COURSE / PROJECT DESCRIPTION:

Concrete Workshop : Parametric Precast II is the second installment of a two semester research based workshop focused on developing next generation precast concrete wall systems. Working in groups, the students in the course will develop state-of-the-art variable precast wall systems and will work with Gate Precast to cast full scale prototypes to be installed in the School of Architecture. The workshop will focus on issues of Aesthetics (pattern and composition), Performance (thermal and structural), Process (from forming to erection), Material (cement based steel reinforced structures), and Economics (efficiencies of material and construction). The course will engage the Digital Fabrication Lab where students will be expected to push the limits of computational design and digital fabrication within the context of precast concrete design and construction.

In the fall semester students learned advanced geometry, parametric modeling, and CNC fabrication in the first part of the workshop in order to advance their research and design projects in reinforced precast. The Spring semester will be dedicated to the design and production of a new precast wall system at full scale working directly with industry. Students that were not in the fall course are still encouraged to join in the spring semester and will learn many of the topics that were covered in the fall through direct practice in the design and production of a full scale precast wall system.

PROJECT SPONSORS:

The project sponsors include The Precast Concrete Institute Foundation, Gate Precast, and US Formliner.

FIELD TRIPS:

We will work with the Gate Precast Plant in Nashville to create full scale formwork and castings of the designs in late spring (second semester). In addition we will attempt to visit the Oak Ridge National Laboratory to review Large Scale Additive Manufacturing technologies that are the state-of-the-art in precast mold production.

DELIVERABLES:

Design documentation for a new precast wall system, technical specifications, fabrication workflow map, full-scale mockup.