

## WHAT WOULD WOOD

MIT 4.154 Studio Syllabus, Spring 2025

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### ODDS & MODS

WHAT WOULD WOOD is the second in the multiyear ODDS & MODS cross-disciplinary research and design initiative on material circularity in architecture. With a different material focus each year, ODDS & MODS seeks to create new architectural possibilities through the reuse and upcycling of geometrically variable natural materials as well as diverse inventories of materials harvested from factory 'waste' streams.

### STUDIO & WORKSHOP ADJACENCY

Central to the ODDS & MODS pedagogy is the integration of Studio research through design discovery and learning with computation tools and Workshop based material exploration and fabrication. The WHAT WOULD WOOD Studio is offered in conjunction with an adjacent fabrication Workshop (MIT 4.185) in Spring 2025. With a thematic focus on material circularity for undervalued wood, the two subject areas are closely interrelated. This thematic adjacency is organized to enrich students' exposure to research that integrates historical and cultural contexts, projective architectural design, 'high' and 'low' technologies, and hands-on fabrication without the pressures of addressing these inter-related topics in a single studio or having to separate research from architectural design. While students may take the Workshop independently, **it is anticipated that MArch Option Studio students will also be taking the Workshop to benefit from these synergies.**

### STUDIO SUBJECT DESCRIPTION

The WHAT WOULD WOOD Studio will explore the experimental wood design of collective housing for US Forest service workers and Washoe Tribal community members in the Palisades Tahoe Forest area of what is now called California. The studio will explore wood construction of two emergent, unconventional, and seemingly opposite typologies of wood. **Messy Mass Timber** (MMT) is our term for irregular scraps plywood, dimensional lumber and CLT off-cuts harvested from factory waste streams. **Wild Wood** is our term for minimally processed, small diameter, and forest felled wood with varying branch geometries. The studio will work with machine vision (AI) and digital wood inventory toolkits, to explore and fabricate a fundamentally new relationship of part to whole in architecture. This approach moves away from the traditional value accorded to physically continuous, uniformly milled wood in favor of a transformative 'alchemy' where diverse sets of small wood pieces, considered in the mainstream as 'waste', can be aggregated and designed to take on high value spatial and structural capacities.

The irregular and unpredictable dimensions of **Messy Mass Timber**, (MMT) offer a spatial experience that contrasts with the uninterrupted 'clean' 'blank' aesthetic of cross laminated timber (CLT). Extracted as commercial crop in industrially cultivated forests, contemporary CLT production perpetuates modern era systems of standardization and modular pre-fabrication that create significant material waste. On the other end of the industrial-forest spectrum, **Wild Wood** encompasses small diameter mixed-tree species of varying branch geometries. Wild Wood is an abundant and potentially renewable material for building that could reduce the deforestation of mature trees that are needed to best sequester carbon through long term growth. With minimally processing and expenditures of energy, individual small members of locally harvested Wild Wood could be designed to work together to create new forms, spaces, and structural capacities.

### **Learning Beyond the Classroom**

Central to the pedagogy of Odds & Mods is the idea that architectural education should include learning experiences that engage students in natural environments and places of production where materials originate and are fabricated. Students in the WHAT WOULD WOOD Studio and Workshop will visit local millers, artisanal wood knowledge keepers, forest service worker communities and industrial mass timber manufacturers to study the different histories and ways of thinking about the forest and the utilization of wood in architecture.

Against the visible context of ongoing forest fires and climate crisis, Messy Mass Timber and Wild Wood are undervalued, provocative and increasingly combustible parts of a fragile, and fast disappearing ecological commons. WHAT WOULD WOOD asks how wood – and the architectural discourse around design with wood-- would need to change to enable a circular, carbon sequestering materiality and envision possible futures for wood in architecture.

### **STUDIO SCHEDULE**

The semester will include two architectural design problems that are intended to build upon each other and offer the opportunity for students to study the sourcing and production of waste wood in the context of two distinct forest ecologies.

#### **Bird Blind Design**

Students will begin with an introductory design problem for a Bird Blind, sited in a selected sectional habitat zone of a local New England Forest. Through this design project, students will refresh their understanding of wood constructive systems, and explore how these might be transformed, with a focus on either ‘waste’ wood from sawmill production or wild wood forks and thinnings. Students will learn from worked structural precedents to explore a creative process with the Digital Circularity Toolkit which enables architectural form to be designed and constructed using a diverse inventory of irregular wooden pieces. The Bird Blind designs will define spatial and light qualities of the forest and explore how this forest aesthetic might be expressed in the interior spaces and external volume of the Bird Blind.

#### **Housing & Tahoe Forest Products Research**

The students’ approaches to Wild Wood and ‘waste’ wood circular design will be transformed and developed in the second design problem, where students are asked to create architectural proposals that demonstrate how circular wood housing could serve communities in the Tahoe region. The studio will research the regional wood stock from the 2021 Caldor Forest Fire and the role of cultural burning, thinning and firewood collection in Sierra forest ecology. Students will study the production capabilities of the Tahoe Forest Products sawmill and select a constructive wood element from the introductory design problem to scale and develop in greater detail. Studio research and design work will be informed by meeting on zoom with community leaders and representatives.

#### **Spring Break Travel & Research**

Over spring break, students will travel to Washoe first nation lands, to visit and meet with Washoe community leaders and US Forest Service workers to learn about the housing needs of the region which range from demountable and seasonal housing to single unit housing that can be grouped together to support collective activities, to higher density co-housing. Students will tour the Tahoe Forest Products sawmill and present their constructive building system proposals in progress in discussions with community representatives. The studio will visit and document three hypothetical sites that the community has identified as potential housing sites.

#### **Housing Demonstration Design**

In the second half of the semester, students will focus on the design of architectural demonstration proposals for housing that could be constructed with circular wood strategies using the production capabilities of the Tahoe Forest sawmill. Students will explore the character of circular wood in experiential modes of representation and architectural drawings. From their housing proposals, students will select and develop designs for a constructive element of to design in detail. Partial full-scale prototypes will be fabricated in the WHAT WOULD WOOD workshop.

## **STUDIO CULTURE**

Wild Wood and circular Mass Timber harvested from wood 'waste' are emergent forms of wood still new to the discipline and MIT. This means that our collective learning experience will be informed by discussion, exploration, and knowledge sharing. Participation in studio can occur across many forms, including collaborative participation on project teams, contributing to discussions with peers, speakers and guests and peer project discussions. The WHAT WOULD WOOD studio will be fully in person, except for 4 class sessions with guest lectures/virtual desk crits that will be conducted via zoom. Working with these wood materials in the MIT studio workspace and with MIT shop resources will be instrumental for studio design projects and fabrication.

The WHAT WOULD WOOD studio and associated fabrication Workshop support a positive and respectful environment for critical thinking and innovation in material circularity conducted through speculation, architectural design and material exploration. Respectful collaboration, information sharing, experimentation and engagement among teaching assistants, instructors, students, studio guests and administrative staff are encouraged.

**STUDIO GRADING RUBRIC:** Grades for the studio Design Problems are based upon the following criteria:

- Participation in Studio discussions, information sharing and collaborative teamwork
- Quality of concept, experimentation, and level of development in two Studio Problems
- Ability to conduct an iterative design process to explore/assess options for wood material circularity
- Ability to engage/experiment with Digital Circularity Tool Kit
- Design development of a 'waste' wood building element/ building system, reproducible at scale
- Self-Reflective capability: the student's capacity to reflect upon and critique their own work

## **READINGS & REFERENCES**

On the Studio Canvas site students will access the Studio PDF handbook of curated wood constructions and mass timber housing precedents. The studio bibliography includes online and technical resources for Studio and Workshop subjects. This reference collection is intended to support student design and research and includes book references, online articles, and technical papers on material circularity in architecture, wood production and construction, forest ecology, and histories of the Tahoe region and the Washoe First Nation as well as work by modern era and contemporary artists working in wood.