

SYLLABUS

THE PLANT: A CO-OPERATIVE COMMUNITY FOOD CENTER

TEACHING TEAM

Prof. Sheila Kennedy, Coordinator
Associate Prof. J Yolande Daniels
Visiting Prof. Rami el Samahy
Lecturer, Adam Modesitt

STRUCTURES INSTRUCTORS

Prof. Caitlin Mueller, PhD
Mohamed Ismail, PhD BT '23

TA TEAM

Latifa Alkhayat, MArch '23
Tim Cousin, MArch '23
Natalie Pearl, MArch '23

COURSE DESCRIPTION

Core 3 is the concluding studio of the MArch1 core program at MIT. As an integrated studio, it is co-taught with Building Technology 4.463 led by Professor Caitlin Mueller and her team.

The Core 3 studio gives students the chance to explore and test the development of an architectural design proposal with an integrated understanding of a building's structural and spatial performance and response to the ongoing climate crisis in the Anthropocene.

In Fall 2021 Core 3 will focus on the design project of The Plant, a community owned and operated collective workspace for shellfish and seaweed processing located in the state of Maine. The 25,000 GSF program for the Plant, includes interior and exterior work areas and associated marine infrastructure. Students will consider the seasonality of seaweed and shellfish harvesting/processing in Maine as an important, temporal dimension of the program. Harvesting runs from October to April, with a seaweed "offseason" from May to September which corresponds largely with the tourist season in Maine. In the 'off-season,' seaweed work slows down or stops altogether. This opens opportunities for strategic design of production spaces that can also serve community gathering functions. The design and architectural development

of flexible plans and multi-use spaces are encouraged to demonstrate how the spaces of production transform and/or accommodate the proposed off-season uses.

The Core 3 aquaculture program is well defined with specified technical requirements for daylight, climate control and functional workflows. Yet in designing architecture for this specific program, students will be able to engage climate and carbon footprint, issues of food sovereignty and designs that support co-operative local and regional food networks between inland and coastal communities in the state of Maine. Core 3 students will explore the architectural character of this aquaculture co-op in an iterative process of design that imagines the daily lives of co-operative worker/owners who will use this production facility and the community/communities it is designed to serve.

The Core 3 studio project and program have been inspired by the work of Conservation, Food Sovereignty and Working Waterfront Non-Profits in Maine and the Co-Operative Development Institute in Maine (CDI) which supports equitable workforce training for new Americans in Maine and works towards the creation of a more democratic economy and shared ownership of sustainable small businesses. Waterfront land in Maine

has been largely privatized over the last century; access to the ocean, to seaweed and shellfish is not currently equitable. The state of Maine regulates seaweed foraging and (historically and currently) does not acknowledge the sovereignty of the four Wabanaki nations over the territorial ocean, watershed and habitats where they have gathered for more than 8,000 years. The Kelp Highway, a term that describes the critical role of seaweed and shellfish in coastal food ecologies supported the Wabanaki Nations in their great migration to the land now called the United States and Canada, as evidenced by intricate shell midden structures in Maine. While Seaweed cultivation is an ancient practice, its potential was only recently recognized by the United Nations as an available source of food capable of feeding the human population, with minimal use of fresh water.

In the last decade, seaweed and shellfish harvesting in Maine has been primarily conducted by a diminishing workforce of Maine lobster and fisher folk, most of whom are male and White. While there has been a significant number of immigrants to the state of Maine, many from Eastern Africa, the participation of immigrants and new Americans of color in aquaculture has been limited. The Co-Op Plant project provides Core 3 students with the opportunity to challenge

this pattern, to choose among sites, and to provide for different approaches to shared infrastructure and buildings for seaweed and shellfish harvesting. Throughout the semester, Core 3 will host discussions with representatives from the Co-Operative Development Institute of Maine (CDI), with Passamaquoddy and Penobscot citizens with an interest in traditional foods and cultural practices and with Oyster and Seaweed farmers who can speak first-hand about their work and lives on the water. Our shared goal is to enable a range of different voices and views on aquaculture to enter the Core 3 studio, with opportunities for students to receive different forms of feedback on design projects as they develop.

SEMESTER STRUCTURE

The Core 3 semester is structured as a single design project that is organized around three interrelated Research and Design Problems that allow students to integrate different scales of design.

Design Problem 1: Constructive Systems - Convention & Transformation

addresses learning and innovating through Worked Precedents. Students begin by choosing a constructive system and corresponding Precedent to research by building a large-scale model of its structure and drawing sections at large scale. In parallel, students analyze and diagram the aquaculture program, to understand the program's seasonality, functional workflows and movement of water, people, and shellfish/ seaweed.

In **Design Problem 2: Massing, Circulation & Space** students select a constructive system that the class has studied and apply and transform it through building massing and circulation studies on a coastal site that they choose—with sites offering different waterfront contexts and conditions of public access. Before the building design is complete, students explore and develop the architectural character of a selected program space through large scale sections and study models.

Design Problem 3: Unpacking the Wall addresses relationships in the detailed design and materiality of the building envelope and the exploration of the building interior character and public image. Students will have an opportunity to build experimental

large-scale model and partial full-scale mock ups. The final weeks of the semester will provide an opportunity to step back, reflect and foreground the key ideas and representations for the design development students' architectural design proposals.

Core 3 will support students in learning in the development of an iterative design process that emphasizes materials and construction techniques, quick studies, and exploration of design options through drawings and models. The TA team will be coordinating the semester workload with Core 3 instructors, Caitlin Mueller and BT team to identify in advance any workload issues or conflicts.

Core 3 will seek to use the materials of architecture to think about FOOD-- through the design of collective spaces for food production and exchange, food sovereignty and food heritage. In the service of this larger project, students will research normative constructive systems, then propose ways to transform these construction conventions in the spirit of innovation and a more ecologically responsible use of resources. The architecture of the Plant, its tectonics and aesthetics will need to be invented and/or remembered, depending on where students position their projects along the spectrum of cultivated and wild seaweed harvesting, or greater or lesser scales of industrialization, economic and ecological impacts. Shellfish and seaweed offer a complex and hybrid materiality that will engage us fully with gravity, buoyancy, brininess, and the dynamic forces of the Newtonian world we (still) inhabit.

SITES IN MAINE

The Core 3 studio at MIT recognizes that the territory of Maine is in the homeland of the Wabanaki federation of First Nations where sovereign water and territorial rights, and encroachment upon sacred sites, are ongoing and contested. As instructors of Core 3, we recognize that the Wabanaki Tribal Nations are distinct, sovereign, legal and political entities with their own powers of self-governance and self-determination. The studio will approach to architectural design on three coastal sites in Maine with sensitivity and respect for the different waterfront conditions and contexts they provide.

Taken as a whole, the three sets offer students a gradient that ranges from more urbanized site conditions to peri-urban community waterfront to rugged topographic conditions in Acadia National Park to the north. The Core 3 sites were selected with three criteria in common: accessibility to seawater, access to coasts, roads, towns and markets and plausibility—one could imagine different design approaches to Aquaculture Co-Operatives in these locations. In selecting a site for their projects, student teams will need to consider land and water-based accessibility to seaweeds and co-op membership constituencies and the presence (or not) of summer and/or year-round residents and tourists as potential beneficiaries of shellfish and seaweed.

The Portland Co. Wharf in Portland engages the urbanized context of a Harbor, the Sea Meadow site in Yarmouth is a community owned and operated working waterfront on a tidal River Estuary and Marsh. Dorr Point

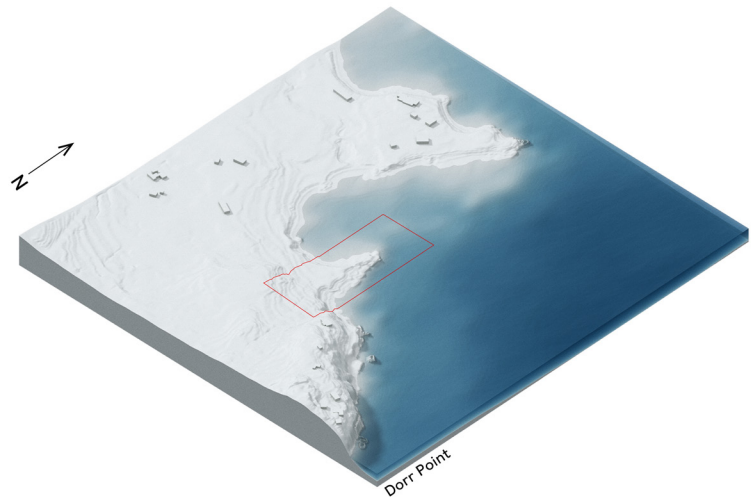
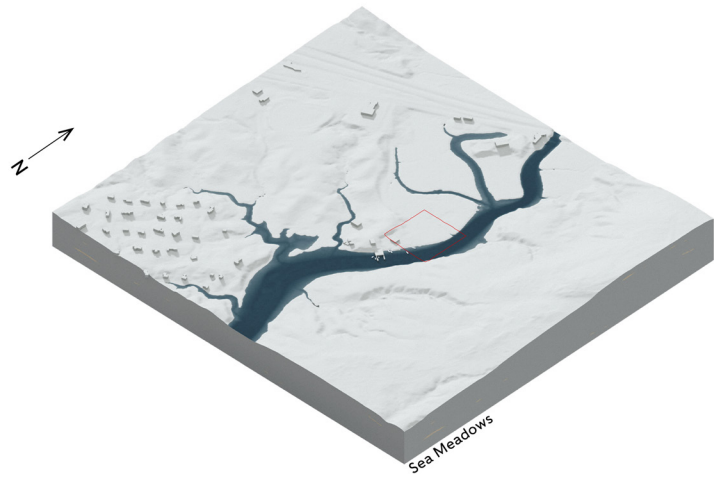
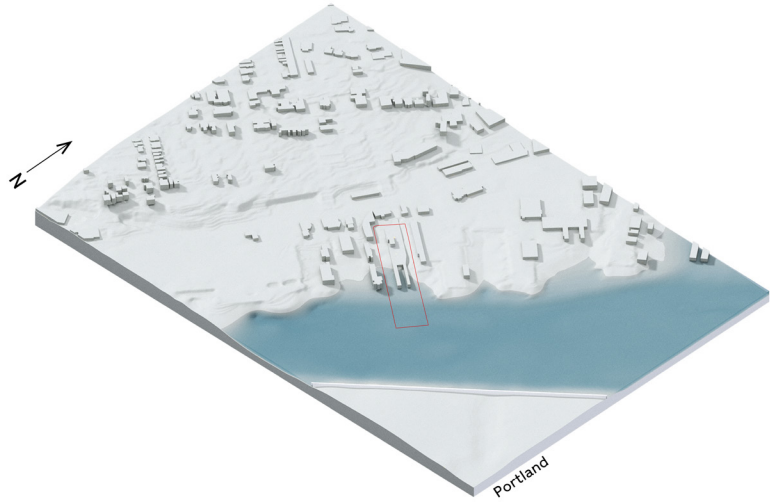
is an uninhabited steep peninsula in Acadia National Park with direct access to the open Atlantic. And a bay with a seasonal summer ferry to Bar Harbor. There will be a class trip to Maine at the end of September to speak with and learn from local seaweed and oyster farmers, local chefs, craftsmen, non-profits and community food co-op leaders.

CLIMATE CONDITIONS

The choice of site will inform how the aquaculture program can be organized. Regenerative aquaculture can occur across different site conditions: Urbanized Ports with harbor access, River Estuaries, marshes and tidal flats, and Off-Shore in the deeper ocean. All the sites are subject changing maritime conditions: daily sectional 12-20-foot differentials of high/low tides, strong winter winds and coastal snow loads, and seasonal cycles that range from below zero in winter to 80-degree plus days in summer. The fundamental criteria for seaweed and shellfish production include Access to daylight in all interior spaces where people work and for living organisms in the cycle of seedling growth in the Nursery. Access to active or passive heat for seaweed drying in high, dry and spaces, which are exposed to heat, sunlight and/or warmed by rising air in multistory sectional design, Access to seawater and warm water for rinsing and cleaning oysters and seaweed, Access to cold storage for seaweed and shellfish.

PROGRAM: The Plant

THREE SITES TO CHOOSE FROM



Portland Co. Wharf

This site at High Street at Commercial Street presents a mix of urban uses: marine industries, commercial office space, residential condominiums, and an active food sector. The wharf hosts many of those activities: an office building along Commercial St, a wood fishing shack, a marine gantry and two parallel docks that currently serve tourist schooners and lobster boats. The wharf site is close to the Maine Immigrant Rights Coalition

headquarters and communities in Portland and about 40 mins drive from Lewiston, a town with farm co-ops and start up enterprises owned by a diverse community of new and older Mainers.

Sea Meadows Working Waterfront

This semi-urban site is a community owned and operated working waterfront in Yarmouth, Maine at the confluence of a tidal Estuary and the ocean waters of the Casco Bay. The Sea Meadows site has been preserved as a working waterfront for small scale sea farmers. The sandy shoreline, shifting tides and ecologically sensitive marshlands make this an ideal place for oyster aquaculture. An Aquaculture Co-Op on this site holds the potential to expand the ocean educational outreach and economic

impact of a community of existing waterfront industries, boat builders and small-scale sea farmers. The Sea Meadows site includes existing oyster farming co-ops, marine boatbuilders and a dock and boat ramp. The site is accessible by car from the center of Yarmouth, is connected with the peninsulas of Casco bay such as Harpswell and Bailey Island and is 10 minutes from the larger town of Freeport.

Dorr Point

This site on Mount Desert Island is under the jurisdiction of Acadia National Park. The site forms the southern edge of Compass Harbor offering the choice of windward and leeward shores and highland coast along a rocky, steep promontory. The site is named after George Dorr, a wealthy textile magnate who worked to establish Acadia as a National Park. Ownership and stewardship of Acadia has been and continues to be contested. Significant shell middens in Acadia attest to the historical

use of the Mount Desert Islands by the Wabanaki First Nations. The Wabanaki seek to maintain their sovereign rights to access and forage this land for eelgrass, shellfish and seaweed. Old carriage roads and trails connect this site on Penobscot Bay with Route 3 and Interstate 1. The site is accessible in 20 minutes by car or boat to/from Bar Harbor, a heavily visited tourist area in summer.

COURSE EXPECTATIONS

Student Participation in required core studio classes is an important part of the MArch1 Core Program. Participation can occur across many forms, including collaborative participation on project teams, leading class discussions with speakers and guests and participation in optional Seaweed/Shellfish Experience Actions (S/SEAs) micro-projects, (material experimentation, gathering seaweed, creating seaweed recipes) which can be done either individually or in groups.

Grading Rubric:

Core 3 grades will be assessed for each Design Module based upon the following criteria:

- Quality of design concept and design development at site, building and detail scales
- Ability to establish an iterative design process to explore & synthesize design options
- Ability to understand and engage with the program and meet its needs
- Ability to integrate structural, enclosure, climate, and architectural design strategies
- Ability to understand the carbon impacts related to choice of materials and construction systems
- Self-Reflective capability: the student's capacity to reflect upon and critique her/his own work
- Participation in class discussions, S/SEAS micro-projects and collaborative teamwork

METHODS OF EVALUATION

The Core 3 teaching team will utilize three methods of evaluation:

1. Quantitative Evaluations of Building Technology integration in students' architectural design projects will be conducted through students' understanding of section, construction assembly and construction detail drawings in their studio projects and through their BT problem sets.

2. Qualitative Evaluations will be conducted through presentations and discussions of students' studio work to track development of the students' design process, design research skills and understanding of design integration across scales in architecture. In distinction to conventional "architecture juries" where students listen and experts talk, this studio will pursue more discursive formats that seek to engage students, faculty and external guests in conversation on students' design projects.

3. Self-Reflective and Peer Evaluations
To foster reflection on their design work, students will be encouraged after each project discussion to formulate a key question and list the first steps that they will initiate to respond to that question. The intermeshing of material research/experimentation paired with skills in design representation and documentation will provide space for self-evaluation and transitions between scales in architectural design.

What Constitutes Success?

In addition to Quantitative, Qualitative, and Self-Reflective Evaluations, success for students in the Core 3 curriculum will be manifested in:

Students feeling interest in and a passion for their studio design projects, which strengthens motivation for learning new skill sets. Students finding intersections between their work in studio, their own interests in architecture and the larger environmental and societal issues they encounter through their studio design projects.

Within the semester, students gain exposure to an iterative design process that can enhance the research depth, productivity, and effectiveness of their creative work.

Students developing the ability to make design decisions that demonstrate a synthesis of series of factors, including user requirements, regulatory requirements, site conditions, and accessible design, and consideration of the measurable environmental impacts of their design decisions.

Students using the medium of architecture and the choice of materials and constructive systems to think about the world around them and position their work with regards to the dynamics between built and natural environments.

In this, architecture functions not to try to solve grand challenges – such as decarbonization, inequity or food security-- but as a means of identifying priorities, strategies and actions that can constitute possible new forms of activism and agency for architecture.

Students realizing, perhaps in years after this semester, that they have developed the habit in their design processes of moving fluidly between analogue and digital ways of designing. Students seeing that they can continue to apply this way of working in the future across different forms and formats for practice in architecture.

Studio Core Values

The Core 3 studio supports a positive and respectful environment for critical thinking and innovation conducted through the medium of architectural design. Respectful collaboration, information sharing, experimentation and engagement among teaching assistants, instructors, students, and administrative staff are encouraged.

DESIGN PROGRAM

THE PLANT: A CO-OPERATIVE COMMUNITY FOOD CENTER

TEACHING TEAM

Prof. Sheila Kennedy, Coordinator
Associate Prof. Yolande Daniels
Visiting Prof. Rami el Samaha
Lecturer Adam Modest

STRUCTURES INSTRUCTORS

Prof. Caitlin Mueller, PhD
Mohamed Ismail, PhD BT '23

TA TEAM

Iatifa Alkhatib, March '23
Tim Cousin, March '23
Natalie Pearl, March '23