

# DIGITAL CLT | *architecture*

OPTIONS STUDIO | ARCH 463/464/563 | Summer 2022 | Stefan AI PHD RA LEED



Wooden office, Miyagi Prefecture, UENOA

## STUDIO SCOPE

*Digital CLT* investigates new architectural design directions for mass timber. Architects around the world are rediscovering an ancient building material — wood — but in new ways and with massive benefits for our planet. Manufactured wood, also known as mass timber, is the most promising building block for lower-carbon structures. But while mass timber is gaining ground as a construction material, it still has untapped potential for innovative construction systems and building geometries. Compared to conventional building materials, mass timber materials such as CLT are more easily manipulated with CAD CAM manufacturing techniques, such as CNC milling. This allows for projects that are prefabricated, modular and custom, all at once.

In this studio we will explore creative architectural solutions for sustainable mass timber buildings using digital design tools. It is structured in four parts. First, students will conduct case study research on digital design and construction methods relevant to mass timber, such as a system of folded CLT plates with parametrically generated dovetail joints. They will then create their own mass timber modular construction system. Students will then use this

system as the major driver of architectural form, designing a sustainable modular building. They will incorporate strategies to improve the building's environmental performance. Finally, they will develop the most iconic spaces within these structures, such as lobbies, roof-decks, loggias, and outdoor spaces.



## TRAVEL: New York City Metro Area

Currently there are several mass timber buildings under construction in New York City. We plan to visit one or more.



# ESSEX HUDSON GREENWAY | *urban design*

OPTIONS STUDIO | ARCH 463/464/563 | Summer 2022 | Darius Sollohub AIA



ESSEX HUDSON GREENWAY, Image by Mathews Nielsen Landscape Architects

## STUDIO SCOPE

The *Essex Hudson Greenway* studio will provide urban design support for a planned bicycle and pedestrian linear park extending over eight miles in New Jersey's Essex and Hudson Counties. The future park will connect Montclair to Jersey City and eventually the Hudson River, along the way passing through Glen Ridge, Bloomfield, Belleville, Newark, Kearny, and Secaucus. The new greenway will improve access to nature and create new recreational and transportation opportunities. Like the High Line in New York, it has the potential to transform its surrounding communities.

The studio will work in a coordinated manner with the project leaders: the Open Space Institute, the New Jersey Bike & Walk Coalition, and the September 11th National Memorial Trail Alliance. Under their suggestions and that of other interested parties, the studio will expand upon designs already begun by Mathews Nielsen Landscape Architects. This firm's Framework Plan articulates opportunities for the greenway and the communities along its length, providing analysis of ecological, experiential, and planning aspects of the project. Building upon this process, the studio will design adjacent open spaces, access points, bridges, amenities, and future intersections with other linear parks. The studio will also coordinate with Montclair State University's PSEG Institute for Sustainability Studies, which is supporting the greenway project in various ways.

The studio will follow a two-phase process: For the first half of the semester, students will work in teams to first comprehend the greenway's relationship to the regional bicycle infrastructure grid and then propose enhancements and extensions. During the semester's second half, students will work individually to design specific aspects of this expanded scope. Throughout, students will interact with a variety of parties, project leaders, outside professionals, and community stakeholders to hone their designs. The outcomes will be presented upon completion of the studio to a range of interested parties.



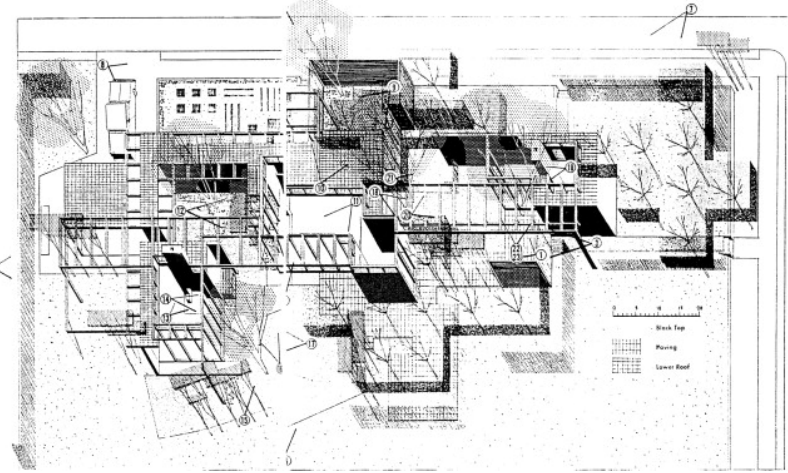
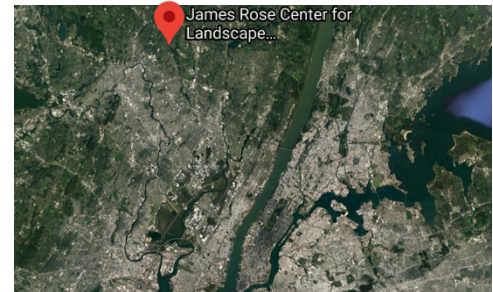
ESSEX HUDSON GREENWAY, Image by Arterial

**TRAVEL:** Regular trips to various sections of the greenway.



OPTIONS STUDIO | ARCH 463/464/563 | Summer 2022 | Kevin Hofmann

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Below: In-out axonometric, *Creative Gardens*, 1954

Architects are familiar with the creative act of making as virtually all architecture offers an addition to the constructed environment. Taking cues from maverick, modernist landscape architect James Rose's improvisational (and often unrecorded) methods, *Ridgewood* investigates how problematizing the "un-making" of an iconic house-and-landscape may be the first step in imagining its future.

its original “basic armature of walls, and roofs, and open spaces.” Next, the studio will adopt treatment strategies (preservation, rehabilitation, restoration, reconstruction) as these frameworks offer creative constraints that lead to unique outcomes, all of which can be understood as “preservation.” For the final, students will describe which aspects of Ridgewood should be made, remade, or un-made, while also justifying how and why.

Site plan of the James C. Rose Landscape Research and Study Center. The plan shows a large, irregular building footprint with various interior spaces, including a central courtyard, a large open area, and several smaller rooms. The building is surrounded by a dense landscape of trees and shrubs. A parking lot is located to the left of the building, and a road is to the right. The plan is oriented with North at the top. A scale bar indicates 0 to 100 feet. A north arrow is in the top right corner. The title "James C. Rose Landscape Research and Study Center" is at the bottom right, with the author "James C. Rose" and the date "May 1988" below it.

This studio begins by thoroughly documenting the Center's extant form – something Rose rarely did – through drawings, models, photographs, research, and in-situ observation. Then, we will explore the un-making of the Center, from its current form back to

**TRAVEL:** We will make several trips to the Center, other Rose-designed gardens, and possibly other iconic modern houses (Manitoga, Raymond Farm, Noyes House, Shofuso).