

Sustainability and Urban Form: Redevelopment, Reuse, and Ecological Design

Instructor: Allison Bridges, Ph.D.
Office Hours: Monday and Wednesday afternoon (3-4pm), or by appointment
Response Policy: Response to emails within 24 hours

Course Overview

As the world's population continues to shift towards urban areas, the need for innovative approaches to urban land management and infrastructure redevelopment becomes more pressing than ever before. With over 4.5 billion people living in cities, the transformation of industrial districts into bustling commercial zones and the revitalization of obsolete urban areas are critical to meeting the demands of the 21st century.

However, achieving sustainability goals requires progress not only in meeting environmental targets but also in ensuring equity and resiliency, often through unconventional financial arrangements and partnerships. Despite the numerous challenges involved in bringing sustainability projects to fruition, success is possible through creative problem-solving and strategic planning. This course explores the most pressing sustainability issues confronting contemporary cities and delves into the challenges of bringing sustainability projects from conception to completion.

Using a case-study format, this course analyzes redevelopment projects in three key areas: (1) the various policy incentives and approaches to driving sustainable urban renewal, (2) the stakeholders in the planning and implementation process, and (3) the impact on the social fabric of the community. By the end of the course, students will have the skills necessary to analyze urban form from an environmental and social standpoint as well as an understanding of the key components of the redevelopment process. Students will gain familiarity with a variety of redevelopment partnership arrangements as well as implementation strategies. These skills are applicable across a range of professional contexts including project design and management within municipal departments, private and non-profit organizations, multilateral organizations, and development finance institutions.

This course fulfills curriculum requirements in Content Area 3: The Physical Dimensions of Sustainability or Area 4: Public Policy. The course explores human-environment linkages in urban areas through the lens of environmental planning to highlight the critical importance of urban redevelopment in the sustainability transition.

The class is enriched with practitioner lectures that offer students the opportunity to gain valuable insight into the redevelopment process. Students participate in the course using the [Canvas](#) (CourseWorks) learning management system. Support in accessing or navigating the course Canvas site is available from the [CUSPS Helpdesk](#).

Learning Objectives

By the end of this course students will be able to:

1. Evaluate urban redevelopment projects across environmental, economic, and social outcomes;
2. Analyze redevelopment policies and incentives in relation to development goals and the impact on land use;
3. Critique redevelopment partnerships in terms of inclusivity, financial arrangements, and land rights;
4. Evaluate data in relation to the political and social challenges of implementation;
5. Collect and evaluate both primary and secondary urban data;
6. Interpret data from Geographic Information Systems (GIS)
7. Distinguish between common analysis techniques used in urban planning;
8. Apply visual communication methods and professional communication skills to effectively convey spatial and social aspects of redevelopment projects.

Resources

Columbia University Library

Columbia's extensive library system ranks in the top five academic libraries in the nation, with many of its services and resources available online: <http://library.columbia.edu/>.

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SPS Academic Resources

The Office of Student Life and Alumni Relations (SLAR) provides students with academic counseling and support services such as online tutoring and career coaching: <http://sps.columbia.edu/student-life-and-alumni-relations/academic-resources>.

Course Requirements (Assignments)

Speaker Questions and Discussion Leaders (L1, L3, L4)

- Students are required to reflect on the case studies and weekly materials and to prepare 1-2 questions for each guest lecturer. The questions should be posted to the Discussion section by 3:00pm on the day of the guest lecture.
- Two or more students will volunteer to facilitate the Q&A each time a guest lecturer joins the class. These students are responsible for reviewing class questions, promoting active participation and engagement among classmates, encouraging the sharing of thoughts and ideas, and providing opportunities for collaborative learning.
- Each class will incorporate small group breakout sessions. Notes on issues or questions that arise during the group discussion will be recorded in a google doc.

Mid-term Policy Memo (3-5 pages) (L2, L6)

The policy memo should be an evaluation of an urban redevelopment policy or incentive. The evaluation can address any municipal policy or incentive (examples covered in class include the federal Opportunity Zones tax incentives and the NYC Brownfield Incentive Grant Program). More than a summary of readings, the memo should synthesize concepts introduced in class to evaluate the selected policy and the targeted geographic area. Further guidelines will be provided the first day of class. The memo will be submitted via Canvas by midnight on the day due.

Final Project Proposal (2 pages) (L1, L4, L7)

Students will work in groups of 3-4 people to develop a 2-page proposal for a final case study or design project. The proposal should clearly outline the case background and research plan (original research and/or secondary data sources). Examples of appropriate case studies will be covered weekly in class. The proposal should include a bibliography of data sources, project context, and project outcomes (generally 10-20 sources). The final project can take the form of a 10-15 page written case study (using the template provided) or an interactive online format such as ArcGIS StoryMaps. Please indicate the project format and submit one proposal per group via Canvas by midnight on the day due.

Final Project (10-15 pages) (L1, L2, L3, L5, L8)

The final project is an analysis of or a proposal for an urban redevelopment or adaptive reuse project. Groups of 3-4 students will prepare the project according to a template provided or in a multi-media format. The case study template organizes the case study by: (1) type of redevelopment (brownfield, adaptive reuse, megaproject, etc), (2) time period and relevant policies, (3) motivation for the redevelopment or problem addressed, (4) design strategy, (5) implementation challenges and solutions, and (6) outcome. The people and partnerships driving the project should be highlighted. Special attention should be given to environmental and equity impacts (short term and long term). Each group should submit their final case study in their chosen format via Canvas by midnight on the day due.

Final Case Study Presentation (15 minutes) (L8)

Groups will prepare a 15 minute presentation on their final projects. Presentations will be followed by 5 minutes of Q & A.

Evaluation/Grading

The policy memo, case study proposal, final case study project, and presentation will be evaluated on a 100 point scale using a grading rubric that will be provided. Class participation will be evaluated on a 10 point scale (where 10 = 100, 9 = 90, etc.) and Speaker Questions & Discussions Facilitation will be evaluated on a 15 point scale. After weighting and combining the scores on the 100 point scale, a final score will be translated to a letter grade. The final score will be calculated based on the following components:

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- Participation (10%) – Students are expected to attend all sessions and contribute to class discussions.
- Speaker Questions & Discussion Facilitation (15%) – Students are required to co-lead at least one discussion with a guest speaker and participate in group discussions. Discussion leaders are asked to review questions from the class and consolidate questions posted to the discussion board by classmates.
- Policy Memo (20%) – The 3-5 page policy memo will be graded on understanding of key urban planning concepts, appropriate use of supporting data, and quality of writing.
- Final Case Study Proposal (10%) – Student groups will submit a 2 page proposal for the final case study that clearly outlines the case background, relevance, and research plan (original research and/or secondary data sources).
- Final Case Study (30%) – Final case studies will be graded based on (1) identifying a land use challenge or problem, (2) analyzing policy alternatives, (3) identifying key players and degree of project inclusivity, (4) describing the approach to project implementation, (5) identifying implementation challenges, and (6) analyzing project outcomes and long term project performance (economic, equity, and environmental).
- Final Case Study Presentation (15%) – Presentation will be graded on completion, organization, clarity, and quality of visuals or other media.

Course Policies

Participation and Attendance

You are expected to do all assigned readings, attend all class sessions, and engage with others in online discussions. Your participation will require that you answer questions, defend your point of view, and challenge the point of view of others. If you need to miss a class for any reason, please discuss the absence with me in advance.

Late work

There will be no credit granted to any written assignment that is not submitted on the due date noted in the course syllabus without advance notice and permission from the instructor.

Citation & Submission

All written assignments must use a consistent citation format, cite sources, and be submitted to the course website (not via email).

Course Schedule/Course Calendar

*When guest lecturers are scheduled, classes will include a 30-minute guest presentation and 20 minutes of Q&A.

Class 1, May 22

Topics and Activities: Course Introduction and Overview of Environmental Planning and Urban Redevelopment

- Overview, introduction to case studies and speakers, and course expectations
- Historical context of sustainable urban planning
- The ecological urbanism movement
- Trends and views of urban land use, regenerative design, and redevelopment policy

Recommended:

Fishman, R. (1982). *Urban Utopias in the Twentieth Century: Ebenezer Howard, Frank Lloyd Wright, and Le Corbusier.* (23-50). In: Fainstein, S. & DeFilippis, J. eds. 2016. *Readings in Planning Theory.* 3rd edition. John Wiley & Sons.

BlackSpace Manifesto <https://www.blackspace.org/manifesto>

Watch video of ecological urbanist Kongjian Yu, https://www.youtube.com/watch?time_continue=267&v=U37gst79pGc&feature=emb_logo

Virtually explore the New York City High Line Park, <https://www.thehighline.org/>

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Assignments Due: Introductory Survey

Class 2, May 24

Topics and Activities: Urban Land Use: Redevelopment Data and Urban Spatial Analysis

- How does data impact the way we imagine new urban form? How do policy makers and planners interact with data today?
- Large data sets and new technologies help us understand cities in new ways.

In class Activity: Health and the Built Environment

Required Readings:

Corner, J. (2016). The Ecological Imagination: Life in the City and the Public Realm. In: Nature and Cities: The Ecological Imperative in Urban Design and Planning. Lincoln Institute of Land Policy.

Nesbitt, L., M.J. Meitner, C. Girling, S.R.J. Sheppard, Y. Lu. (2019). Who has access to urban vegetation? A spatial analysis of distributional green equity in 10 US cities, Landscape and Urban Planning, 181, p. 51-79.

Example data visualizations will be provided in class.

NO CLASS May 29: Memorial Day

To make up for the two missed classes – we will discuss options to attend events occurring in June such as:

- At What Point Managed Retreat?: Habitability and Mobility in an Era of Climate Change, held from June 20-23, 2023, at Columbia University
- Artichoke Dance Company, Immersive Performance Tours of Gowanus
- The Fish Parade & Arts Festival, The Point, Hunts Point
- Community Board meetings for your neighborhood. Find Your Community Board

Class 3, May 31

Topics and Activities: Environmental Policy and the Built Environment

Required Readings:

Patton, C., Sawicki, D., & Clark, J. (2016). Basic Methods of Policy Analysis and Planning, 3rd Edition. Chapter 1 (all) and Chapter 2 (pages 40-55 only)

OneNYC 2050: Building a Strong and Fair City. Familiarize yourself with the general goals of the plan.

Halle D. & Tiso, E. (2014). Chapter 7: The Hudson Yards: Rezonings of 2004-2009 and Beyond: The City's Uniform Land-Use Review Process, Inclusionary Zoning for Affordable Housing, Tax Increment Financing and the Number 7 Subway Extension, and the Culture Shed (280-324). In: New York's New Edge: Contemporary Art, the High Line, and Urban Megaprojects on the Far West Side. University of Chicago Press.

Class 4, June 5

Guest Speaker:

Thaddeus Pawlowski, Managing Director, Center for Resilient Cities and Landscapes; Research Scholar; and Adjunct Associate Professor, Founder of Partners in Public Design

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Topics and Activities: Redevelopment, Resiliency, & Ecological Design

Required Readings:

Biden-Harris Administration recommends \$562 million investment to make communities resilient to climate impacts as part of Investing in America agenda <https://www.noaa.gov/news-release/noaa-bil-investments-2023>

Redefining Resilience, Center for Resilient Cities and Landscapes, 2020.
https://crcl.columbia.edu/sites/default/files/content/docs/CRCL_Update_2021_web.pdf

Rosenzweig, C. and Solecki, W. (2019). New York City Panel on Climate Change 2019 Report, Chapter 1: Introduction.
<https://nyaspubs.onlinelibrary.wiley.com/doi/10.1111/nyas.14004>

NYC Flood Maps. <https://www1.nyc.gov/site/floodmaps/index.page>

NYC Hazard Mitigation Projects. <https://maps.nyc.gov/resiliency/>

Recommended:

Anguelovski, I., Shi, L., Chu, E., Gallagher, D., Goh, K., Lamb, Z., ... Teicher, H. (2016). Equity Impacts of Urban Land Use Planning for Climate Adaptation: Critical Perspectives from the Global North and South. *Journal of Planning Education and Research*, 36(3), 333–348. <https://doi.org/10.1177/0739456X16645166>

Assignments Due: Speaker questions posted to discussion board by 3pm.

Class 5, June 7

Guest Speakers:

Troy Harris, Managing Director, Timberland and Innovative Wood Products, Jamestown

Becca Timms, Director of ESG, Jamestown

Topic and Activities: Green Building & Adaptive Reuse

- Focus on environmental, social and governance (ESG) initiatives in adaptive reuse projects
- Discussion of the rise of the mass timber industry and the connection between the commercial real estate industry and timberland management.

Required Readings:

Jamestown Sustainability and Social Responsibility Report. (2020).
<https://www.jamestownlp.com/uploads/documents/Jamestown-Sustainability-Report-2020-d.pdf>

Seedlings to Solutions. <https://www.seedlingstosolutions.org/>

Rewilding the planet: An archipelago constructed of sand and mud is bringing new life to a dead lake but can this bold experiment have a lasting impact? (2023). https://www.nature.com/immersive/d41586-023-01370-w/index.html?utm_source=Nature+Briefing&utm_campaign=8b15a3be52-briefing-dy-20230427&utm_medium=email&utm_term=0_c9dfd39373-8b15a3be52-43633113

Recommended:

Ndubisi, F. (2017). Adaptation and Regeneration: A Pathway to New Urban Places. In: *Nature and Cities: The Ecological Imperative in Urban Design and Planning*. Lincoln Institute of Land Policy.

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Assignments Due: Speaker questions posted to discussion board by 3pm.

Policy Memo due June 11 (midnight).

Class 6, June 12: Site Visit

Walking Tour of Gowanus Canal

Guest Speakers:

Andrea Parker, Executive Director, Gowanus Canal Conservancy

Jennifer Kepler, Education Program Manager, Gowanus Canal Conservancy

Topics and Activities: Redevelopment and Environmental Justice

- Discussion of redevelopment projects in terms of social objectives and the intended and unintended social outcomes
- Brownfield redevelopment

Required Readings:

Review the work of the Gowanus Canal Conservancy. <https://gowanuscanalconservancy.org/>

Foster, S., Leichenko, R., Nguyen, K.H....(2019). New York City Panel on Climate Change 2019 Report Chapter 6: Community-Based Assessments of Adaptation and Equity. <https://nyaspubs.onlinelibrary.wiley.com/doi/10.1111/nyas.14009>

Alexiou, J. (2015). Chapter 10: Superfund Me! (1981-2010). (pp. 329-356). In: Gowanus: Brooklyn's Curious Canal. New York: NYU Press.

Assignments Due: Speaker questions posted to discussion board by 9pm, June 11.

Class 7, June 14

Topics and Activities: Case Study: Gowanus, Brooklyn

Guest Speakers:

Mimi Raygorodetsky, Principal, Langan Engineering

Amy Motzny, Section Lead, Climate & Equity at NYC Department of Environmental Protection

Required Readings:

New York State Department of Environmental Conservation. (2014). Cleanup Action to Begin at Brownfield Site, 365 Bond. <http://www.dec.ny.gov/data/der/factsheet/c224174cubegins.pdf>

Review the Gowanus Lowlands, Master Plan

Recommended:

Review 365 Bond. Brooklyn Luxury Apartments, <http://365bond.com/>

Assignments Due: Speaker questions posted to discussion board by 9pm, June 13.

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Class 8, June 16 [Optional Make Up Class]

Walking Tour of Javits Center & Green Roof

Final Case Study Proposal due by June 18 (midnight).

NO CLASS June 19: Juneteenth

Class 9, June 21: Site Visit

Newtown Creek

Topics and Activities: This site visit will include a tour of the Newtown Creek Wastewater Resource Recovery Facility and the Newtown Creek Nature Walk with Kingsland Wildflowers.

4:00 Newtown Creek Wastewater Resource Recovery Facility

5:30 Newtown Creek Nature Walk with Kingsland Wildflowers

Resources:

Wastewater Treatment: Discover how NYC's wastewater is collected, treated, and transformed into resources

Kingsland Wildflowers Green Roof & Community Space

Newtown Creek Alliance

Required Readings:

Brookfield Properties, Reshaping the Brooklyn waterfront, Greenpoint Landing, Brooklyn, NY

Strom E. (2018). Brownfield Redevelopment: Recycling the Urban Environment. In: Brinkmann R., Garren S. (eds) The Palgrave Handbook of Sustainability. Palgrave Macmillan

Curran, W. and Hamilton, T. (2019). Chapter 4: Reworking Newtown Creek. In Krueger, R., Freytag, T., & Mössner, S. (Eds.) (2019). Adventures in Sustainable Urbanism. SUNY Press.

Assignments Due: Speaker questions posted to discussion board by 9pm, June 20.

Class 10, June 23 [Zoom Make Up Class]

Guest Speaker:

Karen Blondel, Harvard Loeb Fellow 2022, Founder and Executive Director, Public Housing Civic Association

Join Zoom Meeting

<https://columbiauniversity.zoom.us/j/94400220806?pwd=VnVaSFNYaVZ2ajFQSE4zQUxnUncyQT09>

Required Reading:

Public Housing Preservation Trust. <https://www.nyc.gov/site/nycha/about/public-housing-preservation-trust.page>

"Opinion: 421-a Deadline Threatens the Promise of Gowanus Rezoning." (2023). Michelle de la Uz and Rachel Fee.

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Recommended:

Gowanus Neighborhood Plan: Racial Equity Report on Housing and Opportunity (2021)

Assignments Due: Speaker questions posted to discussion board by 9pm, June 22.

Class 11, June 26

Assignments Due: Case Study Presentations

Class 12, June 28

Assignments Due: Case Study Presentations

Final Projects due by July 2 (midnight).

School Policies

Copyright Policy

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Academic Integrity

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SPS holds each member of its community responsible for understanding and abiding by the SPS Academic Integrity and Community Standards posted at <http://sps.columbia.edu/student-life-and-alumni-relations/academic-integrity-and-community-standards>. You are required to read these standards within the first few days of class. Ignorance of the School's policy concerning academic dishonesty shall not be a defense in any disciplinary proceedings.

Accessibility

Columbia is committed to providing equal access to qualified students with documented disabilities. A student's disability status and reasonable accommodations are individually determined based upon disability documentation and related information gathered through the intake process. For more information regarding this service, please visit the University's Health Services website: <http://health.columbia.edu/services/ods/support>.