

INFRASTRUCTURE PLANNING AND FINANCE
Urban Design and Planning 466A/566A, Fall Quarter 2021

Class: Monday and Wednesday, 8:30 to 10:20 am

Instructor: Prof. Jan Whittington, janwhit@uw.edu

Office hours: Monday 11:00 to 12:00 noon, and Friday 3:00 to 4:00 pm (on Zoom via Canvas)

Canvas: <https://canvas.uw.edu/courses/1482885>

This course is focused on infrastructure planning and finance and, more generally, on the relationship between planning and budgeting. The course is divided into three parts.

The course begins with an introduction to infrastructure systems: water and sewer services, solid waste disposal, transportation, and fire services. In this segment of the course, infrastructure planning is distinguished from and related to budgeting and finance. We explore basic concepts, legal frameworks, politics, and processes used in the systems studied, including techniques in infrastructure planning aimed at estimating demand and forecasting effects on land use and climate change.

The second part is focused on local government finance. We study government's conceptual economic framework, budgeting approaches, and taxes such as property tax, sales tax, and user fees. We examine arguments for and examples of outcome-based, client-oriented programming and budgeting. The features of local finance are introduced and the economic theories with which they are associated, including neoclassical, public goods, club goods, game theory, and transaction costs.

Infrastructure finance is the subject of the final part of the course. We examine the relationship between sources of funds and their uses for infrastructure. Our study includes all common forms of finance, such as pay-as-you-go, user fees, special districts, public and private debt, impact fees, exactions, and tax increment finance. We devote considerable attention to the equity and distributional issues that arise from alternative forms of finance. We study the assessment and prioritization of infrastructure investments in changing economic conditions and under climate change, the development of Capital Improvement Programs (aka Capital Investment Plans), and the implications of alternative forms of project and program delivery, such as public-private partnerships, design-build contracts, and privatization.

Required Texts:

John R. Bartle, W. Bartley Hildreth, and Justin Marlowe (eds). 2013. *Management Policies in Local Government Finance*. (6th Ed) Washington, DC: ICMA. <https://icma.org/publications/management-policies-local-government-finance-6th-edition>

Justin Marlowe, William C. Rivenbark and A. John Vogt. 2009 (2nd edition). *Capital Budgeting and Finance: A Guide for Local Governments*. Washington, DC: ICMA. (ICMA Website, e-book: <https://bookstore.icma.org/capital-budgeting-and-finance-a-guide-for-local-governments-2nd-edition-p4.aspx>)

David Dowall and Jan Whittington. 2003. *Making Room for the Future: Rebuilding California's Infrastructure*. San Francisco: Public Policy Institute of California. <http://www.ppic.org/main/publication.asp?i=399>

Your experience in this class is important to me. It is the policy and practice of the University of Washington to create inclusive and accessible learning environments consistent with federal and state law. If you have already established accommodations with Disability Resources for Students (DRS), please activate your accommodations via myDRS so we can discuss how they will be implemented in this course. If you have not yet established services through DRS, but have a temporary health condition or permanent disability that requires accommodations (conditions include but not limited to; mental health, attention-related, learning, vision, hearing, physical or health impacts), contact DRS directly to set up an Access Plan. DRS facilitates the interactive process that establishes reasonable accommodations. Contact DRS at disability.uw.edu.

Instructional Objectives

- + Describe the roles of local finance and political organization in urban planning
- + Explain the relationship between public facilities, growth, and local finance, and relate these issues to contemporary urban problems, such as urban sprawl and climate change.
- + Analyze a local infrastructure system.
- + Explain the local finance process, including key concepts, relationships, processes, theories, and approaches in local finance.
- + Address equity, long-range, and distributional issues in infrastructure planning and finance.
- + Analyze local budgets and fiscal issues through concepts and theories, and gain experience in capital improvement programming (aka capital investment planning) and budgeting.
- + Identify and apply the rules of thumb (standards and equations) employed in infrastructure planning and local finance, and analyze the assumptions and values underlying financing techniques.

Course Requirements (perfect grade = 400 points):

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| Quizzes based on readings | 50 |
| Participation in class discussions | 50 |
| Systems paper | 100 |
| Group project | 100 |
| Final exam (short essay answers) | 100 |

Academic Standards

Turn assignments in to Canvas on time. Late work is not accepted. Grading will be based on content, organization, and measures of style appropriate to writing at the upper undergraduate or graduate level. Style refers to your method of citing sources, grammar, punctuation, and related issues. I (strongly!) urge you all to refer to the Chicago Manual of Style (17th Edition, University of Chicago Press) as you compose and edit your work. When in doubt, check it out. Papers that do not conform to Chicago Style will be marked down, lose credit for this assignment and impact your grade. See this site: <http://guides.lib.uw.edu/research/citations/citation-basics>. Please make use of the expertise and resources available to you. Odegaard Library has one of numerous writing centers on campus, available to you free of charge, as shown: <http://guides.lib.uw.edu/c.php?g=342041&p=2300216>.

The University takes academic integrity very seriously. Behaving with integrity is part of our responsibility to our shared learning community. If you are uncertain about if something is academic misconduct, ask me. I am willing to discuss questions you might have. Acts of academic misconduct may include but are not limited to:

- Cheating (working collaboratively on quizzes/exams and discussion submissions, sharing answers and previewing quizzes/exams)
- Plagiarism (representing the work of others as your own without giving appropriate credit to the original author(s)). This constitutes plagiarism whether it is intentional or unintentional. I advise each of you to read a style manual in order to learn how to avoid it.
- Unauthorized collaboration (working with each other on assignments)

Any student who is uncertain whether his or her use of the work of others constitutes cheating, plagiarism, or unauthorized collaboration should consult the course instructor for guidance before formally submitting the course work. Concerns about these or other behaviors prohibited by the Student Conduct Code will be referred for investigation and adjudication by (include information for specific campus office). For more information: <https://www.washington.edu/cssc/facultystaff/academic-misconduct/>. Students found to have engaged in academic misconduct may receive a zero on the assignment, and cases will be forwarded for the Associate Dean of Academic Affairs.

Course Schedule

| Date | Topic | Readings |
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| 29 Sept | Introductions Systems Paper Assign | West, Geoffrey. <i>Scale</i> . Penguin Books, 2017. (Chapter 7) Dowall and Whittington, Chs 1 and 2 |
| 4 Oct | Infrastructure Systems: <i>Planning, capital planning, and plan implementation</i> | Marlowe, Ch 1 and 2 (up to page 43) Kelly, E. 1993. <i>Planning, Growth, and Public Facilities</i> . Planning Advisory Service Report, number 447. Chicago, IL: American Planning Association. Riordian, T.H., M. E. Oria, and J.P. Tuss. 1989. "Dayton's Capital Allocation Process." In <i>Capital Project</i> , John Matzer (ed). Washington, DC: ICMA. Chen, C. and J. Bartle. 2017. <i>Infrastructure Financing: A Guide for Local Government Managers</i> . ICMA (International City/County Management Association) and GFOA (Government Finance Officers Association). (up to 9) https://icma.org/documents/infrastructure-financing-guide-local-government-managers |
| 6 Oct | Demand, Supply, and Pricing: <i>Water, Wastewater</i> | Dowall and Whittington, Chs 3 and 4 (on Water only) Bauman, D., J. Boland, and W. M. Hanemann. 1998. <i>Urban Water Demand Management and Planning</i> . New York: McGraw-Hill. (Chs 1 and 3) Hanak, E. 2005. <i>Water for Growth: California's New Frontier</i> . San Francisco: Public Policy Institute of California. (Chs 1, 3, and 4) http://www.ppic.org/main/publication.asp?i=429 Cropf, Robert. "Water Resources" In <i>Setting Municipal Priorities 1990</i> , edited by Charles Brecher and Raymond Horton. New York: NYU Press. |
| 11 Oct | Planning, Engineering, Modeling, and the Evolution of Technology: <i>Transportation, Energy</i> | Dowall and Whittington, Chs 3 and 4 (on Transportation only) Institute of Transportation Engineers. 2010. <i>Designing Walkable Urban Thoroughfares: A Context Sensitive Approach</i> . Washington DC: ITE. (Ch 1) http://library.ite.org/pub/e1cff43c-2354-d714-51d9-d82b39d4dbad Woo, Jesse and Whittington, Jan and Arkin, Ronald. "Urban Robotics: Achieving Autonomy in Design and Regulation of Robots and Cities" 32 <i>Connecticut Law Review</i> 319. (2020, Parts 1 and 2). SSRN: https://ssrn.com/abstract=3145460 Coalition for Urban Transitions. <i>Climate Emergency, Urban Opportunity</i> . September 19, 2019. (Executive Summary) https://urbantransitions.global/en/publication/climate-emergency-urban-opportunity/ New Jersey Department of Transportation. 1989. <i>Managing Transportation In Your Community. A Municipal Handbook</i> . Trenton: NJ DOT. (optional) Edward Beimborn and Rob Kennedy. 2006. <i>Inside the Black Box: Making Transportation Models Work for Livable Communities</i> . Environmental Defense Fund. (43 pages) https://www4.uwm.edu/cuts/blackbox/blackbox.pdf (optional) |
| 13 Oct | Planning, Programming, and GIS: <i>Fire, Solid Waste, Broadband</i> Guest Lecture: <i>Prof. Adrienne Greve, City and Regional Planning, CalPoly San Luis Obispo</i> | Figuroa, Roberto and Michael Kartusch. 2000. <i>Flaming to the Scene: Routing and Locating to Get There Fast</i> . Geospatial Solutions. De Kadt, Maarten. 1990. "Solid Waste Disposal." In <i>Setting Municipal Priorities 1990</i> , Charles Brecher and Raymond Horton (eds). New York: NYU Press. Bruno, A. "COVID-19 and broadband Internet access" ICMA Blog, March 17, 2021. https://icma.org/blog-posts/covid-19-and-broadband-internet-access GFOA. Best Practices: Technology in Capital Planning and Management. October 31, 2011. https://www.gfoa.org/materials/technology-in-capital-planning-and-management Pieterse, Edgar (2019) Urban governance and spatial transformation ambitions in Johannesburg, <i>Journal of Urban Affairs</i> , 41:1, 20-38, DOI: 10.1080/07352166.2017.1305807 |

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| 18 Oct | Project Development: <i>Procurement, Cost, Quality, Maintenance</i> | Dowall and Whittington, Ch 10 Marlowe Ch 9 Bartle Ch 15 Flyvbjerg, B. 2002. "Underestimating Costs in Public Works Projects: Error or Lie?" <i>Journal of the American Planning Association</i> , 68 (3) 279. Whittington, Jan. 2012. "When to Partner for Public Infrastructure?" <i>Journal of the American Planning Association</i> , 78(3) 269-285. |
| 20 Oct | Local Finance I: <i>Rational Planning, Budgeting, Public Goods Theory</i> Systems Paper Due | Bartle, Chs 2 (up to page 35) and 3 (up to page 59) Rubin, I. 1996. "Budgeting for Accountability: Municipal Budgeting for the 1990s" <i>Public Budgeting and Finance</i> . Summer 1996. Pigou, Arthur C. <i>The Economics of Welfare</i> . 1920. Part I Chapter II, Part II Chapter II, and Part IV Chapter II. http://www.econlib.org/library/NPDBooks/Pigou/pgEW.html Hardin, Garrett. "The tragedy of the commons." <i>Science</i> 13 December 1968, 162 (3859): 1243-1248. Nash, John. "Two-person cooperative games." <i>Econometrica</i> 21 January 1953, 1: 128-140. |
| 25 Oct | Local Finance II: <i>Neoclassical Economic Theory, Public Choice, and the Property Tax</i> | Bartle, Ch 8 Heikkila, Eric. 2000. <i>The Economics of Planning</i> . New Brunswick, NJ: CUPR, Rutgers University. (Chs 1 and 5) The Concise Encyclopedia of Economics. "Adam Smith (1723-1790)" Library of Economics and Liberty, 2008. http://www.econlib.org/library/Enc/bios/Smith.html Krugman, Paul. "Who was Milton Friedman?" The New York Review of Books. February 15, 2007. http://www.nybooks.com/articles/archives/2007/feb/15/who-was-milton-friedman/ Friedman, Milton. "Free to Choose." PBS. 1980. Volume 1: The Power of the Market. (first 28 minutes) https://www.youtube.com/watch?v=f1Fj5tzuYBE California Constitution, Article 13A. http://law.justia.com/constitution/california/article_13A.html "California Governor Jerry Brown's Proposition 13 Address", June 8, 1978. YouTube. http://www.youtube.com/watch?v=xCueOgnluDg&feature=related |
| 27 Oct | Local Finance III: <i>Forecasting, Club Goods, and Non-Property Taxes</i> Assign Group Project | Bartle, Chs 9 and 10 (plus excerpt from Aronson and Schwartz, Ch 5) Marlowe, Ch 2 (43 to 57) Buchanan, James. "An economic theory of clubs." <i>Economica</i> , New Series, 32 (125): 1-14. Tiebout, Charles. "A pure theory of local expenditures." <i>The Journal of Political Economy</i> , 64 (5): 416-424. |
| 1 Nov | Local Finance IV: <i>Strategic Planning, Social Cost, Transaction Cost Theory</i> | Bartle, Chs 4 and 6 Dowall and Whittington, Ch 5 Coase, R. H. "The problem of social cost" <i>Journal of Law and Economics</i> , 3 (October 1960): 1-44. Sclar, Elliot. 2000. <i>You Don't Always Get What You Pay For</i> . Ithaca, NY: Cornell University Press. (Ch 5) Whittington, J. and C. Lynch. 2015. <i>Climate-informed decisions: The capital investment plan as a mechanism for lowering carbon emissions</i> . Policy Research Working Paper Series. The World Bank. Whittington, J. and S. Young. Resilience through transaction cost economic evaluation: Recognizing the cost-effectiveness of sustainable development. <i>S.A.P.I.E.N.s</i> [online], 6.1 (2013). http://sapiens.revues.org/1639 |

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| 3 Nov | Capital Budgeting, CIPs, and Equity Issues Group Project: First Deliverable Due | Marlowe, Ch 3 Bowyer, R. 1993. <i>Capital Improvements Programs: Linking Budgeting and Planning</i> . PAS Report 442. Chicago, IL: American Planning Association Press. Beatley, Timothy. 1988. Equity and Distributional Issues in Infrastructure Planning: A Theoretical Perspective. In <i>Public Infrastructure Planning and Management</i> . Lucy, William. 1988. "Equity Planning for Infrastructure." In <i>Public Infrastructure Planning and Management</i> . Kavanagh S. and J. Kowalski. "The basics of equity in budgeting" <i>Government Finance Review</i> , February 2021: 18-27. Available from the GFOA: https://www.gfoa.org/materials/gfr-equity-in-budgeting-2-21 |
| 8 Nov | Capital Financing Guest Lecture: <i>Mike Brown,</i> <i>Environmental Finance Manager, San Francisco Public Utilities Commission</i> | Whittington on Inflation Bartle, Chs 11 (253-269, 274-277) Marlowe, Chs 5 and 6 Dowall and Whittington, Ch 9 Chen, C. and J. Bartle. 2017. <i>Infrastructure Financing: A Guide for Local Government Managers</i> . ICMA and GFOA. https://icma.org/documents/infrastructure-financing-guide-local-government-managers (9 to 33) Matzer, John Jr. 1989. "Selecting Financing Options." In <i>Capital Projects</i> . |
| 10 Nov | Bond Finance Group Project: Second Deliverable Due | Marlowe, Chs 7 and 8 (up to 196) Bartle, Ch 12 Dowall and Whittington, Ch 8 GFOA. <i>Best Practices: Capital Budget Presentation</i> . September 28, 2018. https://www.gfoa.org/materials/capital-budget-presentation (follow links to supporting material) Public Financing Network. 2021. <i>Understanding Financing Options Used for Public Infrastructure</i> . GFOA. https://www.gfoa.org/materials/understanding-financing-options-used-for-public-infrastructure GFOA. <i>ESG Considerations for Governmental Issuers</i> . June, 2020. |
| 15 Nov | User Fees and Special Districts | Excerpt from Aronson and Schwartz, Ch 12 Dowall and Whittington, Chs 6 and 7 Jones, P. S. and A. Chainani. "Why and how local governments across the country are reforming fines and fees" ICMA Blog, September 7, 2021. https://icma.org/blog-posts/why-and-how-local-governments-across-country-are-reforming-fines-and-fees Mitzany and Manatt. 2002. <i>What's So Special About Special Districts?</i> Sacramento: California Senate Local Government Committee. www.csda.net . Click on "about special districts" Little Hoover Commission. <i>Special Districts: Relics of the Past or Resources for the Future?</i> Sacramento, CA. 2000. |
| 17 Nov | Exactions, Tax Increment Financing, and the Cost of Sprawl | Casella, Sam and Kim, T.J., C.W. Forrest, and K.A. Przypyszny. 1984. <i>Tax Increment Financing</i> . PAS Report 389. Chicago: American Planning Association. Burchell, R. W., D. Listokin et al. 1994. Chapter 10. "Shared Infrastructure Costs." In <i>Development Impact Assessment Handbook</i> . Wash. D.C.: ULI Kasowski, Kevin. Feb. 1993. "The costs of sprawl, revisited." PAS Memo. APA. |

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| 22 Nov | Public-Private Partnerships and Private Project Finance | <p>Marlowe, Ch 4</p> <p>Sagalyn, Lynne. Public/Private Development: Lessons from History, Research and Practice. <i>Journal of the American Planning Association</i> 2007, 23 (1): 7-22.</p> <p>GFOA. Advisories: Public-Private Partnerships. 2021. https://www.gfoa.org/materials/public-private-partnerships-p3</p> <p>FitchRatings. <i>Global Infrastructure & Project Finance Outlook: Special Report, February 2009</i>. February 18, 2009.</p> <p>FitchRatings. <i>U.S. Toll Roads and the 2007-2008 Recession: A Diagnosis of Performance</i>. June 11, 2009.</p> <p>Spiller, Pablo. 2008. "An Institutional Theory of Public Contracts: Regulatory Implications." <i>Working Paper 14152. National Bureau of Economic Research</i>. http://www.nber.org/papers/w14152</p> |
| 24 Nov | <p>Presentations</p> <p>Group Project: Third Deliverable Due</p> | |
| 29 Nov | Public-Private Partnerships and Privatization | <p>Bartle, Ch 16</p> <p>Osborne and Gaebler. 1992. <i>Reinventing Government</i>. (Ch 3)</p> <p>Sclar, Elliot. 2000. <i>You Don't Always Get What You Pay For</i>. Ithaca, NY: Cornell University Press.</p> <p>Spiller, Pablo. 1996. "Institutions and Commitment." <i>Industrial and Corporate Change</i>, 5 (2) 1996: 421-452.</p> <p>Warner, Mildred and Amir Hefetz. 2008. "Managing Markets for Public Service: The Role of Mixed Public-Private Delivery of City Services" <i>Public Administration Review</i> 2008 (Jan/Feb): 155-166.</p> <p>Guasch, Luis. 2004. <i>Granting and Renegotiating Infrastructure Concessions: Doing it Right</i>. World Bank. (Preface, and Chapters 1-3) http://regulationbodyofknowledge.org/wp-content/uploads/2013/03/Guasch_Granting_and_Renegotiating.pdf</p> |
| 1 Dec | Discounting and Cost-Benefit Analysis | <p>Whittington on Discounting</p> <p>Bartle, Ch 11 (270-274)</p> <p>Excerpt from Aronson and Schwartz, Ch 6</p> <p>Heikkila, Eric. 2000. Understanding Cost-Benefit Analysis. In <i>The Economics of Planning</i>. Pp. 171-193.</p> <p>Dorfman, Robert. 1993. "An Introduction to Benefit-Cost Analysis." In <i>Economics of the Environment</i>. NY: W.W. Norton and Co.</p> <p>Hejnowicz, A.P.; Rudd, M.A. "The Value Landscape in Ecosystem Services: Value, Value Wherefore Art Thou Value?" <i>Sustainability</i> 2017, 9, 850.</p> |
| 6 Dec | <p>Presentations</p> <p>Group Project: Fourth Deliverable Due</p> <p>Exam Review</p> | Dowall and Whittington, Ch 11 |
| 14 Dec | <p>Final Exam</p> <p>8:30 – 10:20 am</p> | |

COVID-19

This class is conducted in-person and masked in accordance with the UW Masking policy. Students are expected to participate in class to fully benefit from course activities and meet the course's learning objectives. Students should only register for this class if they are able to attend in-person and masked.

To protect their fellow students, faculty, and staff, students who feel ill or exhibit symptoms consistent with COVID-19 should not come to class and seek immediate testing, the most convenient may be the Husky Testing Program. If you test positive contact the University of Washington UW COVID-19 Response and Prevention Team at covidehc@uw.edu or 206 616-3344. When absent, it is the responsibility of the student to inform the instructor in advance (or as close to the class period as possible in the case of an unexpected absence), and to request appropriate make-up work. The instructor has the responsibility to determine if make-up work is possible and/or to modify assignment or course grading. For chronic absences, the instructor may award an incomplete grade after the 8th week, or recommend the student contact their academic adviser to consider a hardship withdrawal (known as a Registrar Drop).

You may be eligible for an accommodation administered by the Disability Resources for Students (DRS) to take classes remotely if you are a student who is: a) Immunocompromised, b) Experiencing other diagnosed physical or mental health conditions that preclude you from participating in class in person.

If you think you may qualify for any type of formal accommodation, we encourage you to visit the Disability Resources for Students (DRS) and apply by completing the necessary steps as soon as possible. *Please note that it can take 4-6 weeks to get approvals through DRS, so you need to submit any requests well in advance of the beginning of the quarter to have the best outcome.*

Religious Accommodations

Washington state law requires that UW develop a policy for accommodation of student absences or significant hardship due to reasons of faith or conscience, or for organized religious activities. The UW's policy, including more information about how to request an accommodation, is available at [Religious Accommodations Policy \(https://registrar.washington.edu/staffandfaculty/religious-accommodations-policy/\)](https://registrar.washington.edu/staffandfaculty/religious-accommodations-policy/). Accommodations must be requested within the first two weeks of this course using the [Religious Accommodations Request form \(https://registrar.washington.edu/students/religious-accommodations-request/\)](https://registrar.washington.edu/students/religious-accommodations-request/).

Safety

Call SafeCampus at 206-685-7233 anytime – no matter where you work or study – to anonymously discuss safety and well-being concerns for yourself or others. SafeCampus's team of caring professionals will provide individualized support, while discussing short- and long-term solutions and connecting you with additional resources when requested.

International Students

Faculty members at U.S. universities – including the University of Washington – have the right to academic freedom which includes presenting and exploring topics and content that other governments may consider to be illegal and, therefore, choose to censor. Examples may include topics and content involving religion, gender and sexuality, human rights, democracy and representative government, and historic events. If, as a UW student, you are living outside of the United States while taking courses remotely, you are subject to the laws of your local jurisdiction. Local authorities may limit your access to course material and take punitive action towards you. Unfortunately, the University of Washington has no authority over the laws in your jurisdictions or how local authorities enforce those laws. If you are taking UW courses outside of the United States, you have reason to exercise caution when enrolling in courses that cover topics and issues censored in your jurisdiction. If you have concerns regarding a course or courses that you have registered for, please contact your academic advisor who will assist you in exploring options.