Tulane School of Architecture
ADGM 6800: Computational Design

Fall 2016, T, 6:30-8:45 pm, Room 404
Faculty: David Merlin, AIA, LEED AP (dmerlin@tulane.edu), Room TBD

## COURSE DESCRIPTION

Developments in design technology have afforded the architectural profession the opportunity to advance beyond conventional 3D modeling into parametric modeling. This paradigm associates elements of a model so they can easily flex in a coordinated manner. Initially, architects such as Frank Gehry, Greg Lynn, Zaha Hadid, and Tom Wiscombe used these tools to design formally complex work, but as the paradigm has developed, it's capability to address issues of fabrication, constructability, sustainability, and/or problems of the information age has become abundantly clear. To effectively create and manipulate parametric models, students must first understand the relationship between space and information. Coupling this knowledge with readily available, inexpensive, and powerful computational design tools, creates innumerable design possibilities.

Using the Grasshopper plug-in for Rhino, this course will focus on exploring parametric design methods and techniques with a strong focus on architectural geometry. Course content will start with fundamentals and quickly address geometry subdivision, data management, integrating digital fabrication tools, connecting real time information, and simulations (environmental and physical). Students will apply these techniques to four design problems during the semester using both bottom-up (generative) and top-down (rationalization) methodologies. This will include the use of plug-ins such as Firefly, Kangaroo, Ladybug + Honeybee, and Weaverbird.

## LEARNING OBJECTIVES

_ Illustrate an ability to apply parametric techniques.
_ Illustrate understanding of architectural geometry including points, lines, planes, vectors, curves, surfaces and meshes.
_ Illustrate an ability to distinguish between top-down and bottom-up design methodologies.
_ Demonstrate proficiency in data management by creating and traversing lists and data trees.
_ Demonstrate proficiency in effectively subdivide curves and surfaces.
_ Demonstrate proficiency in sampling data from files, simulations, hardware, and live data streams.

## ATTENDANCE

Attendance for this class is required. Any unexcused absence will directly affect your grade. An excessive number of late arrives will also directly affect your grade. More than one unexcused absences over the course of the semester will result in an administrative withdrawal (WF), which constitutes an "F" on your transcript.