# CP 298-001: Pedestrian and Bicycle Transportation
*DRAFT Syllabus*

Spring 2010—3.0 Credits
Tuesday, 5 p.m. to 8 p.m., Wurster Hall, Room 106

Course Leader: Robert Schneider (rschneider@berkeley.edu)
Assistance with syllabus and several lectures provided by
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Office Hours: By appointment

## Course Background

Walking and bicycling are essential components of a sustainable transportation system. In response to growing concerns about personal mobility and safety, access to transit, equity between socioeconomic groups, air quality, public health, and other issues of community sustainability, many government agencies are developing plans to improve pedestrian and bicycle transportation.

Pedestrian and bicycle transportation are influenced by micro-scale elements of the built environment, such as sidewalks, bicycle lanes, traffic speeds, and roadway crossings, as well as by macro-scale characteristics, such as community-wide pathway systems and regional land use patterns. As a result, walking and bicycling issues bridge the disciplines of urban planning, urban design, and civil engineering.

This graduate-level course is structured to provide students with information about current practices in the pedestrian and bicycle transportation field. It will cover historical and institutional frameworks, benefits and obstacles to pedestrian and bicycle planning, policy development, perceived and actual safety, facility design, network development, and practical methods of estimating demand and evaluating walking and bicycling conditions. This is not an advocacy course. Students will be challenged to evaluate the existing methods critically and develop ideas for improving pedestrian and bicycle planning practices. While the course will focus on practices in the United States, it will also include international examples of innovative strategies.

The course will include lectures, guest speakers, field trips, and three class projects. Most classes will include a presentation by the course leader. References from the reading list will also be discussed in class. To facilitate discussion, a group of three students will be selected to be the "Expert Panel" for the following week's readings. These three students should be prepared to provide an overview and two discussion questions for the readings each week. As the "Expert Panel," the three students may also field questions on the weekly topic from the rest of the class. Guest speakers (and panels of speakers) will be professionals working in local, regional, and state agencies, advocacy organizations, and academic settings who will provide a practical perspective on the issues discussed in class. When guest speakers are scheduled, the second half of class will be reserved for their presentation and discussion.

This class can be taken as pass/no pass. Grades will be based on the three assignments (worth 15%, 25%, and 30%, respectively) and class attendance/overall participation (30%).

## Class Assignments

The three assignments were designed to give practical experience with elements of the non-motorized transportation realm, including political, research, and design aspects. 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 or distributing the results to members of the Association of Pedestrian and Bicycle Professionals. The assignments are described below.

*Assignment #1: Attend a local transportation meeting and turn in a 2-page summary in memo form*
This assignment is meant to give the student experience in the political realm of decision-making. By February 2nd, the student should email the course leader the proposed meeting and the date, time, and location. This project can be worked on simultaneously with assignment 2, so it is due by March 16th. The final product should be a two-page, single-spaced memorandum in a standard memo form with a meeting summary and analysis. You should address the memo to a staff or advocacy member/organization (real or fictitious) of your choice. Your memo should contain the following three sections:

- A very brief description of the role and function of the organization whose meeting you attended (about 1 paragraph)
- A short summary of the purpose of the meeting and the specific topics discussed. If the agenda included a large number of items you may choose to focus on one or two key topics. (1 to 2 paragraphs)
- Your detailed comments on the following question: What did this experience teach you about citizen participation and public decision-making with regard to bicycle and pedestrian planning? (1 to 1.5 pages)

Before attending the meeting, skim a few background materials about the organization sponsoring the meeting and any reports and analyses prepared specifically for the meeting. Also obtain and review any materials that are handed out or presented at the meeting. Examples of appropriate meetings include:

- Bicycle Advisory Committee meetings, SF, fourth Thursday each month, 6:30, City Hall
- Pedestrian Safety Advisory Committee meetings, SF, 2nd Tuesday each month, 5:30, City Hall
- Bicycle BART Access Task Force meetings, first Monday of even months, 6:30, MTC
- San Francisco Bicycle Coalition (SFBC), various meetings and events such as volunteer nights and service stations
- Street Skills class, various locations, several dates
- East Bay Bicycle Coalition (EBBC) various events
- Richmond Bicycle/Pedestrian Advisory Committee
- Walnut Creek Bicycle Advisory Committee
- ACTIA Bicycle/Pedestrian Advisory Committee
- Any meeting of ABAG, MTC, SFMTA, SFCTA, etc. that has a bicycle or pedestrian issue on the agenda

****Important word of advice**: Please do not wait to the last minute for this assignment. Meetings are often held during the weekday and many transportation meetings are only held monthly.****

*Assignment #2: Paper on Topic of Choice*
This assignment is meant to showcase the prior experience of students in the class, or give them a chance to pursue a subject of particular interest. The result should be an 8- to 10-page, double-spaced paper. A brief (half page) project proposal or outline will be due on February 16th, about which the course leader will provide feedback. The paper will be due March 16th, and students should be prepared to give a 5-minute PowerPoint presentation on their findings and respond to 3 minutes of questions. Possible project topics include, but are not limited to:

- Detailed description of past experience working with non-motorized transportation, and lessons learned
- Evaluation of a local, small-area pedestrian and bicycle plan (roadway corridor or neighborhood)
- Description of past pedestrian or bicycle work – challenges and innovations
- Profile of innovative city and its work to increase pedestrian and bicycle mode share and safety
- Photographic essay and memorandum on a specific pedestrian or bicycle facility design issue
- Analysis of an existing source of pedestrian or bicycle use, safety, user characteristics, or facility data (American Community Survey Commuting Data, National Household Travel Survey, US Census Commuting Data, Statewide/Regional Crash Databases, International Databases, etc.)
- Field data collection and analysis (e.g. walkability index, pedestrian/bicycle roadway crossing index, Bicycle Level of Service, user survey, pedestrian and bicycle counts, etc.)

*Assignment #3: Design Analysis*
The design analysis should be conducted in groups of 3-4 students, and should include a section and plan view of the current design of a street segment, traffic counts for autos, pedestrians, and bicyclists, and a proposed redesign of the intersection. The redesign should take into account issues such as property rights, infrastructure costs, and varying interest groups. 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. A description of the steps and conclusions of the group members should accompany drawings and analysis.

One member from each group should email the instructor with the group members' names and the proposed intersection by March 30th. In addition to the write-up, each group is expected to give a 10-minute PowerPoint presentation regarding the findings and redesign of the street; the presentations will occur on April 27th. Time limits on presentations will be strictly enforced.

**Class Topics and Reading List**
A different topic from the pedestrian and bicycle planning field will be covered each week. The list below includes required readings on each weekly topic. A separate list titled, "Important References for Pedestrian and Bicycle Transportation Planners," will be distributed to students on the first day of class. Everyone is expected to read all the assigned readings BEFORE class and actively participate in the discussion. Everyone is also expected to attend class and to arrive on time.

Readings will be available from the class wikispace: http://cp298pedbiketranspo.wikispaces.com/

I am looking forward to a great semester with all of you!
Bob

**Week 1: (1/19/10)**

*Pedestrian and Bicycle Transportation Institutions (History, Policy Frameworks, Legal Issues)*
1.1. US Department of Transportation Federal Highway Administration and National Highway Traffic Safety Administration. *National Bicycling and Walking Study: Ten Year Status Report*, October 2004. (pp. 1-14)

1.2. League of American Bicyclists and Bikes Belong Coalition. *Bicycle Friendly America Yearbook*, Available online: http://www.bikeleague.org/programs/bicyclefriendlyamerica/pdfs/bfa_yearbook09.pdf, 2009. (pp. 1-14)

1.3. US Department of Transportation. *Accommodating Bicycle and Pedestrian Travel: A Recommended Approach, A US DOT Policy Statement on Integrating Bicycling and Walking into Transportation Infrastructure.* Available online: http://www.fhwa.dot.gov/environment/bikeped/Design.htm, 2000.

1.4. United States Department of Housing and Urban Development, Department of Transportation, and Environmental Protection Agency. *HUD, DOT, and EPA Partnership: Sustainable Communities*, Available online: http://www.epa.gov/dced/pdf/dot-hud-epa-partnership-agreement.pdf, June 16, 2009.

1.5. Mionske, B., JD. (2007). *Bicycling and the Law - Your Rights as a Cyclist*. Boulder, CO: VeloPress. (pp. 1-24)

*Environmental Factors Associated with Pedestrian and Bicycle Transportation*
1.6. Krizek, K., A. Forsyth, and L. Baum. *Walking and Cycling International Literature Review, Final Report*, Department of Transport, State Of Victoria, Melbourne, Australia, 2009. (pp. 1-13)

1.7. Cervero, R. and M. Duncan. "Walking, Bicycling, and Urban Landscapes: Evidence From the San Francisco Bay Area," *American Journal of Public Health*, Volume 93, Number 9, September 2003. (pp. 1-14)

> *Class Leader:* Robert Schneider (History, Policy Frameworks, Environmental Factors), Rebecca Sanders (Policy Frameworks, Legal Issues)
> *Guest Speaker: TBD*

**Week 2: Benefits and Challenges of Promoting Pedestrian and Bicycle Transportation (1/26/10)**

*Environment/Equity/Health*
2.1. Fisher, G.W., K. A. Rolfe, T. Kjellstrom, A. Woodward, S. Hales, A.P. Sturman, S. Kingham, J. Petersen, R. Shrestha, and D. King. *Health Effects Due to Motor Vehicle Air Pollution in New Zealand*, Report to the Ministry of Transport, 2002. (pp. i-5)

2.2. Gordon-Larsen, P., M.C. Nelson, P. Page, and B.M. Popkin. "Inequality in the Built Environment Underlies Key Health Disparities in Physical Activity and Obesity," *Pediatrics*, Volume 117, 2006, pp. 417-424.

2.3. Salvesen, D., Evenson, K. R., Rodríguez, D. A., & Brown, A. "Factors Influencing Implementation of Local Policies to Promote Physical Activity: A Case Study of Montgomery County, Maryland," *Journal of Public Health Management and Practice, 14*(3), 280-288, 2008.

2.4. Sallis, J. F., & Glanz, K. (2006). The Role of Built Environments in Physical Activity, Eating, and Obesity in Childhood. *The Future of Children, 16*(1), 89-108.

Cavill, N., & Davis, A. (2007). Cycling & Health: What's the Evidence? : Cycling England. (Read Executive Summary)

*Economy/Efficiency*
2.5. Gotschi, T., and K. Mills. *Active Transportation for America: The Case for Increased Federal Investment in Bicycling and Walking*, Rails-to-Trails Conservancy and Bikes Belong, 2008. (pp. 3-17)

2.6. Litman, Todd. "Economic Value of Walkability," Victoria Transportation Policy Institute, *Transportation Research Record 1828*, 2003.

2.7. Hurdle, J. "U.S. Cities Promote Bicycling as Gas Prices Soar," Washington, June 12, 2008. Available online: http://www.reuters.com/article/GCA-Oil/idUSN1245324520080612.

*Safety*
2.8. Jacobsen, P.L. "Safety in Numbers: More Walkers and Bicyclists, Safer Walking and Bicycling," *Injury Prevention*, Volume 9, pp. 205-209, 2003.

> *Class Leader:* Rebecca Sanders (Environment/Equity/Health); Robert Schneider (Economy/Efficiency, Safety)
> *Guest Speaker: TBD*

**Week 3: Pedestrian and Bicycle Safety: Crash Data, Perceptions, Attitudes, and Culture (2/02/10)**

**E-MAIL PROPOSED MEETING NAME, DATE, TIME, AND LOCATION TO COURSE LEADER BEFORE CLASS ON 2/02/10 (PREPARATION FOR ASSIGNMENT 1).**

*Review of Crash Data*
3.1. National Highway Traffic Safety Administration. *Traffic Safety Facts: 2008 Data for Pedestrians*, DOT-HS-811-163, Available online: http://www-nrd.nhtsa.dot.gov/Pubs/811163.pdf, 2009.

3.2. National Highway Traffic Safety Administration. *Traffic Safety Facts: 2008 Data for Bicyclists and Other Cyclists*. DOT-HS-811-156, Available online: http://www-nrd.nhtsa.dot.gov/Pubs/811156.PDF, 2009.

*Pedestrian and Bicycle Safety Perceptions, Attitudes, and Culture*
3.3. Basford, L., Reid, S., Lester, T., Thomson, J., & Tolmie, A. (2003). Drivers' Perceptions of Cyclists. Crowthorne: Transport Research Laboratory. (Read Executive Summary)

3.4. Connerly, C., Audirac, I., Higgins, H., & Stutzman, M. (2006). Sharing the Roadway with Bicyclists & Pedestrians: Florida Drivers' Attitude Survey. Tallahassee: Florida Planning and Development Laboratory and FSU Survey Research Laboratory. (Read Executive Summary)

3.5. Horton, D. (2007). Fear of Cycling. In D. Horton, P. Rosen & P. Cox (Eds.), *Cycling and Society*. Hampshire: Ashgate Publishing. (pp. 133-152)

> *Class Leader:* Rebecca Sanders (Perceptions, Attitudes, and Culture), Robert Schneider (Review of Crash Data)
> *Guest Speaker: TBD*

**Week 4: Anatomy of a Pedestrian and Bicycle Plan (2/09/10)**

4.1. Three to four example pedestrian and bicycle plans to be reviewed by students in groups (See Example Plans at the end of the syllabus.)

> *Class Leader: Robert Schneider*
> *Panel #1 (discussion panel): TBD*

**Week 5: Pedestrian and Bicycle Facility Design Fundamentals (2/16/10)**

**SUBMIT A HALF-PAGE PROJECT PROPOSAL OR OUTLINE TO COURSE LEADER BEFORE CLASS ON 2/16/10 (PREPARATION FOR ASSIGNMENT 2).**

5.1. US Department of Transportation, Federal Highway Administration. *Designing Sidewalks and Trails for Access, Part I of II: Review of Existing Guidelines and Practices*, 1999. Available online: http://www.fhwa.dot.gov/environment/bikeped/Access-1.htm. (pp. 31-69)

5.2. American Association of State Highway Transportation Officials. *Guide for the Development of Bicycle Facilities*, 1999. (currently being updated). (pp. 15-36)

> *Class Leader: TBD*
> *Guest Speaker: TBD*

**Week 6: Pedestrian and Bicycle Facility Design Innovations and Cost Considerations (2/23/10)**

6.1. US Department of Transportation, Federal Highway Administration. *Safety Effects of Marked Versus Unmarked Crosswalks at Uncontrolled Locations*, FHWA-RD-04-100, Authors: Zegeer, Charles V., J. Richard Stewart, Herman Huang, and Peter Lagerwey, Available online: http://www.tfhrc.gov/safety/pubs/04100/index.htm, 2001. (pp. 1-11; pp. 51-61)

6.2. Synopsis of Jennifer Dill's research on bicycle lanes in Portland.
http://www.portlandtribune.com/sustainable/story.php?story_id=122402296838932000

*> Class Leader: TBD*
*> Panel #2 (discussion panel): TBD*

**Week 7: International Pedestrian and Bicycle Transportation (3/02/10)**

7.1. United States Department of Transportation, Federal Highway Administration. *University Course on Pedestrian and Bicycle Transportation*, Lesson 23: International Approaches to Bicycle and Pedestrian Facility Design, Available Online: http://www.tfhrc.gov/safety/pedbike/pubs/05085/chapt23.htm, 1999.

7.2. Søren Underlien Jensen, Claus Rosenkilde, Niels Jensen. *Road Safety and Perceived Risk of Cycle Facilities in Copenhagen*, White Paper, City of Copenhagen, Denmark and Trafitec, 2007.

7.3. City of Amsterdam Bicycle Policy (PDF on wiki)

7.4. City of Copenhagen Bicycle Policy (PDF on wiki)

7.5. Pucher, J., & Buehler, R. (2008). Cycling for Everyone: Lessons from Europe. *Transportation Research Record: Journal of the Transportation Research Board 2074*, pp. 58-65.

7.6. Cervero, R., Sarmiento, O., Jacoby, E., Gomez, L., & Neiman, of Copenhagen,

****Week 10: NO CLASS – SPRING BREAK! (3/23/10)****

**Week 11: Pedestrian and Bicycle Data Collection and Performance Measures (3/30/10)**

**EMAIL GROUP MEMBERS' NAMES AND PROPOSED INTERSECTION FOR DESIGN ANALYSIS TO COURSE LEADER BEFORE CLASS ON 3/30/10 (PREPARATION FOR ASSIGNMENT 3).**

11.1. US Department of Transportation, Federal Highway Administration. *Pedestrian and Bicycle Data Collection in United States Communities: Quantifying Use, Surveying Users, and Documenting Facility Extent*, Authors: R. Schneider, R. Patten, J. Toole, and C. Raborn, Available online: http://www.walkinginfo.org/rd/planning.cfm#data, January 2005. (Read summary section)

11.2. City of Copenhagen, Denmark. *Copenhagen: City of Cyclists: Bicycle Account*, Available online, http://www.vejpark2.kk.dk/publikationer/pdf/464_Cykelregnskab_UK.%202006.pdf, 2006.

11.3 City of Portland, OR. *Portland Bicycle Counts 2008*, Available online: http://www.portlandonline.com/shared/cfm/image.cfm?id=217489, November 2008.

> *Class Leader: Robert Schneider*
> *Guest Speakers: Rebecca Sanders (Caltrans performance measures) & TBD*

**Week 12: Pedestrian and Bicycle Facility Assessment/Suitability Analysis Methods (Roadway/Sidewalk/Trail Segments) (4/06/10)**

12.1. Dowling, R., D. Reinke, A. Flannery, P. Ryus, M. Vandehey, T. Petritsch, B. Landis, N. Rouphail, and J. Bonneson. *Multimodal Level of Service Analysis for Urban Streets*, National Cooperative Highway Research Program Report 616, Transportation Research Board, Available online: http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_rpt_616.pdf, 2008. (pp. 1-16; pp. 92-95)

12.2. Gehl, J. *Public Spaces & Public Life Studies*, City of Adelaide, City Council, Australia, Available online, http://www.adelaidecitycouncil.com/adccwr/publications/reports_plans/public_spaces_public_life.pdf, 2002. (pp. 7-15; pp. 47-67)

> *Class Leader: Robert Schneider*
> *Guest Speaker: TBD*

**Week 13: Pedestrian and Bicycle Facility Assessment/Suitability Analsysis Methods (Roadway Intersections/Crossings ) (4/13/10)**

13.1. US Department of Transportation, Federal Highway Administration. *Pedestrian and Bicyclist Intersection Safety Indices: Final Report*, Authors: D.L. Carter, W.W. Hunter, C.V. Zegeer, R. Stewart, and

H. F. Huang, Pedestrian and Bicycle Information Center, Available online: http://www.tfhrc.gov/safety/pedbike/pubs/06125/06125.pdf, 2006. (p. 1; pp. 49-50)

13.2. Landis, Bruce W., Venkat R. Vattikuti, Russell M. Ottenberg, Theodore A. Petritsch, Martin Guttenplan, and Linda B. Crider. "Intersection Level of Service for the Bicycle Through Movement." *Transportation Research Record 1828*, Transportation Research Board, Washington, DC, 2003.

> *Class Leader: Robert Schneider*
> *Guest Speaker: TBD*

**Week 14: Pedestrian and Bicycle Demand Analysis and Prioritization Methods (4/20/10)**

14.1. Schneider R.J., L.S. Arnold, and D.R. Ragland. *Validation Testing and Refinement of the Alameda County Pedestrian Intersection Crossing Volume Model*, UC Berkeley Traffic Safety Center White Paper, Presented at the Association of Collegiate Schools of Planning Conference Arlington, Virginia, Available online: www.safetrec.berkeley.edu/research/pedbikemodeling.html, October 2009.

14.2. California Department of Transportation. *Trip-Generation Rates for Urban Infill Land Uses in California: Phase1, Data Collection Methodology and Pilot Application*, Prepared by Association of Bay Area Governments (ABAG), Kimley-Horn and Associates, Inc., and Economic & Planning Systems, April 2008. (pp. 1-15)

> *Class Leader: Robert Schneider*
> *Guest Speaker: TBD*

**Week 15: In-Class Presentations of Class Projects Course/Wrap-Up (4/27/10)**

**ASSIGNMENT 3 DUE AT BEGINNING OF CLASS.**

> *Class Leader: Robert Schneider, Rebecca Sanders*

**Example Pedestrian and Bicycle Plans**


City of Alexandria, VA. *Pedestrian and Bicycle Mobility Plan*, Available online: http://alexandriava.gov/localmotion/info/default.aspx?id=11418, June 2008.

City of Cambridge, MA. *Cambridge Pedestrian Plan*, Available online: http://www.cambridgema.gov/~CDD/et/ped/plan/ped_plan.html, 2004.

City of Portland, OR. *Portland Pedestrian Master Plan*, Available online: http://www.portlandonline.com/transportation/index.cfm?c=dhage, 1998.

City of Oakland, CA. *Oakland Pedestrian Master Plan*, Available online: http://www.oaklandnet.com/government/pedestrian/index.html, 2002.

Alameda County Transportation Improvement Authority. *Alameda Countywide Strategic Pedestrian Plan*, Available online: http://www.acta2002.com/ped-toolkit/Full_Ped_Plan.pdf, 2006.

City of Sacramento, CA. *Sacramento Pedestrian Master Plan*, Available online: http://www.cityofsacramento.org/transportation/dot_media/street_media/sac-ped-plan_9-06.pdf, 2006.

City of Seattle, WA. *City of Seattle Bicycle Master Plan*, Available online: http://www.seattle.gov/Transportation/bikemaster.htm, 2007.

Greensboro, NC Metropolitan Planning Organization. *Greensboro Urban Area Bicycle, Pedestrian, and Greenway Plan*. Available online: http://www.greensboro-nc.gov/Departments/GDOT/divisions/planning/bicycle/BiPed.htm, 2006.

City of Baltimore. *Baltimore Bicycle Master Plan*, Available online: http://www.liveearnplaylearn.com/Publications/BaltimoreCityBicycleMasterPlan/tabid/98/Default.aspx, 2006.

District of Columbia. *District of Columbia Bicycle Master Plan*, Available online: http://www.ddot.dc.gov/ddot/cwp/view,a,1245,q,634448.asp, 2004.

City of Berkeley, CA. *Berkeley Bicycle Plan*, Available online: http://www.ci.berkeley.ca.us/transportation/Bicycling/BikePlan/BikePlan.html, 2000 (and update, 2005).

City of Berkeley, CA. *DRAFT Berkeley Pedestrian Plan*, Available online: http://www.altaprojects.net/berkeleypedestrianplan/index_files/Documents.htm, March 2008.

Metropolitan Transportation Commission. *Regional Bicycle Plan for the San Francisco Bay Area: 2009 Update*, Available online, http://www.mtc.ca.gov/planning/bicyclespedestrians/MTC_Regional_Bicycle_Plan_Update_FINAL.pdf, March 2009.