

## **Advanced Tech Course**

**Title:** Design the Unseen: Research Investigating Health + Energy in Building Design

### **Description**

From the late nineteenth century to much of the early twentieth century, architecture, driven by the rise of urbanism, industry and related disease, was focused on health. Early modernist architects were harnessing prevailing medical science (heliotherapy) to shape architectural expression, from sanatoria, such as Jan Duiker's Zonnenstraal, to urban form, such as Le Corbusier's utopian vision of Ville Radieuse. During this time, the development of building science and the belief that architecture could improve health through informed design began to burgeon. However, the prevailing paradigm was that energy resources were unlimited. Toward the latter half of the twentieth century, the world experienced an oil crisis, which led architects, manufacturers, and building consumers to shift design focus away from health and onto energy conservation.

Today, the building community understands that designing buildings with high energy performance and net zero energy use often separates occupants more distinctly from the outdoors and natural world to maintain control over energy. The resulting new indoor environment concentrates human exposure to materials, pollutants, human microbial communities, lighting and thermal conditions at a time when humans are spending more than 90% of their time in an indoor habitat as they transition to a digital, virtual life. The rapid evolution in habitat is often incongruous with how humans have biologically evolved and adapted, which is now implicated with health effects, and therefore demands that designers consider the unseen elements of the built environment: health + energy.

Understanding how to holistically integrate health + energy in the built environment is an immense, multifaceted challenge requiring creative synthesis of design and science through innovative and unconventional partnerships. Architectural project timelines are fast and are designed with best available evidence. Therefore, it is important for designers to be able to find evidence, validate and apply it, collaborate internally and across disciplines, and continually learn through investigation of built projects using scientific tools that visualize the unseen. For this seminar, students will learn through lecture, discussion, hands-on investigation and collaboration with local design firms to research relevant projects that integrate health + energy and present findings to the design community to better inform future built projects.