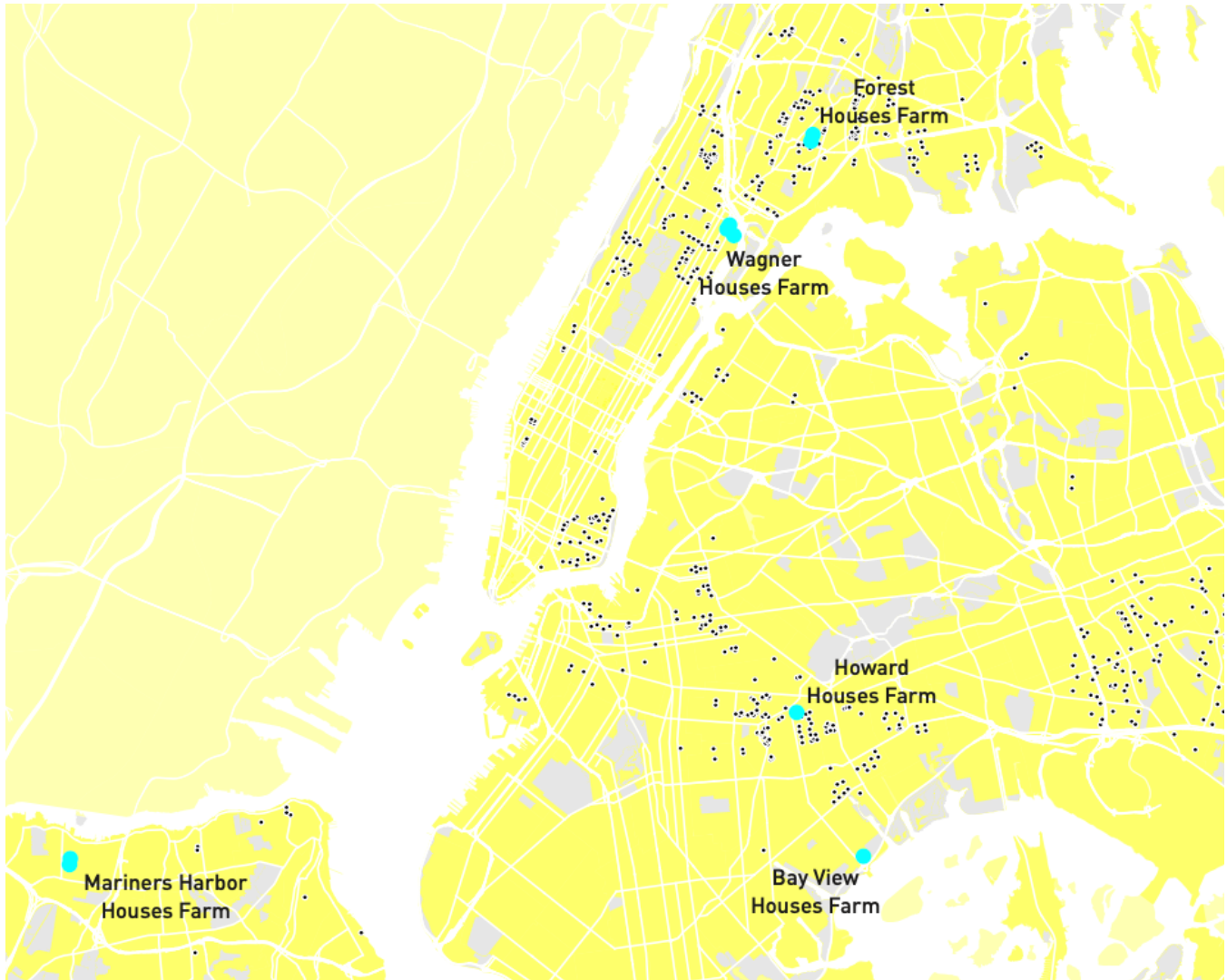


MIT Department of Architecture | Department of Urban Studies and Planning
4.182 / Drawing Together Practicum: Community Participation in Urban Technology Development
(Counts Towards M.Arch URB Elective)

Sandoval Olascoaga / de Monchaux

Core Partners: Green City Force (GCF)

Spring 2023 / M 3:00 PM-6:00 PM / 5-232 / In-Person



Introduction

The Drawing Together Practicum is part of a social and ecological resilience effort in New York City Public Housing (NYCHA) that explores new methods to scale community participation in urban design. Bringing together Green City Force (GCF), an AmeriCorps program that trains young adults from NYCHA in environmental service, NYC public housing residents, MIT students and researchers, this practicum will demonstrate a community-led planning and design process for the siting, co-design, and operation of community spaces, Eco-Hubs, using new digital platforms. GCF's Eco-Hubs align local green services for food, water, waste and energy behavior change and neighborhood transformation strategically with local, city, state, national and global goals for climate and equity.

We will explore how urban data, public service and design can become a medium for communities to shape their own environments through community engagement and on-the-ground urban farming work. Students will be incrementally programming and building spatial software, co-designing UI/UX interfaces with community members, and supporting farm-based public service programs, to support the growth and scale of GCF's workforce development program and community spaces, while amplifying the needs and voices of NYCHA communities throughout the process.

Outputs and Expectations

Weekly class attendance and site visits are mandatory for this course.

Throughout the course, students will be learning how to code and develop robust and scalable tools for spatial computing and planning, engage with communities and stakeholders to collaboratively design and test civic technologies, and volunteer in GCF's public service program.

The course will be divided into three modules, whose outputs will support each other incrementally. First, students will develop a "Community Engagement Toolkit", which will be used to support an initial site visit to GCF's Eco-Hubs in NYC. As part of this work, students can, for example, map out community assets or the digital footprint and digital literacy of community members.

Second, students will prototype a set of "Community Design and Engagement Digital Prototypes". For example, these prototypes can include UI/UX design of interfaces for collaborative design for community members, data visualizations to communicate GCF's program impact, or custom sustainability metrics that can be used to evaluate Eco-Hubs design. In collaboration with EECS students that are participating in a parallel course, these toolkits will be developed and implemented digitally.

Finally, students will test and deploy their toolkits and digital platforms in the community. In this module, we will organize user workshops to iteratively evaluate and identify improvements and redesign needs for their software based on its accessibility, usability, scalability, and adoption.

Alongside building digital frameworks to scale-up community engagement in existing and future Eco-Hubs, students will engage in conversations about the role of technology and digital skills in workforce development training. Students will discuss the potentials for creating a sustainability-focused, data science curriculum that supports farm development and operations as part of GCF's workforce training program.

New York City Public Housing and Green City Force

In this practicum we will be partnering with Green City Force, an AmeriCorps program that works at the intersection of environmental, economic, and racial justice through training young adults from New York City Housing Authority (NYCHA) communities in environmental service. NYCHA young adults are unemployed at twice the rate of their peers, with a rate of over 70%.ⁱ A city-within-a-city, NYCHA houses a population of more than 400,000, equivalent to Pittsburgh or Atlanta, with enormous need for social, economic, and ecological resilience.ⁱⁱ NYCHA residents are challenged by systemic barriers to economic mobility and pervasive effects of social inequities, poverty, and racial discrimination.

Core to GCF's approach and their partnership with NYCHA is service intentionally designed as part of sectoral career paths, a platform for Black and brown young adult leadership in public housing communities, and an emphasis on hope, healing, and trauma-informed practices. GCF co-founded the NYC Green Economy Network, convened by JobsFirst NYC, through its commitment to building the collaborative ecosystem around an inclusive green economy in the city.

Environmental injustice is concentrated in NYCHA, with decades of disinvestment in their physical spaces, proximity to brownfields and flood zones, high pollution rates, inaccessible public space, and limited access to healthy food.ⁱⁱⁱ GCF has developed a multi-site, multi-partner initiative to improve the health and wellbeing of NYCHA residents through community spaces, to which we have been consultants since 2015. These "Eco-hubs" combine workforce development, healthy food production, distribution and diet, community engagement, and sustainable landscape transformations to existing infrastructure.^{iv} GCF's five existing Eco-hubs have turned NYCHA's underused areas into working farms that serve as active community spaces for residents. The results of the past 12 years have demonstrated measurable benefits of Eco-hubs that extend far beyond food production and NYCHA, for example diversion of food scraps from landfills, stormwater collection, and scholarships for continuing education.^v

In the next five years, GCF has the goal of expanding from 5 to 10 Eco-Hubs. Our work will support this goal by developing a set of digital tools and design approaches to scale up existing community engagement and recruitment practices and the design and operation of the Eco-Hubs. The course will include up to two site visits to NYC: an initial site visit to learn about GCF's program and engage with staff and residents, and there is the possibility of a second visit to present, deploy, and evaluate the practicum's results and approaches. Additionally, we will meet online on a regular basis with a GCF staff member or Eco-Hub Fellow.

Educational Approach

Our work will be organized in different modules that will introduce design principles of participatory software development, principles of digitally mediated collaborative design, and digital approaches for community engagement and outreach in workforce development. We will engage in coding workshops, guest lectures, reading groups, site visits, user testing, and community meetings. Our partnership with GCF will be essential for effective community engagement, and we will be building on their deep experience, community ties, and the strength of our existing collaboration.

The first module of the course will introduce interdisciplinary theories and methods in history of technology, reflective practice, and co-design within Human-Computer Interaction, and readings to provide context and history of NYCHA Communities. Through reading groups, discussions, and design charettes, practicum students will develop an "Engagement Toolkit" for an initial site visit. As part of this toolkit, students will define a set of strategies for community engagement to identify community issues to address through GCF's program. Students will engage with residents and GCF staff members to define best practices and approaches for supporting the operation of GCF's Eco-Hubs through computing. We will organize workshops with community members for problem identification and to help define the design problem; to articulate the different stakes in the project and community resources and expertise; and to articulate the intended beneficiaries of the project.

The second module will include technical workshops that will introduce visualization techniques, and principles of software development, as well as collaborative design conversations with GCF Staff, Corps members, and resident representatives. In this module, students will reflect on the goals and strategies

identified in the site visit and through continuous stakeholder conversations to prototype a set of Technological Prototypes to support GCF's program. These prototypes can include, for example, UI/UX design of interfaces and modes of engagement for effective and accessible digital design for community members, design strategies for Eco-Hubs that can be customized by residents, visualizations of GCF's program outcomes, or custom sustainability metrics of GCF's program outcomes.

Finally in the last module, we will test and deploy our toolkits and digital platforms. In this module, we will organize user workshops to iteratively evaluate and identify improvements and redesigns for the software based on its accessibility, usability, and success.

To accomplish these goals, we will be primarily engaging with long-term GCF Corps members, whom with their local-ties and community membership are the best and most motivated representatives of the community.

Requirements

You are required to be present at all class meetings, unless by prior arrangement. You may be absent from one class each semester without prior notice (not a review or workshop), but each subsequent unexcused absence will result in the loss of a letter grade. Similarly, you are expected to have completed homework and preparation for each class, unless excused by prior arrangement. You also get one free pass in this regard, but afterwards a penalty correspondent to that for an absence applies.

In this practicum we will be combining in-class tutorials with online technical modules. If specified, prior to every class you are required to review and complete the technical module of each session. In every week's session we will be discussing challenges, troubleshoot workflows, and ideas. You are expected to participate in the discussion.

Finally, you are expected to contribute robustly to the success of the class as a shared enterprise; without this commitment from everyone involved, we might as well not show up. Participation and weekly assignments will count for 60% of your grade, and the presentation of your final project 40%.

Office Hours (by appointment)

Carlos: <https://calendly.com/csandova/office-hours>

Nicholas (Department Head Office Hours): <https://calendly.com/demonchaux/office-hours>

Calvin: Wednesday 2:30-3:30 (3-329)

Course Materials

Including this document, course materials will be available and distributed via the MIT Canvas site (<https://canvas.mit.edu/courses/19295>) for which you should shortly receive an invitation. Large files will be distributed via Dropbox filesharing service; the Dropbox folder will be referenced in Canvas.

Software

All the software we will use is provided to you free of charge - QGIS, Figma, Node.js and Visual Studio Code.

Structure

Starting with the class meeting of February 6, the course will adopt the following week-by-week structure to address a range of software and graphic techniques and tools. You should be ready to discuss the readings during the session that they are planned for.

Schedule

DATE	#	AGENDA
6-Feb-23	0	Introductory Lecture
	1	Module 1: Co-Design and Community Participation in HCI
13-Feb-23	1.1	Introduction to NYCHA, GCF, and Eco-Hubs

Readings:

NYCHA – Open Space Master Plan. Capital Projects Division, October 2021.
Farms at NYCHA – Final Evaluation Report. CUNY Urban Food Policy Institute, June 2019
Eco-Hubs Powered by Green City Force – Draft Presentation 2021
Hester Street. “Eco-Hubs Powered by Green City Force: Pathways to Community Ownership.” New York, NY, March 2021.
Schalliol, David. “Conclusion: Challenges and Opportunities.” In *Affordable Housing in New York*, edited by Nicholas Dagen Bloom and Matthew Gordon Lasner, 291–306. The People, Places, and Policies That Transformed a City. Princeton University Press, 2016. <https://doi.org/10.2307/j.ctvs32rwj.13>.

Technical Review: Introduction to JavaScript and Web-Development

Assignment 0 Due: Hello World!

21-Feb-23	1.2	<i>Note: Monday Classes are Held on Tuesday</i> Software Has History, Participatory Design, and Co-Design in HCI
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Guest Lecture: Tonya Gayle, Executive Director, Green City Force

Readings:

de Monchaux, Nicholas. “The Map and the Territory.” In *Local Code - 3,659 Proposals About Data, Design & the Nature of Cities*, 154–77. Princeton, NJ: Princeton Architectural Press, 2016.
Costanza-Chock, Sasha. “Design Practices: ‘Nothing about Us without Us.’” In *Design Justice*, 2020.
<https://designjustice.mitpress.mit.edu/pub/cfohnud7/release/4>.

Cizek, Katerina, William Uricchio, Juanita Anderson, William Uricchio, Maria Agui Carter, Thomas Allen Harris, Maori Holmes, Katerina Cizek, and Michèle Stephenson. "PART 1: 'WE ARE HERE': STARTING POINTS IN CO-CREATION." Works in Progress, May 15, 2019.
<https://wip.mitpress.mit.edu/pub/collective-wisdom-part-1/release/3>.

Optional:

Light, Jennifer. "Discriminating Appraisals: Cartography, Computation, and Access to Federal Mortgage Insurance in the 1930s." *Technology and Culture* 52, no. 3 (2011): 485–522.

Sandoval Olascoaga, Carlos. Really, Now, Who or What is ESRI?, in "Drawing Participation: Histories of Geospatial Computing, Professional Silos, and Potentials for Collaboration in Planning and Design." Thesis, Massachusetts Institute of Technology, 2021.

Technical Review: Data Management and Analysis, Data Persistence

Assignment 1 Due: Community Asset Mapping and Data Gathering

27-Feb-23 1.3 Interview, Community Engagement, and Research Design

Readings:

"Design Kit." IDEO. <https://www.designkit.org/methods>.

The Code for America. "The Code for America Qualitative Research Practice Guide," Spring 2020.

Goldman, Shelley, Angela Booker, and Meghan McDermott. "Mixing the Digital, Social, and Cultural: Learning, Identity, and Agency in Youth Participation." *Youth, Identity, and Digital Media*. Edited by David Buckingham. The John D. and Catherine T. MacArthur Foundation Series on Digital Media and Learning. Cambridge, MA: The MIT Press, 2008. 185–206. doi: 10.1162/dmal.9780262524834.185

Technical Review: Intro to Data Visualization

Assignment 2 Due: Site Visit Toolkit and Data Representation

3 / 6-Mar-23 1.4 Site Visit (*Date to be discussed with class*)

2 Module 2: Design Development

13-Mar-23 2.1 Project Definition / Feedback and Working Sessions with GCF

Readings:

Schön, Donald A. "The Structure of Reflection-in-Action." *In The Reflective Practitioner*. Routledge, 1992.

Costanza-Chock, Sasha. "Directions for Future Work: From #TechWontBuildIt to #DesignJustice." *Design Justice*, March 3, 2020.
<https://designjustice.mitpress.mit.edu/pub/ev26fjji/release/1>.

International Journal of Design. “A Collaboration System Model for Planning and Evaluating Participatory Design Projects.”
<http://ijdesign.org/index.php/IJDesign/article/view/3486>.

Optional:

Schön, Donald A. “Reflective Practice in the Science-Based Professions.” *In The Reflective Practitioner*. Routledge, 1992.

Technical Review: UI/UX, Wireframing (Figma)

Assignment 3 Due: Intervention Wireframes

20-Mar-23	2.2	Software Lifecycle and Test-Driven Development
		<i>SERC Scholars Presentation</i>
		Prototyping / Design Crits
		Technical Review: Advanced Data Visualization
		Assignment 4 Due: Interactive Data Visualization
27-Mar-23		No Class - Spring Break
3-Apr-23	2.3	Prototyping / Design Crits
		Technical Review: User Interaction
		Assignment 5 Due: Wireframe Implementation
10-Apr-23	2.4	Mid Review
		Potential Guests: Tonya Gayle (Executive Director GCF), Erin Johnson (Director of Service Operations and Infrastructure), Annel Cabrera-Marus (Chief Program Officer)
17-Apr-23		No Class – Patriot’s Day
	3	Module 3: Implementation & Deployment
24-Apr-23	3.1	Prototyping / Design Crits
		Technical Review: User Testing
		Assignment 6 Due: Application Deployment and Test Suite
1-May-23	3.2	User Engagement, Testing, and Deployment / Design Crits
8-May-23	3.3	User Testing / Design Crits
15-May-23	3.4	Final Presentations – (<i>Potential Site Presentation</i>)

Endnotes

ⁱ “Youth Unemployment Data Provided by NYCHA to GCF on 2/6/2018.,” n.d.

ⁱⁱ JOBSFIRSTNYC, “2016 Annual Report,” February 10, 2016, <https://jobsfirstnyc.org/latest/2016-annual-report/>.

ⁱⁱⁱ New York City Department of Health and Mental Hygiene, “Community Health Survey Trends,” 2018, <https://www1.nyc.gov/site/doh/data/data-sets/community-health-survey.page>.

^{iv} Green City Force, “Green City Force Annual Report,” 2018.

^v Urban Food Policy Institute, “Farms at NYCHA: Final Evaluation Report” (New York, NY: CUNY, June 2019).