Course Title: Topical Studio: Prefabricated Affordable Climate Responsive Housing
Course Number: ARCH 7101: Topical Studio
Instructor: John Nelson, Associate Professor, School of Architecture, UNC Charlotte
Office: 229 School of Architecture, eMail: janelson@uncc.edu
Credit Hours: 5 credit hours
Prerequisites: Arch 6102 | Arch 5301 | Arch 5302

Introduction: Prefabrication is the practice of assembling components of a structure in a factory or other manufacturing site, and transporting complete assemblies or sub-assemblies to the construction site where the structure is to be located. The term is used to distinguish this process from the more conventional construction practice of transporting the basic materials to the construction site where all assembly is carried out.

This topical studio will provide an opportunity for students to research current practices in the design & construction of prefabricated modular affordable housing, develop a set of design strategies based on the research and finally propose a series of architectural design solutions for selected sites within the different climatic regions of North Carolina.

Content: The content of the studio will include the historical context, past work, current practices and future trends in the issues surrounding the design and construction of affordable modular housing. The work of the semester will conclude with a design project that asks each student to incorporate the semester's work into final design proposals for sites located within different climatic regions of North Carolina. The course will be structured so as to include faculty presentations as well as case studies researched and presented by the students. The following set of issues will be introduced and will constitute the dialogue within the studio.

- Brief historical survey of prefabricated affordable housing initiatives in the U.S.
- Climate responsive strategies appropriate for the regional differences found in North Carolina.
- Systems of fabrication and assembly utilized in the construction of affordable housing, including the standards of practice and new advancements in assembly/material strategies.
- Contemporary initiatives of prefabrication/modular construction practices.

Method: The semester will be divided into three parts. During the first weeks of the semester each student will execute a research/case study project that addresses the issues of prefabricated affordable housing. During this portion of the semester, the students will both research and visit a number of modular home manufacturing facilities and project sites. This will also include a documentation and examination of existing communities and neighborhoods which have built examples of manufactured modular housing.

The second portion of the semester will allow the students to apply/incorporate the information collected from the case study and field study work into a series of design proposals for modular units. This portion of the semester will focus on the development, at a large scale, detailed physical models, supplemented by computer drawings, of prefabricated modular units that may be combined in a number of different ways that result in a completed built project. This might include a variety of manufacturing scales from a “kit of parts,” assembled panelized units or modular units.

The final portion of the semester will revisit the opportunities identified earlier in the semester and apply the lessons learned on sites with a clearly defined climate and context. This will also provide an opportunity to investigate alternative combinations of units from multifamily quadruplex units to larger scale affordable housing complexes.
“You take the blue pill – the story ends, you wake up in your bed and believe whatever you want to believe. You take the red pill – you stay in Wonderland and I show you how deep the rabbit-hole goes.”

Morpheus, The Matrix

“Think of it. We are blessed with technology that would be indescribable to our forefathers…. We know now what we could never have known before – that we now have the option for all humanity to make it successfully on this planet in this lifetime. Whether it is to be Utopia or Oblivion will be a touch-and-go relay race right up to the final moment.”

Buckminster Fuller, Critical Path

INSTRUCTOR
Betsy West (bcwest@uncc.edu; Storrs 144; office hours by appt.)

PREMISE  Architecture lives in the public realm. It takes its place in an existing continuum of ideas and artifacts as well as the shifting mores of culture, politics, economics, technology, etc. Architecture that doesn’t respond to the rich milieu into which it is born might be functional and can be beautiful, but cannot be meaningful – to be self-referential is to be socially impotent. The challenge, therefore, is to engage things that intersect the realm of the architect – the tangential, the juxtaposed, the tangible and the intangible – and translate them into the language of architecture.

CONTEXT  On April 2, 2013 President Obama announced the creation of the BRAIN Initiative, a collaborative endeavor between private foundations, research institutions and the federal government to increase understanding of the human brain/mind. This initiative is akin to the Human Genome Project launched in 1987 which has exponentially accelerated genetic research over the past 25 years. As is true of genomics, advances in brain science offer tremendous promise yet inevitably bring with them extremely complex social and ethical issues. Put another way, exploration and manipulation of the brain has both utopian and dystopian potential. Indeed, it is telling that while the National Institute of Health (NIH) and the National Science Foundation (NSF) are dedicating significant resources to the BRAIN Initiative, the single largest source of funding is the Pentagon – specifically the Defense Advanced Research Projects Agency (DARPA).

PROJECT  This studio will focus on the design of a collaborative Brain Research Center that brings together neuroscientists, psychologists, sociologists, computer scientists, philosophers, etc. to work towards the latest advances in cognitive science. This project will be informed by an exploration of architectural, theoretical, social and ethical issues. We will study not only architectural precedents but also current scientific readings in the popular press as well as the work of various artists, filmmakers and writers.

METHODOLOGY  The studio will focus primarily on one building design project informed by significant and wide-ranging research.

OBJECTIVES
• To engage both the poetics and pragmatics inherent in the site and program you are given
• To develop, hone and take ownership of a coherent and effective design process
• To think hard, work hard and have fun.