**School of Architecture | Georgia Tech | Fall 2019**

**ARCH 7015: Urban Design 3**

Instructor: TBD

Meeting Times: M, F, 1:02-6:25, W 1:25-3:25

Classroom: Hinman Studio

Office Hours: TBD

Office Location: TBD

**Course Description**

This studio course is an option for students in the MSUD and MS in High Performance Buildings (HPB) during their final semester. It may be cross-listed with ARCH 6071 Design & Research Studio 1 and be open to students in the M.Arch or MCRP degree.

Urban Design Studio 3 provides MSUD students the opportunity to apply the lessons learned about natural systems in Urban Design Studio 1 and about economic and transportation systems in Urban Design Studio 2 to more forward-looking proposals integrating new performance modeling and data analysis softwares into the process of design and advanced technologies into urban design proposals. In conjunction with the HPB students, the focus is on laying out urban districts so as to reduce energy consumption and greenhouse gas emissions while integrating energy production into high performance urbanism.

In an interdisciplinary context, MSUD students will learn how to generate feedback on urban design proposals from analytical tools on building energy performance, transportation energy performance, urban metabolism, urban heat island and micro-climate design. In turn, students in other degrees will be challenged to expand their thinking to the design and policy implications at the urban scale. The studio will be highly research- and data-driven but conclude with collaboratively-produced applications of the research in detailed design proposals.

Specific research topics and design problems might include: District Energy & Trigeneration, Waste Heat Capture, Microgrids, Smartgrids, Smart Cities, Community Energy & Community Energy Planning, Net-Zero Design, Embodied Energy, Autonomous Urbanism, Low Carbon Cities, Leveraging Excess Capacity, Infrastructure Ecology, Climate Change Mitigation and Adaptation.

# Course Objectives

Below are some of the main objectives and learning outcomes of the course:

* To develop multi-scalar innovative strategies for high performance buildings, infrastructure and urbanism
* To experiment with applying and developing various analytical tools, data sources, and software at multiple scales to enhance urban performance metrics.
* To speculate about the impacts on urban form of new technologies from integrated forms of renewable energy, transport, and water infrastructure to the future role of automation and robotics on where and how we live, work, shop, and recreate.
* To understand the performance of different building types and development patterns on energy efficiency
* To understand the Water-Energy Nexus
* To apply lessons learned from cutting-edge global precedents of high-performance, sustainable urbanism that are calibrated to the climatic and socio-economic conditions of the particular site in question.
* To learn how to use collaboration to foster new ideas and disciplinary expertise to evaluate them

# Assignments

These would vary depending on the particular instructor, research agenda, and design problem.

# Resources

The complete list will vary every semester but would likely include some of the following core components:

* LEED ND (Leadership in Energy and Environmental Design): <https://www.usgbc.org/guide/nd>
* QUEST (Quality Urban Energy Systems of Tomorrow): <https://questcanada.org>
* EPA’s resources for renewable heating and cooling: <https://www.epa.gov/rhc/rhc-project-development-tools>
* City Energy Analyst: <https://cityenergyanalyst.com>
* Urban Footprint: <https://urbanfootprint.com>
* The CI-NERGY project: <http://www.ci-nergy.eu>
* Harrison Fraker, *The Hidden Potential of Sustainable Neighborhoods: Lessons from Low Carbon Communities* (2013)
* Douglas Kelbaugh, *The Urban Fix: Resilient Cities in the War Against Climate Change* (2019)
* Daniel Kammen, “Sustainable Design of Communities Dramatically Reduces Waste,” (*Scientific American*, June, 2017 – “the ecoblock” is one of Top 10 Emerging Technologies to Watch of 2017)
* Specific Case Studies: Masdar City, UAE; Hammarby-Sjostad, Sweden; SMA x Eco Town Harumiai, Japan: Songdo IBD, Korea; BEDZED, UK; GEOS, Arvada, CO, USA; various ecocities, including those visited by MSUD students who participated in the Modern Architecture Modern Cities summer travel semester.

# COURSE POLICIES

**Attendance**

Attendance at all class meetings is mandatory and crucial to successful completion of this course. If you do not present your work or participate in class your course grade will be affected. Attendance will be taken at the beginning of each class period and punctual arrival is required. Late arrivals or departures from class will be counted as absences; more than two unexcused absences or three total absences will be grounds for reduction of your course grade by one full letter grade. Absences will be excused only for medical or family emergencies documented in writing. Don’t jeopardize your overall performance and course grade by skipping class. You are not allowed to work on assignments for other courses during class meeting times for this course.

Your grade for this course will be determined based upon the quality of the work you produce, your improvement over the course of the semester, completion of required course assignments, quality of class participation, and attendance, attitude and ethical conduct.

# Grading

Your grade for this course will be determined based upon the quality of the work you produce, your improvement over the course of the semester, completion of required course assignments, quality of class participation, and attendance, attitude and ethical conduct.

Evaluation of a student’s performance in each course is the responsibility of the instructor for that course. If the grade is disputed, a student may appeal to the instructor for a review. If, after the review, the student still believes that a grade has been assigned unfairly, the student may submit a written request for a grade appeal to the School Chair. The petition must clearly state the reasons for the appeal. A committee of faculty and students will convene to review the work and make a decision as to whether the grade will stand or be changed. Petitions must be settled and a final grade submitted to the registrar no later than three weeks after the end of the term in which the course was completed. The School Chair will inform the student of the committee’s decision regarding the grade appeal, and their decision is final.

A student may receive a grade of incomplete (I) by requesting permission from the instructor prior to the date of the final examination or presentation. Permission will be granted only under extraordinary circumstances and usually for medical reasons. Incompletes must be fulfilled to the satisfaction of the instructor no later than six weeks after the end of term.

# Academic Integrity and Conduct

Georgia Tech aims to cultivate a community based on trust, academic integrity, and honor. Students are expected to act according to the highest ethical standards. All Georgia Tech students should familiarize themselves with and abide by the Georgia Tech Honor Code <http://www.catalog.gatech.edu/rules/18/>.

Student work that presents the ideas or words of others as the student’s own adversely impacts the whole school and may lead to immediate dismissal. Academic dishonesty, including cheating, plagiarism, commissioning academic work by others, or performing academic work on behalf of another student, is strictly prohibited. All persons in the classroom are expected to behave with courtesy towards others and in a way that does not interfere with the regular conduct of the class. Cell phones are to be turned off when students enter the classroom and should remain off for the duration of class: <http://www.catalog.gatech.edu/rules/19/>

# Special Needs

Any student with a disability, that may require accommodation, should contact Office of Disability Services at 404-894-2563 or visit <http://disabilityservices.gatech.edu> to make an appointment to discuss his or her special needs and obtain an accommodations letter. He or she should also schedule an appointment to speak with the course instructor.

# Emergencies

In case of emergency (e.g., fire, accident, or criminal act), please call the Georgia Tech Police at 404-894-2500. Please note that Perry Minyard, IT Support Administrator for the College of Architecture, is also a firefighter and an Emergency Medical Technician (EMT) certified in performing CPR.

# Ownership

Physical copies of student work submitted to the school to satisfy course requirements—including, but not limited to digital files, papers, drawings, and models—become the property of the school. It is assumed as no obligation to safeguard such materials and may, at its discretion, retain them, return them to the student, or discard them.

# Archiving

In some courses, selected students may be required to submit physical examples of their work or digital examples (on a clearly labeled CD), no later than one week after the end of term, to their instructors or administration for archiving. By enrolling, each student grants a license to reproduce and display his or her work. This is a chance for students to have their work shown online and potentially featured in forthcoming publications.

College of Design Facility Rules and Guidelines

Please consult the Georgia Tech Student Handbook regarding the use of facilities and all Institute policies. Aerosol sprays of any kind are strictly banned from the studio and surrounding areas. A new spray painting booth is now in operation in the College of Design shop, on the ground floor of the East Architecture Building.

Shop Use: All students using shop facilities must first have completed an orientation. Safety first, always! Noise should be kept to a minimum. Music may be listened to only through headphones, including evenings and weekends.

Studio Housekeeping: Students should feel free to organize their space creatively and expressively, but with respect to others around them. Try to prevent clutter from becoming a nuisance, distraction, or a hazard. The cleaning staff makes every effort to determine what is and is not trash, but their job can be made easier if you keep drawings and models off of the floor.