, a connection between activity centers?), 2) improves suitability for all roadway users without significant deterioration of conditions for a certain user group, 3) reduces crash risk, 4) is not excessively costly, 5) recommendations from previous pedestrian or bicycle plans, etc.
- Assessment of how the redesigned conditions are likely to affect walking, bicycling, and driving. You are encouraged to use current practice standard calculations (e.g. multimodal level of service, LTS classification, CROW manual) for existing conditions and proposed project to support your design decisions.
- Challenges to implementing the recommendations: 1) citizens or other groups who may oppose the design, 2) physical design constraints, 3) cost constraints, etc.
- Future phases and/or alternative designs of the project.
- Source information for graphics and images that are not your own.
- Appendices for all supporting material that is too detailed for the presentation. Examples include but are not limited to:
 - Count sheets
 - Supporting program details
 - Budget justification
 - Benefit calculations

Note that accuracy will be more important than precision in this exercise (i.e., it is more important to demonstrate knowledge of the difference in magnitude of costs between various infrastructure types, rather than know exactly how much each type costs). In addition, Illustrations should include key dimensions, such as street and lane widths, to communicate the existing conditions and proposed changes accurately, but they do not need to be developed using special software. Base aerial photos from Google Earth plus PowerPoint illustrations are sufficient for this project. AutoCAD, GIS, Adobe Illustrator and other design software is optional but can increase the attractiveness of the final recommendations.

Academic Misconduct and Plagiarism

All work in this course should be your own, though you will draw upon other references. In written work, cite your sources for quotes, facts, and opinions, both in the body of your work (at the end of the specific sentence where the information is cited) and in the bibliography. Do not copy word for word unless you place the words in quotation marks. Plagiarism includes¹:

- Taking credit for any work created by another person; work includes, but is not limited to books, articles, experimental methodology or results, compositions, images, lectures, computer programs, internet postings.
- Copying any work belonging to another person without indicating that the information is copied and properly citing the source of the work.

¹ <https://ossja.ucdavis.edu/code-academic-conduct>

- Using another person's presentation of ideas without putting such work in your own words or form and/or failing to provide proper citation
- Creating false citations that do not correspond to the information you have used
- Representing your previous work as if it is new work Any plagiarism will be dealt with as a serious ethical breach.

If you have questions about whether you are crossing an ethical line, talk to me.

COVID flexibility

This is a challenging time for everyone, but some people are particularly impacted by the COVID pandemic. If during the quarter you get into a situation where you do not feel like you can complete the work in this course, please talk to me.

Grading

Grades will be given on an A to F scale based on the following components of the class:

- Overall class attendance and participation (including leading discussions) (20%)
- Assignment #1: Critical review of a bike/ped plan (20%)
- Assignment #2: Mixed-media field trip documentation (20%)
- Assignment #3 (Final Examination): Intersection/corridor analysis and re-design (40%)

Assignments are due by the day/times listed on Canvas. Each calendar day late will result in loss of one grade (i.e., an "A" assignment will be given a "B"). I give a 2-hour grace period from the Canvas time, but beyond that, the assignment will be considered late.

The grading scale will be based on points earned out of 100 possible points in each component area. This scale is:

98 and above = A+
 93 to 97.9 = A
 91 to 92.9 = A-
 88 to 90.9 = B+
 83 to 87.9 = B
 81 to 82.9 = B-
 78 to 80.9 = C+
 73 to 77.9 = C
 71 to 72.9 = C- (and so on)

Grading is based on a combination of factors that contribute to professional-quality work. These include completeness of presentations and documents, logic, clarity, and creativity. Assignments that I judge to be professional quality will receive an "A". Assignments with some deficiencies in the four factors will receive lower grades. I will provide written feedback (and additional oral feedback, as requested) so that you can understand aspects of your work that may need improvement. The general grading rubric is as follows:

Criteria	Low Quality	Medium Quality	High Quality
Complete and succinct	Parts of the assignment are not addressed and/or the practical implications of the work are not included.	All parts of the assignment are covered, but some lack the depth of discussion.	All parts of the assignment are covered, and all responses include thorough discussion.
Logical	Some arguments do not make sense or are not supported by evidence.	Arguments in general make sense but are not supported by strong evidence. OR, arguments are supported by evidence but do not make sense (e.g. potential problems with evidence).	Arguments make sense and are supported by strong evidence (studies, empirical data).
Clear	Writing/presentation is poorly organized or uses poor sentence structure and grammar which makes it hard to understand.	Writing/presentation is understandable, but is verbose, includes minor errors in grammar, or lacks professionalism.	Writing/presentation is clear, professional, and could be understood by anyone in the profession.
Creative	Analyses and approaches to the assignment are limited to the obvious or perhaps status-quo solutions, or limitations are not discussed.	Several analyses and approaches to the assignment are included and some limitations are discussed, but the scope is limited.	A wide range of analyses and approaches to the assignment are considered including some that are well beyond the status-quo and all options are given discussion of limitations.

Time Requirements

In general, it is expected that you will spend approximately four hours in class per week plus an additional seven hours per week on readings, assignments, and other preparation. However, grading is based on the quality of work produced rather than amount of time spent working.