

Concrete Workshop : Parametric Precast

ARCH 4803/8803 | Spring 2017
Monday 6pm-9pm | Digital Fabrication Laboratory
School of Architecture | Georgia Institute of Technology
Professor Tristan Al-Haddad
Credits: 3 credit hours
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Perot Museum of Natural History | Dallas, Texas | Morphosis Architects | Gate Precast

COURSE / PROJECT DESCRIPTION:

Concrete Workshop : Parametric Precast is a two semester research based workshop focused on developing next generation precast concrete wall systems using conventional reinforcing bars. 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 in Spring 2017. 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 reinforced concrete design and construction.

Students will learn 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. Fundamentals of reinforced concrete design, steel reinforcement detailing, connection design, formwork design, casting / finishing procedures, and erection process will be covered in the workshop. At the same time students will be asked to speculate on new and novel methods of designing and building 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. There will be four teams in the workshop working collaboratively on the design and production.

PROJECT SPONSORS:

The project sponsors include The Concrete Reinforcing Steel Institute, Thomas Concrete, and Gate Precast.

FIELD TRIPS:

The workshop will work at the Gate Precast Plant in Nashville to create full scale formwork and castings of their design in late spring. Details forthcoming.

DELIVERABLES:

Design documentation for a new precast wall system, technical specifications, fabrication workflow map, full-scale prototype (mold to be made by the students in the DFL and cast at the Gate Precast plant in Nashville).