Course Syllabus

Department of City and Regional Planning **CP290 D** **last update: 2-4-15**
University of California, Berkeley **Spring 2015**
CP290: Pedestrian and Bicycle Transportation Planning
CCN: 13781 (3 units)

Class Meets: Mondays and Wednesdays 9:30-11:00, Wurster Hall Rm. 106

Instructors: Elizabeth Deakin and Andrea Broaddus

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Course Overview

The transportation, urban planning, and public health professions are placing an increased emphasis on walking and bicycling as active modes of transportation that can support healthier lifestyles and more sustainable communities. At the same time, biking and walking continue to face challenges including a problematic safety record and shortages of funding for facilities and programs. This class will provide students with a deep understanding of the role that walking and biking currently play and the enhanced roles that they potentially could play in livable cities, a critical perspective on the challenges that biking and walking programs must contend with, and knowledge of policy and design strategies that planners can adopt to improve conditions for cyclists and pedestrians and encourage the use of these modes.

Students will become familiar with contemporary bicycling and walking issues as well as policies, programs, and planning and engineering interventions that can be used to support and encourage safe and comfortable biking and walking. Topics to be covered will include mode shares and trip characteristics of travel by biking and walking, socioeconomic and demographic characteristics of cyclists and pedestrians, the relationship of urban design to bike and walk mode choices, safety issues, policies and programs to facilitate biking and walking, and planning and design of bicycle and pedestrian facilities. Both U.S. and international examples of current best practices will be considered.

The class format will include both lectures and discussion sections. Some classes will be devoted to discussion of readings taken from recent texts, journal articles, and professional reports and plans on biking and walking, while others will feature presentations from local professionals specializing in bike and pedestrian planning and still others will engage students in in-class exercises. The requirements for the course will include active participation in class (10%). three short assignments (30%), a midterm exam(25%), and preparation and presentation of a major paper or project of the student's choice (35%). There will be no final exam.

Course Objectives

This course will focus on planning for those traveling by foot and bicycle, with the aim of preparing students who wish to specialize in this field. It will give an overview of the latest research on travel behavior, street design and infrastructure, and current best practices in use by cities around the US and Europe. It includes several exercises allowing students to address issues and carry out analyses of the types that pedestrian and bicycle planners frequently are asked to do.

Upon completion of this course, students should be able to:

- Knowledgeably discuss historical and current trends in biking and walking, both in the US and in other countries, and their relationship to factors affecting safety, level of service, and demand for these modes.

- Explain how bike and pedestrian planning and design have been carried out over the past 150 years, and demonstrate an understanding of the role of public and private actors in shaping street designs and special facilities for these modes.
- Identify the factors that affect bike use and walking as a function of the key variables that affect demand and the strategies that can be used to encourage more biking and walking.
- Explain the factors affecting pedestrian and bicycle safety and level of service and discuss the strategies that can be implemented to improve safety and service quality.
- Design and carry out a plan for the collection of robust data on pedestrian and bicycle usage and user preferences, incorporating best practices.

Course Format

Some class sessions will follow a lecture and discussion format, while others will engage students in class exercises and a few sessions will involve activities outside the classroom. Several guest experts will give lectures during the semester. Some assignments will be completed on an individual basis, and others will be completed as teams.

Course Requirements

Students are expected to come to class prepared by doing the required reading beforehand and participating in class discussions. Additional course requirements include three short assignments, a midterm exam, and a final paper or project which will be presented to the class during the final week of classes. The short assignments and exam are to be completed on an individual basis. For the paper or project, students may work individually or in small teams (2-3 members) on a topic of their choice - a case study, field work and analysis on a local issue, a policy analysis are all acceptable approaches. The topic should be sufficiently circumscribed that students can assess it in depth, utilizing assigned readings, materials from the UC Transportation Library and other local and online resources, and/or original data collection (interviews, surveys, field observations) and analysis.

Grading

The final grade will be calculated as follows:

Class Participation and Attendance	10%
Assignment #1 – Policy Brief - due 2/9	10%
Assignment #2 – Anatomy of a Bike/Ped Plan - due 2/18	10%
Midterm Exam -- in class, 3/18	25%
Assignment #3 – Intersection/Street Segment Analysis - due 4/20	10%
Presentation of Final Paper/Project -- in class, 4/27 or 29 *	10%
Final Paper/Project -- due last day of class	25%

* All presentation materials are due at the start of class on 4/27 regardless of when the presentation is scheduled.

Please note: In fairness to other students who sometimes sacrifice to meet deadlines, late assignments will be graded down half a letter grade for each day late unless the instructor has granted an extension for good cause.

Readings

The assigned text for this course is *City Cycling*, edited by John Pucher and Ralph Buehler, MIT Press, 2012. Chapters from this book (CC), along with other readings, are assigned according to the schedule below. The other readings are available on the course website, along with other resources. **All readings should be completed by the day they are assigned, in preparation for class discussion**.

Most readings are on bCourses under Files, organized by Week. A few of the readings listed below should be accessed using the listed link.

Week / Date	Topic	Readings for the Class
WEEK 1 Wed, 21-Jan	Introduction / NMT Trends in the US	CC chapter 1, "Introduction: Cycling for Sustainable Transport," by John Pucher and Ralph Buehler. Gotschi, T., and K. Mills. (2008) "Active Transportation for America: The Case for Increased Federal Investment in Bicycling and Walking," Rails-to-Trails Conservancy and Bikes Belong. Southworth, Michael and Eran Ben-Joseph. (1995) "Street Standards and the Shaping of Suburbia," Journal of the American Planning Association, Vol. 61, No. 1. US Department of Transportation, (2010) "The National Bicycling and Walking Study: 15-Year Status Report." Federal Highway Administration, Washington, DC, esp. pp. 1-9.
WEEK 2 Mon, 26-Jan	International Comparisons	CC chapter 2, "International Overview: Cycling Trends in Western Europe, North America and Australia," by Ralph Buehler and John Pucher. CC chapter 6, "Bicycling Infrastructure for Mass Cycling: A Transatlantic Comparison," by Peter G. Furth. John Pucher and Ralph Buehler, (2008) "Making Cycling Irresistible: Lessons from the Netherlands, Denmark, and Germany," Transport Reviews, Vol. 28, No. 4, pp.495-528. 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 A, Vol. 45, No. 6, pp. 451-474.
WEEK 2 Wed, 28-Jan	Factors affecting the decision to walk or bike	Schneider, R.J. (2013) "Theory of Routine Mode Choice Decisions: An Operational Framework to Increase Sustainable Transportation," Transport Policy, Volume 25, pp. 128-137. Alfonzo, Mariela. (2005) "To walk or not to walk? The hierarchy of walking needs," Environment and Behavior, Vol. 37, No. 6. Jeffery M. Guinn & Paul Stangl, Pedestrian and bicyclist motivation: an assessment of influences on pedestrians' and bicyclists' mode choice in Mt. Pleasant, Vancouver Urban, Planning and Transport Research: An Open Access Journal, 2:1, 105-125, To link to this article: http://dx.doi.org/10.1080/21650020.2014.906907 Dill J. and N. McNeil. (2012) "Four Types of Cyclists? Testing a Typology to Better Understand Bicycling Behavior and Potential," Working Paper, Portland State University, Oregon Transportation Research and Education Consortium. Ann Forsyth and Kevin Krizek. (2010) "Promoting Walking and Bicycling: Assessing the Evidence to Assist Planners," Built Environment, Vol. 36, No. 5, pp. 429-446.

WEEK 3 Mon, 2-Feb	Social and Demographic Factors Affecting the Use of NMT **Guest lecturer: Prof. Susan Handy, UC Davis**	CC chapter 10, "Women and Cycling," by Jan Garrard, Susan Handy, and Jennifer Dill. CC Chapter 11, "Children and Cycling," by Noreen C. McDonald. Handy, Susan. (2011) "The Davis bicycle studies: Why do I bicycle but my neighbor doesn't?," Access 39, Fall 2011. Ben-Joseph, E. and Warner, S. (2011). "Child Streets." Journal of Urban Planning and Development, Volume 137, pp. 365-369. Webber, S., M. Porter and V. Menoc. (2010) "Mobility in Older Adults: A Comprehensive Framework," The Gerontologist, Volume 50, pp. 443-450.
WEEK 3 Wed, 4-Feb	Who uses NMT and why, where and when?	CC chapter 4, "Effective Speed: Cycling Because It's "Faster"," by Paul Tranter. Pucher, J. Buehler, R., Merom, D. and A. Bauman. (2011) "Walking and Cycling in the United States, 2001-2009: Evidence from the National Household Travel Surveys," American Journal of Public Health, Vol. 101, No. S1, pp. 310-317. Pushkarev, Boris and Jeffrey Zupan. (1975) *Urban Space for Pedestrians*, Chapters 1 and 2. League of American Bicyclists (LAB). (2012) "Where We Ride: Analysis of Bicycling in American Cities," Washington, DC.
WEEK 4 Mon, 9-Feb	NMT and Public Health **Assignment #1 Due** -	CC chapter 3, "Health Benefits of Cycling," by Jan Garrard, Chris Rissel, and Adrian Bauman. Pucher, J., Buehler, R., Bassett, D. and A. Dannenberg. (2010) "Walking and Cycling to Health: Recent Evidence from City, State, and International Comparisons," American Journal of Public Health, Vol. 100, No. 10, pp. 1986-1992. Heath, G. W., Brownson, R. C., Kruger, J., Miles, R., Powell, K. E., Ramsey, L. T., & Task Force on Community Preventive Services. (2006). "The effectiveness of urban design and land use and transport policies and practices to increase physical activity: a systematic review," Journal of Physical Activity & Health, 3, S55. Boarnet, M., Greenwald, M. and T. McMillan. (2008) "Walking, urban design and health: Toward a cost-benefit analysis framework," Journal of Planning Education and Research, Vol. 27, No. 3, pp. 341-358.
WEEK 4 Wed, 11-Feb	NMT and Urban Form: Effects of Location and Siting Choices	Saelens, Brian E., James F. Sallis, and Lawrence D. Frank. (2003) "Environmental correlates of walking and cycling: findings from the transportation, urban design, and planning literatures," Annals of Behavioral Medicine 25:2, pp. 80-91 Schlossberg, M., Phillips, P., Johnson, B., and Parker, B. (2005). "How do they get there? A spatial analysis of a 'sprawl school' in Oregon." Planning Practice and Research, 10.1080/02697450500414678, 147-162. Online publication date: 1-May-2005. Broaddus, Andrea. (2010) "A Tale of Two Eco-suburbs in Freiburg, Germany," Transportation Research Record, No. 2187.

WEEK 5 Mon, 16-Feb	**Public holiday**	NO CLASS - academic holiday
WEEK 5 Wed, 18-Feb	Anatomy of a bike/ped plan **Assignment #2 Due**	Discussion of plans in class
WEEK 6 Mon, 23-Feb	NMT and Traffic Safety: Vulnerable users -	CC Chapter 7, "Cycling Safety," by Peter L. Jacobsen and Harry Rutter. Loukaitou-Sideris, A., R. Ligett, and H. Sung. (2007) "Death on the Crosswalk," Journal of Planning Education and Research, Volume 26, pp. 338-351. League of American Bicyclists (LAB). (2013) "The New Majority: Pedaling Toward Equity," http://bikeleague.org/equity (Links to an external site.)
WEEK 6 Wed, 25-Feb	NMT and Traffic Safety: Data vs perceptions, risk and exposure **Guest lecturer: Frank Proulx, SafeTREC Berkeley**	Bhatia, R. and M. Weir. (2011) "Safety in Numbers Re-examined: Can we make valid or practical inferences from available evidence?" Accident Analysis & Prevention, Vol. 43, pp. 235-240. Nordback, K., W.E. Marshall, and B.N. Janson. (2014) "Bicyclist safety performance functions for a U.S. city." Accident Analysis & Prevention, Vol. 65, pp. 114-122. Karsch, H. M., Hedlund, J. H., Tison, J., & Leaf, W. A. (2012) "Review of Studies on Pedestrian and Bicyclist Safety, 1991-2007," NHTSA Report DOT-HS-811-614, National Highway Safety Administration, Washington, DC. Schneider, R.J., R.M. Ryznar, A.J. Khattak. (2004) "An accident waiting to happen: a spatial approach to proactive pedestrian planning," Accident Analysis & Prevention 36, pp. 193-211.
WEEK 7 Mon, 2-Mar	Street Design for NMT: Walkability and Legibility Issues	Hutabarat Lo, Ria. (2009) "Walkability: what is it?," Journal of Urban Design, Volume 2, Issue 2. Adkins, Arlie et al. "Unpacking Walkability: Testing the Influence of Urban Design Features on Perceptions of Walking Environment Attractiveness," Journal of Urban Design, Volume 17, Issue 4, 2012. Fendley, T. (2009) "Making sense of the city: A collection of design principles for urban wayfinding," Information Design Journal, Volume 17, Issue 2, pp. 91-108.
WEEK 7 Wed, 4-Mar	Street Design for NMT: Accessibility (ADA) and crowd issues	U.S. Access Board, "Proposed Accessibility Guidelines for Pedestrian Facilities in the Public Right of Way," Federal Register, July 26, 2001. Also, website: http://www.access-board.gov/guidelines-and-standards/streets-sidewalks/public-rights-of-way/proposed-rights-of-way-guidelines (Links to an external site.) Smith, R. A. "Density, velocity and flow relationships for closely packed crowds." Safety science 18.4 (1995): 321-327 Association of American State Highway and Transportation Officials, AASHTO Guide for the Planning, Design, and Operation of Pedestrian Facilities, First Edition, 2004. Whyte, William H. (1979) "New York and Tokyo: A study in crowding," Real Estate Issues, Winter. Manual on Uniform Traffic Control Devices (MUTCD). (2012) Most recent edition with revisions. http://mutcd.fhwa.dot.gov/ (Links to an external site.)

WEEK 8 Mon, 9-Mar	NMT Infrastructure: Traffic calming, complete streets **Guest lecturer: Jamie Parks, City of Oakland**	Pucher, J., J. Dill, and S. Handy. "Infrastructure, Programs, and Policies to Increase Bicycling: An International Review," Preventative Medicine, Volume 50, pp. S106-S125, 2010. LaPlante, John and Barbara McCann. "Complete Streets: We can get there from here," ITE Journal, May 2008. Association of American State Highway and Transportation Officials, AASHTO Guide for the Planning, Design, and Operation of Bicycle Facilities, Fourth Edition, 2012. National Association of City Transportation Officials (NACTO), Urban Street Design Guide. (2013) http://nacto.org/usdg/ (Links to an external site.). On reserve in the CED library.
WEEK 8 Wed, 11-Mar	Encouraging NMT: Other measures	CC chapter 8, "Integration of Cycling with Public Transportation," by John Pucher and Ralph Buehler. CC chapter 9, "Bikesharing across the globe," Susan A. Shaheen, Stacey Guzman, and Hua Zhang. CC chapter 15, "Promoting Cycling for Daily Travel: Conclusions and Lessons from across the Globe," by John Pucher and Ralph Buehler. Painter, Kate. "The influence of street lighting improvements on crime, fear and pedestrian street use, after dark," Landscape and Urban Planning 35.2 (1996): 193-201.
WEEK 9 Mon, 16-Mar	Best practices for suburbs and small cities; best practices for large cities	CC chapter 12, "Cycling in Small Cities," by Susan Handy, Eva Heinen and Kevin J. Krizek. Randall, T. and Baetz, B. (2001). "Evaluating Pedestrian Connectivity for Suburban Sustainability." Journal of Urban Planning and Development, Vol. 127, No. 1, pp. 1–15. Aytur, S., Satinsky, S., Evenson, K., and Rodriguez, D. (2011) "Pedestrian and bicycle planning in rural communities: Tools for active living," Family and Community Health, Vol. 34, No. 2, pp. 173-181. Pedestrian and Bicycle Information Center, http://www.pedbikeinfo.org/planning/facilities.cfm (Links to an external site.) CC chapter 13, "Big City Cycling in Europe, North America and Australia," by Ralph Buehler and John Pucher. CC chapter 14, "Cycling in Megacities: London, Paris, New York and Tokyo," by John Pucher, Emmanuel de Lanversin, Takahiro Suzuki, and John Whitelegg. Stangl, Paul. (2011) "The US Pedestrian Plan: Linking Practice and Research," Planning Practice and Research, Vo. 26, No. 3, pp. 289-305. National Association of City Transportation Officials, http://nacto.org/cities-for-cycling/design-guide/ (Links to an external site.)
WEEK 9 Wed, 18-Mar	**MIDTERM EXAM**	closed book, in class exam

Spring Recess, March 23-27		
WEEK 10 Mon, 30-Mar	Discussion	Review exam; discussion No reading assignments
WEEK 10 Wed, 1-Apr	Types and sources of NMT data; Emerging methods of data collection and analysis **Guest lecturer: Frank Proulx, SafeTREC Berkeley**	Alliance for Biking & Walking (ABW), Annual Benchmarking Report, http://www.bikewalkalliance.org/resources/benchmarking (Links to an external site.) League of American Bicyclists (LAB), Bicycle Commuting Data, http://bikeleague.org/content/bicycle-commuting-data (Links to an external site.) NCHRP Report 797. (2015) "Methods and Technologies for Collecting Pedestrian and Bicycle Volume Data," National Cooperative Highway Research Program. http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_rpt_797.pdf (Links to an external site.) Strauss, J. and Miranda-Moreno, L.F. (2013) "Spatial Modeling of Bicycle Activity at Signalized Intersections," The Journal of Transportation and Land Use, Vol. 6 No.2. pp. 47-58. Hankey, S., G. Lindsey, X. Wang, J. Borah, K. Hoff, B. Utecht, and Z. Xu. (2012) "Estimating use of non-motorized infrastructure: Models of bicycle and pedestrian traffic in Minneapolis, MN." Landscape and Urban Planning, Vol. 107, pp. 307-316. Schuurman, N., Cinnamon, J., Crooks, V.A. and S. Morad Hameed. (2009) "Pedestrian injury and the built environment: an environmental scan of hotspots," BMC Public Health 9:233. Lee, Sungduck and Emily Talen. (2014) "Measuring walkability: A note on auditing methods," Journal of Urban Design, Vol. 19, No. 3, pp. 368-388. Lee, M. Wolf, J., Oliveira, M. and M. Kaiser. (2008) "Data visualization in travel and physical activity studies," Proceedings, Int'l Conference on Survey Methods in Transport, Annency, France. Basile Chaix et al., Walking, cycling, and public transport use: their determinants and relationship with physical activity – a study with GPS, accelerometers, and an electronic mobility survey, Transport Research Arena 2014, Paris N. Raford and D. Ragland, Space Syntax: An Innovative Pedestrian Volume Modeling Tool for Pedestrian Safety, UC Berkeley, Dec. 2003, https://escholarship.org/uc/item/50m064zp#page-1
WEEK 11 Mon, 6-Apr	**Tour of downtown Berkeley** **Guest lecturer/guide: Eric Anderson, City of Berkeley**	Berkeley Bicycle Plan, http://www.ci.berkeley.ca.us/contentdisplay.aspx?id=6656 (Links to an external site.) Berkeley Pedestrian Master Plan, http://www.ci.berkeley.ca.us/pedestrian/ (Links to an external site.)
WEEK 11 Wed, 8-Apr	Data collection (class exercise)	class will do field exercises no reading assignments

WEEK 12 Mon, 13-Apr	Costs and financing of NMT infrastructure	Bushell, M.A., B.W. Poole, C.V. Zegeer, and D.A. Rodriguez. (2013) "Costs for Pedestrian and Bicyclist Infrastructure Improvements: A Resource for Researchers, Engineers, Planners, and the General Public," UNC Highway Safety Research Center, Prepared for the Federal Highway Administration. NCHRP Report 552. (2006) "Guidelines for Analysis of Investments in Bicycle Facilities," National Cooperative Highway Research Program. McCann, Barbara and Susan Handy. (2011) "Regional Response to Federal Funding for Bicycle and Pedestrian Projects," Journal of the American Planning Association, Vol. 77, No. 1, pp. 23-38. USDOT, FHWA, "FHWA and FTA Funds that may be used for bicycle and pedestrian activities," http://www.fhwa.dot.gov/hep/bkepedtble.htm (Links to an external site.)
WEEK 12 Wed, 15-Apr	Demand Forecasting and Modeling: Level of Service; Modeling: Mode Choice, Route Choice	NCHRP Report 770. (2014) "Estimating Bicycling and Walking for Planning and Project Development: A Guidebook," National Cooperative Highway Research Program. Parkin, J., Wardman, M. and M. Page. (2008) "Estimation of the determinants of bicycle mode share for the journey to work using census data," Transportation, Vol. 35, pp. 93-109. Agrawal, A., M. Schlossberg and K. Irvin. (2008) "How far, by which route, and why? A spatial analysis of pedestrian preference," Journal of Urban Design, Vol. 13, No. 1, pp. 81-98. Asadi-Shekari, Z., M. Moeiaddini and M. Zaly Shah. (2013) "Non-motorised level of service: Addressing challenges in pedestrian and bicycle level of service," Transport Reviews, Vol. 33, No. 2, pp. 166-194.
WEEK 13 Mon, 20-Apr	Intersection/Street Segment Design **Assignment #3 Due**	Groups present results of intersection/street segment analysis. Schneider, R., O. Grembek, M. Braughton, P. Orrick, and D. Ragland. (2013) "Pedestrian and Bicycle Safety Strategies for UC Berkeley Campus and Periphery: Recommendations for Implementation." Safe Transportation Research & Education Center, Report RR-2013-1.
WEEK 13 Wed, 22-Apr	Wrap-Up: Best Practices & Challenges Ahead	No assignment
WEEK 14 Mon, 27-Apr	**Student Presentations**	all presentation materials due at start of class 4-27 regardless of date of presentation (4/27 or 4/29)
WEEK 14 Wed, 29-Apr	**Student Presentations** **FINAL PAPERS/PROJECTS DUE**	final papers due by midnight 4/29