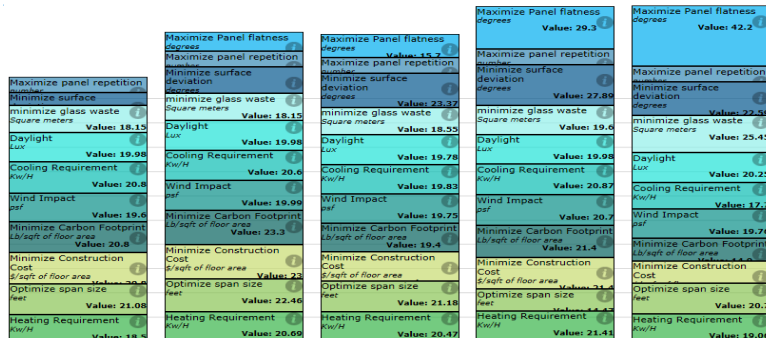


**Georgia Tech College of Architecture
Design Computation Track – Design Space Construction Project**

**ARCH 4803 8803: Design Space Construction
Spring 2014, Instructor: John Haymaker**

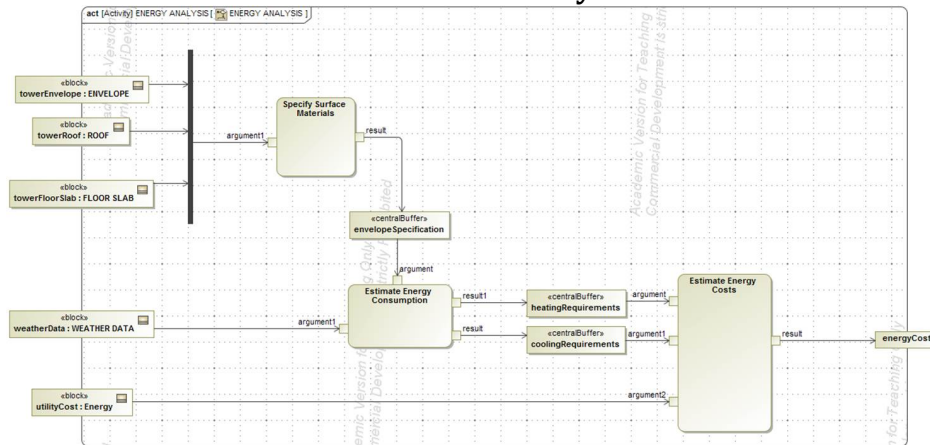
Hands-on application of parametric modeling, multidisciplinary analysis, optimization, and decision methods on real world challenges. Short lectures and tutorials introduce students to each concept, while a semester long project with industry mentors and a multidisciplinary student team applies these concepts and tools real world challenges



	6-7PM	7-8PM	8-9PM	HW Due before 1 PM
week 1	Intro to class	Decision Making Tutorial - Wecision	Define Design Domain Tutorial - SysML	
week 2	Intro to Industry Project 1	Define Block Envelope Diagram Tutorial - SysML	Parametric Envelope Tutorial - Dynamo	Decsion Model, Intro to SysML Tutorial - Install Magic draw
week 3	Intro to Industry Project 2	Energy Analysis Tutorial - Dynamo Define Activite Diagram for Energy - SysML	Tutorial Single Objective Optimization	SysML and Parametric Envelope Models Define Structure Analysis Tutorial - SysML
week 4	Intro to Industry Project 3	Structural Analysis Tutorial - Dynamo	Tutorial SOO - Dynamo	SysML Activity for Energy and Daylight SOO for Energy & Daylight
week 5	Guest Speaker: Parametric Modeling in Practice	Multi-Objective Optimization Tutorial - Dynamo	Apply SysML and Wecision to Group Project	SysML Activity for Structure Updated SOO for Structure
week 6	Project Decision Model Lab	Project SysML Model Lab	Project Parametric Model Lab	Multi-Objective Optimization
week 7	Midterm 1: Project SysML Meta Models, Parametric Models, Decision Models			Project Decision Model Midterm 1 Presentation
week 8	Guest Speaker: Healthcare Analysis	Functional Analysis Lab	Functional Analysis Lab	Project Meta Model (SysML)
week 9	Break			
week 10	Guest Speaker: Energy Analysis	Energy Analysis Lab	Energy Analysis Lab	SySML Models for Energy
week 11	Midterm 2: DM,MM,PM, EM,SM, Other Analyses			Midterm 2 Presentation
week 12	Guest Speaker: Structural Analysis	Structural Analysis Lab	Structural Analysis Lab	SysML Models for Structure
week 13	Guest Speaker Multidisciplinary Optimization and Sensitivity Analysis	MOO Lab	MOO Lab	SySML Models for Optimization Activities
week 14	Midterm 3 DM,MM,PM, EM,SM, Other Analyses, SOO, MOO			Midterm 3 Presentation
week 15	Project Working Lab	Project Working Lab	Project Working Lab	Draft decision model
week 16	Final Project: DM,MM,PM, EM,SM, Other Analyses, SOO, MOO, Decision			Final Project Presentation and Report

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Design Space Exploration
ARCH 4833 8833: Fall/Spring 2014, THURSDAY 6-9 PM
Instructors: Any



This class builds on prior courses in the Design Space Construction curriculum as a launching point from which to speculate on new solutions to the construction of design spaces. Whereas prior built analytical systems to make design decisions, the spring class appropriates these systems for generative purposes and to answer research questions. Students explore how to relax or add constraints, modify and invent new generative systems, add and improve analyses, and invent new optimization or decision-making schemes that result in new design exploration systems, theories, data, and designs.

A semester long project helps students work with industry mentors to apply these concepts and tools to:

- **Work with Systems** of objectives, generative systems, multidisciplinary analysis and optimization tools using the SysML modeling language.
- **Modify a framework of tools and models** that systematize existing design spaces to explore economic, social, and environmental objectives.
- **Explore design spaces** to create informed design propositions.
- Write Research papers that describe your work, and that are publishable at major conferences and journals.

Last updated, April 30, 2014