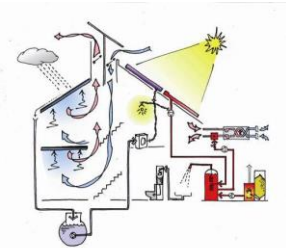
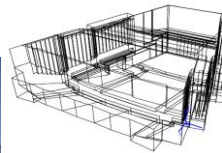
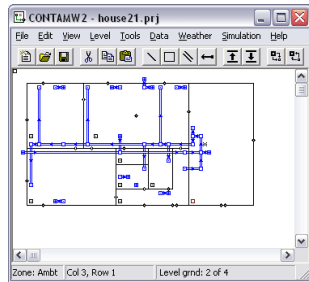


Course **ARCH 6241: Building Simulation in Design Practice**
Time: WF 11:35-12:55, Room CLUC-TBD

Instructor Godfried Augenbroe
HINMAN 228, fried.augenbroe@coa.gatech.edu

Course Objectives Get familiar with mainstream simulation packages to support building design, audit and calibration at various levels of fidelity in the following domains: Solar, Energy, Air Flow and Ventilation, Lighting, Passive Design
Software packages from which we will choose: **Ecotect, EPC Calculator, eQuest, Radiance, DIVA, EnergyPlus, CONTAM, IES-VE, Comfy, Umi** and others



Relationships The course develops the skills necessary for professional use of simulation software both in practice as well as in graduate studies and research projects

Prerequisite **ARCH 6226: Green Construction (Fall 2016)**
Exceptions can be made for students that can prove mastery of engineering analysis in various building technology domains, i.e. energy/HVAC, lighting, visual and thermal comfort.

Learning Objectives Use selected simulation software packages at a beginner's to intermediate level.
Be able to apply them in real life projects.

Procedure Students will get training in class and through software tutorials and webinars. Students will apply the full palette of tools on a selected, monitored GT campus building

Required readings To be suggested during class: mostly software manuals and tutorials and background studies on simulation software

Teaching approach and Assignments Wednesdays will be mostly devoted to class teaching' Fridays will be reserved for tutorial and lab sessions. Incremental simulation assignments:

- Professional site climate analysis: solar, wind and daylight studies
- Simplified whole building energy modeling
- Application: Campus audits and Energy Conservation Measures (ECM)
- Dynamic simulation studies, with focus on one of more of the following:
 - The use of natural ventilation
 - Calibration of building energy models
 - Building control studies

Grading (1) Based on individual report, incrementally developed over the semester.
Throughout the semester students will work on one building and add incremental extensions dealing with first order assessment, dynamic simulation at increasing levels of fidelity, audit, calibration with monitored data.
(2) Final assignment: expert study, looking at an advanced topic of building performance, requiring a dedicated simulation