Course | ARCH 6241: Building Simulation in Design Practice  
| Time: T/R 10:00-10:45, location TBD  
| Labs: THU 12:2:45 for software training sessions

Instructor | Godfried Augenbroe  
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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, EnergyPlus, CONTAM, IES-VE, Comfy, TAS 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 Learning Objectives | ARCH 6226: Green Construction (Fall 2016); No exceptions  
| Use selected simulation software packages at a beginner 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 | Lectures will be mostly devoted to background. The lab sessions are reserved for tutorial and hands-on team work. Incremental simulation assignments:
- Professional site climate analysis: solar, wind and daylight studies
- Simplified whole building energy modeling: EPC
- Application: Campus audits, calibration and optimal selection of ESM’as
- Dynamic simulation studies,
- The use of natural ventilation
- Calibration of high fidelity 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, and calibration with monitored data.
| (2) Final assignment: expert study, looking at an advanced topic of building performance, requiring a dedicated simulation