

CPLN 655 MULTIMODAL TRANSPORTATION **(MEYERSON HALL B-3 | WED 1:45 – 4:45 PM)**

Office hours sign up: <https://www.wejoinin.com/ibambe@gmail.com>

COURSE OVERVIEW

This course explores contemporary multimodal transportation systems, policy, planning, and practice through a series of comparative international case studies, lectures, and class exercises. Case topics include innovative parking management in San Francisco, congestion charging in London, managing motorcycles in Indonesia, and Bus Rapid Transit in Bogota. By analyzing contemporary planning challenges and best practices, students will develop a better understanding of how the transportation system works and how to employ specific multimodal interventions and policies effectively.

The course emphasizes learning about contemporary transportation planning and policy issues through the case study method. This pedagogical tool requires students to prepare the case before class and engage actively in the classroom discussion. In most classroom cases, a manager or policy maker faces a difficult decision related to a contemporary transportation policy. In general, there is no right answer. Well-informed, intelligent people may come to different conclusions about the most effective way to proceed. Students will learn to process information quickly and hone effective arguments to support their position.

Throughout the course, I will put a special emphasis on verbal and written communication for policy recommendations. This will include a memo-writing workshop and class exercises that ask students to quickly digest transportation-related themes (such as a parking inventory analysis) and prepare a brief presentation that highlights recommendations and evidence to support that recommendation.

The first section of the course will focus on surface-based transportation planning and policy. The second section will explore specific topics related to public and non-motorized transportation.

COURSE REQUIREMENTS

This course has three primary assignments:

- 1) Two action memos responding to class case studies (30%);
- 2) Self/peer evaluations and participation (30%); and
- 3) Final exam or final project (40%).

You are required to come prepared and participate in all classes. This is particularly important for teaching cases. Effectively preparing a teaching case requires you to read the

case at least twice, study the exhibits, and develop your arguments. One of the first day's reading assignments details how to prepare a case effectively.

You will also give and receive regular written and verbal feedback on your classmates' work. Given the participatory nature of this course's work, it is important to prepare and submit your assignments on time. If for any reason you are having trouble keeping up with the course materials or assignments, please arrange a meeting with me.

Plagiarism

Do not plagiarize. If you have any questions about what constitutes plagiarism, please consult the [University's official policy for academic integrity](#). If you continue to have any questions, please come talk to me or send me an email.

Memos (30%)

You will write two *action* memos (roughly 500 to 1500 words) on any case that we discuss in the class, except for the Jakarta case. Memos will be due on Canvas by the end of day on the Friday after a case is discussed in class. You may submit your memos individually or in pairs.

One case must be from the first five weeks (up to the San Francisco parking case), the other from the remaining cases. Late submissions will not be accepted, nor will memos for a class that you do not attend. The memo should make clear and specific recommendations that respond to the question posed on the day of class and consider the opportunities and challenges presented in the cases. Be sure to organize your memo clearly with headings or other devices to effectively separate and highlight key ideas, use evidence from the case to support your argument, and use crisp jargon-free English. For guidance, refer to the course materials on writing an action memo in the Files section of Canvas.

Participation and peer-evaluations (30%)

You will be required to submit a self- and peer-evaluation form periodically throughout the semester. Each student will also fill self-evaluation forms that highlight strengths, areas for improvement, and goals for the remainder of the semester. These are due on March 5 and on April 30.

Final Exam or Final Project (40%)

Students may choose between a final exam and final project. The final exam will take place on the last scheduled course day and will require students to prepare a case like the ones we have prepared in class and respond to specific written questions about the case.

Alternatively, students may work in groups of 1 to 3 to prepare their own teaching case. I will provide additional details on preparing and writing a case study in class. In general, the content and style should follow the format of the cases that we review in class. This will require some primary research (likely interviews), data collection, and analysis.

Use an author-date format when referring to readings and include a bibliography. Here are links to the [Chicago](#) and [APA](#) manuals of styles.

Grading

For the final grade:

- an A indicates excellent work across all dimensions of all aspects of the course.
- a B indicates acceptable work.
- a C or below indicates insufficient or unacceptable work.

Readings

Throughout the course, we will rely on several cases, provided by Harvard Business Publishing. Pay special attention to preparing cases on days when we learn from a teaching case. To purchase the electronic or paper versions of the cases, please follow this link: <https://hbsp.harvard.edu/import/1248793>

Note that the Ho Chi Minh City case is optional and does not need to be purchased if you do not plan to take the final exam.

Other readings are available online through Canvas. Where possible, I also provide hyperlinks to articles in the reading list. You will only be able to access them through a Penn-connected computer or through [a library proxy](#).

If for some reason a link is broken, you are still required to access the reading. I recommend using the Penn library or Google Scholar. I will also provide a list of additional readings that will help you learn more about a subject but are not required prior to class. You can find these through the Penn library or Google Scholar search and can use them to improve your understanding of a specific topic. I recommend reading at least one per case to familiarize yourself with the topic.

READING LIST AND CLASS SCHEDULE

Week 1 (January 22): Introduction and overview

Part A) Course overview

Part B) Learning from the case study

Part C) Traffic flow and passenger-car equivalents

Required Readings

Cervero, Robert. 1998. *The Transit Metropolis: A Global Inquiry*. 1st ed. Washington, D.C.: Island Press. Chapter 1: Transit and the Metropolis: Finding Harmony.

Gomez-Ibanez, Jose. 1984. Learning by the Case Method. Cambridge, MA: Kennedy School of Government Case Program.

Yin, Robert. 2009. *Case Study Research: Design and Methods*. 4th ed. Thousand Oaks, CA: SAGE Publications, Inc. Chapter 1, Introduction.

Part I: Surface transportation

Week 2 (January 29)

A) Case: Jakarta's Transportation Problems

Prep questions: What are the causes of congestion and how important are they? What are the pros and cons of reducing travel demand? Increasing road supply? Managing the existing supply?

B) Memo-writing breakout session

Additional Readings

Cervero, Robert. 1998. *The Transit Metropolis: A Global Inquiry*. 1st ed. Washington, D.C.: Island Press. Chapter 15, Hierarchical Transit: Mexico City, Mexico.

Dimitriou, Harry T, and Ralph Albert Gakenheimer, ed. 2011. *Urban Transport in the Developing World: A Handbook of Policy and Practice*. Cheltenham: Edward Elgar.

Gakenheimer, Ralph. 1999. "Urban Mobility in the Developing World." *Transportation Research Part A: Policy and Practice* 33 (7–8) (September): 671–689.

Vasconcellos, Eduardo. 2001. *Urban Transport, Environment, and Equity: The Case for Developing Countries*. London: Earthscan.

Yudhistira, Muhammad Halley, Witri Indriyani, Andhika Putra Pratama, Yusuf Sofiyandi, and Yusuf Reza Kurniawan. 2019. "Transportation Network and Changes in Urban Structure: Evidence from the Jakarta Metropolitan Area." *Research in Transportation Economics* 74 (May): 52–63.

Week 3 (February 5)

A) Memo writing workshop

B) Memo-evaluation breakout session (bring copy of Jakarta memo)

Week 4 (February 12)

A) Case: Congestion Charging in London: the Western Expansion

Prep questions: Is the original scheme a success? What are its strengths and weaknesses? What are the advantages and disadvantages of the western expansion? Would the London scheme work in Philadelphia?

B) Zonal congestion charge for Philadelphia exercise (bring laptops)

Additional Readings

Lehe, Lewis. 2019. "Downtown congestion pricing in practice." *Transportation Research Part C*, 100: 200-223.

Schweitzer, Lisa, and Brian D. Taylor. 2008. "Just Pricing: The Distributional Effects of Congestion Pricing and Sales Taxes." *Transportation* 35 (6) (November 1): 797–812.

Taylor, Brian D. 2002. "Rethinking Traffic Congestion." *Access* (21) (October 1): 8–16.

Vickrey, William S. 1963. "Pricing in Urban and Suburban Transport." *The American Economic Review* 53 (2): 452–465.

Week 5 (February 19)

A) Case. Parking in San Francisco.

Prep questions: How should San Francisco address its parking problems? What is the relationship between on-street parking and minimum parking regulations? What should Philadelphia do about its parking problems?

B) Parking inventory exercise

Additional Readings

Millard-Ball, Adam, Rachel R. Weinberger, and Robert C. Hampshire. 2014. "Is the Curb 80% Full or 20% Empty? Assessing the Impacts of San Francisco's Parking Pricing Experiment." *Transportation Research Part A: Policy and Practice* 63 (May): 76–92.

Pierce, Gregory, and Donald Shoup. 2013. "Getting the Prices Right." *Journal of the American Planning Association* 79 (1): 67–81.

Shoup, Donald. 1999. "The Trouble with Minimum Parking Requirements." *Transportation Research Part A: Policy and Practice* 33 (7-8): 549–574.

———. 2005. *The High Cost of Free Parking*. Chicago, IL: Planners Press.

Wilson, R. W. 1995. "Suburban Parking Requirements: A Tacit Policy for Automobile Use and Sprawl." *Journal of the American Planning Association* 61 (1).

Part II: Public and Non-Motorized Transportation

Week 6 (February 26)

A) Case: Transmilenio: The Battle over Avenida Séptima

Prep questions: What were the successes and challenges of phases 1 & 2 of the Transmilenio? What additional challenges and opportunities does phase 3 present? What are the limitations of BRT as a transport policy?

B) Capacity calculations, BRT, and case study research

Additional Readings

- Cervero, Robert, and Danielle Dai. 2014. "BRT TOD: Leveraging Transit Oriented Development with Bus Rapid Transit Investments." *Transport Policy* 36: 127–38.
- Federal Transit Administration. 2009. "Characteristics of Bus Rapid Transit for Decision-Making". FTA-FL-26-77109. United States Department of Transportation.
http://www.fta.dot.gov/documents/CBRT_2009_Update.pdf.
- Gilbert, Alan. 2008. "Bus Rapid Transit: Is Transmilenio a Miracle Cure?" *Transport Reviews* 28 (4): 439–467.
- Guerra, Erick. 2014. "Mexico City's Suburban Land Use and Transit Connection: The Effects of the Line B Metro Expansion." *Transport Policy* 32 (March): 105–14.
- Hensher, David A., and Thomas F. Golob. 2008. "Bus Rapid Transit Systems: A Comparative Assessment." *Transportation* 35 (4): 501–518.
- Rodríguez, Daniel A., and Felipe Targa. 2004. "Value of Accessibility to Bogotá's Bus Rapid Transit System." *Transport Reviews: A Transnational Transdisciplinary Journal* 24 (5): 587–610.
<https://www.design.upenn.edu/work/urban-expansion-equity-bogota-examining-housing-transportation-disparities>

Week 7 (March 5)

A) Case: SEPTA Capital Budget Crisis

Prep questions: How serious is SEPTA's budget problem? What are the most important criteria for evaluating different funding options (equity, efficiency, political acceptability, etc.)? What are the relative merits of taxes and user fees?

B) Guest lecture (Leslie Richards)

Additional Readings

- Pucher, John. 1981. "Equity in Transit Finance: Distribution of Transit Subsidy Benefits and Costs Among Income Classes." *Journal of the American Planning Association* 47 (4): 387–407.
- Zhao, Zhirong Jerry, Kirti Vardhan Das, and Kerstin Larson. 2012. "Joint Development as a Value Capture Strategy in Transportation Finance." *Journal of Transport and Land Use* 5 (1): 5–17.

Paul, Julene, and Brian D. Taylor. 2022. "Pandemic Transit: Examining Transit Use Changes and Equity Implications in Boston, Houston, and Los Angeles." *Transportation*, October.

<https://transitcosts.com/city/newyork-case-study/>

Self-assessment form due

Week 8 Spring Break

Week 9 (March 19)

A) SEPTA's contemporary budget crisis exercise

B) Transit service planning exercise Part I

Additional Readings

Grisé, Emily, Anson F. Stewart, and Ahmed El-Geneidy. 2021. "Planning a High-Frequency Transfer-Based Bus Network: How Do We Get There?" *Journal of Transport and Land Use* 14 (1): 863–84.

Byala, Lora B., Katie Filardo, Oren Hirsch, Michael J. Walk, James P. Cardenas, and Jinuk Hwang. 2019. *Comprehensive Bus Network Redesigns*. Washington, D.C.: Transportation Research Board. <https://doi.org/10.17226/25487>.

Week 10 (March 26)

Transit service planning exercise Part II

Additional Readings

Crôtte, Amado, Robert Noland, and Daniel Graham. 2009. "Is the Mexico City Metro an Inferior Good?" *Transport Policy* 16 (1): 40–45.

Meyer, Michael D., and Eric J. Miller. 2001. *Urban Transportation Planning: A Decision-Oriented Approach*. 2nd ed. New York: McGraw-Hill. Chapter 8, Transport System and Project Evaluation.

Week 11 (April 2)

Field trip: Kimley Horn (Philadelphia office) with Stephen Buckley
Two Liberty Place (16th and Chestnut)

Week 12 (April 9)

A) Case: California High-Speed Rail

Prep questions: What are the different markers for HSR? Are the demand forecasts reasonable? What assumptions are most problematic? What are the biggest barriers to implementation?

B) Northeast HSR forecast and memo-writing exercise

Additional Readings

- Campos, Javier, and Ginés de Rus. 2009. "Some Stylized Facts about High-Speed Rail: A Review of HSR Experiences around the World." *Transport Policy* 16 (1) (January): 19–28.
- Chester, Mikhail, and Arpad Horvath. 2010. "Life-Cycle Assessment of High-Speed Rail: The Case of California." *Environmental Research Letters* 5 (1).
- Vickerman, R. 1997. "High-Speed Rail in Europe: Experience and Issues for Future Development." *The Annals of Regional Science* 31 (1): 21–38.

Week 13 (April 16)

A) Introduction to Bicycle and Pedestrian Planning

B) Case: Hubway Bike Sharing in Boston

Prep questions: What is the future of bicycling in US cities? Increasing? Decreasing? Are their limits to mode share? What is the role of bike sharing in a city like Boston? What are the challenges of operating bike share? How important is rebalancing the fleet? What actions are available for rebalancing?

Additional Readings

- Gössling, Stefan. 2013. "Urban Transport Transitions: Copenhagen, City of Cyclists." *Journal of Transport Geography* 33 (December): 196–206.
- Peters, D. (2013). Gender and sustainable urban mobility. Thematic study prepared for Global Report on Human Settlements 2013. Retrieved from: <http://unhabitat.org/wp-content/uploads/2013/06/GRHS.2013.Thematic.Gender.pdf>
- Pucher, John, Jennifer Dill, and Susan Handy. 2010. "Infrastructure, Programs, and Policies to Increase Bicycling: An International Review." *Preventive Medicine* 50, Supplement (January): S106–S125. doi:10.1016/j.ypmed.2009.07.028.
- Dill, J. 2009. "Bicycling for Transportation and Health: The Role of Infrastructure." *Journal of Public Health Policy*: S95–S110.
- Garrard, Jan, Geoffrey Rose, and Sing Kai Lo. 2008. "Promoting Transportation Cycling for Women: The Role of Bicycle Infrastructure." *Preventive Medicine* 46 (1) (January): 55–59. doi:10.1016/j.ypmed.2007.07.010.
- NCHRP project 15-37. 2010. *AASHTO Guide for the Development of Bicycle Facilities*, read Chapters 1 and 2 (pp 1-36), skim Chapters 4 and 5 (pp 55-195)
- Gössling, Stefan. 2013. "Urban Transport Transitions: Copenhagen, City of Cyclists." *Journal of Transport Geography* 33 (December): 196–206.
- PennDesign Studio. 2016. CYCLE, QRO Promoting equitable bicycle planning in the Municipality of Queretaro, Mexico
- Buehler, Ralph, John Pucher, and Alan Altshuler. 2017. "Vienna's Path to Sustainable Transport." *International Journal of Sustainable Transportation* 11 (4):257–71.
- Buehler, Ralph, John Pucher, Regine Gerike, and Thomas Götschi. 2017. "Reducing Car Dependence in the Heart of Europe: Lessons from Germany, Austria, and Switzerland." *Transport Reviews* 37 (1):4–28.

- National Association of City Transportation Officials (NACTO). 2012 Urban Street Design Guide. New York City.
- Federal Highway Administration. 2002. Pedestrian Facilities Users Guide, Chapters 1 (pp 3-10) and 4-A (pp 41-50)
- Manaugh, Kevin, and Ahmed El-Geneidy. 2011. “Validating Walkability Indices: How Do Different Households Respond to the Walkability of Their Neighborhood?” *Transportation Research Part D: Transport and Environment* 16 (4):309–15.

Week 14 (April 23)

Design Charrette: Intersection and Street Section Redesign
 Aditya Inamdar, AICP, LEED AP
 Urban Planner at Kittelson & Associates, Inc.

Week 15 (April 30)

Alumni panel and event

Self-assessment form due

Final Exam (Date TBD)

Case: Ho Chi Minh City

Prep questions to consider: What are the trade-offs between motorcycles and public transit from a user and public perspective? What would you have to do to achieve the 2025 transit mode share goals? Is your strategy likely to succeed?

Additional Readings

- Shirgaokar, Manish. 2015. “Expanding Cities and Vehicle Use in India: Differing Impacts of Built Environment Factors on Scooter and Car Use in Mumbai.” *Urban Studies*. doi:10.1177/0042098015608050.
- Srinivasan, Karthik, P. Bhargav, Gitakrishnan Ramadurai, Vidhya Muthuram, and Sumeeta Srinivasan. 2007. “Determinants of Changes in Mobility and Travel Patterns in Developing Countries: Case Study of Chennai, India.” *Transportation Research Record: Journal of the Transportation Research Board* 2038 (1): 42–52.
- Pucher, John, Zhong-ren Peng, Neha Mittal, Yi Zhu, and Nisha Korattyswaroopam. 2007. “Urban Transport Trends and Policies in China and India: Impacts of Rapid Economic Growth.” *Transport Reviews* 27 (4): 379–410.