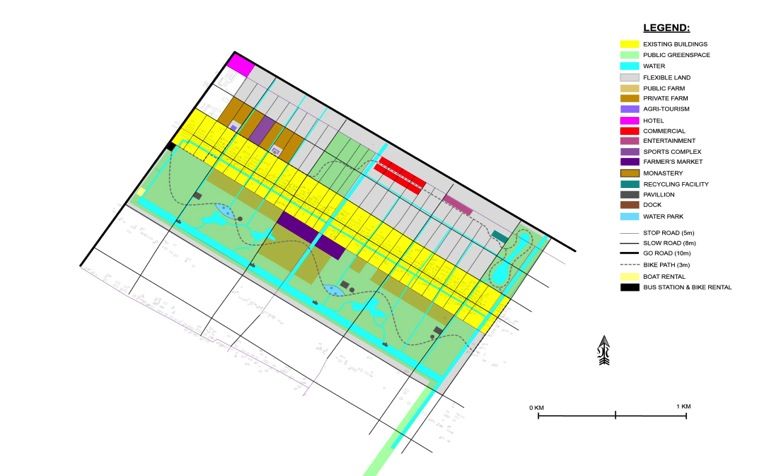
**CP6053 Applied Planning Studio (Urban Design) 6 Credits**



School of City and Regional Planning + School of Architecture, College of Architecture, Georgia Institute of Technology

**10KM2 near Zero Energy District (nZED)** International Urban Design Studio 2016, Shanghai

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Affiliated faculty: Steven Quan (TA): John Koon (Civil and Environmental Engineering); Richard Dagenhart, Alan Balfour

External collaborators: Disney Research China, Tongji University

M/W/F: 2:05- 6:05pm, Eco Urban Lab @ 3rd FL Architecture East, College of Architecture

*Farm City Proposal in Shanghai Chongming Island, 2015 International Urban Design Studio, Georgia Tech and Tongji University*

**Introduction**

Cities as *systems* of energy, materials, water, organism and informational flows are emerging as a fundamental research area for sustainable and resilient urban future. Cities are also seen as a form of *metabolism*, an analogy of organism that contains flows that are organized in complex forms over uncertain and stochastic processes. This perspective gives rise to questions central to sustainable urban design: What are the urban design strategies for cities to be more efficient in energy performance, more renewable in resource management, and more resilient in their systems behavior? What constitutes a new form of future cities that is ecologically and energy resilient to the changes needed for the post-oil urban era to come, and more importantly, how do we design for it?

The International Urban Design Studio 2016 focuses on the design an energy resilient urban system using Shanghai as an urban laboratory. The linkage between modeling and design is a key to the studio process. The studio will address physical, performative, and design dimensions of *flows in cities* and *cities as flows*, which views cities as multi-faceted, layered, interdependent systems, in the context of a Shanghai site adjacent to Disney’s development.

The studio looks at how urban design as an ecological intervention would play a role in shaping future urban forms by ensuring cities’ high performance in energy and systems resiliency. Urban design is seen a way of synthesizing complex environmental and social problems, a tool connecting analyses and projections for future scenarios based on urban modeling and simulation of flows, as well as an interventional approach creatively designing novel urban forms across different scales from buildings, landscapes, urban districts to a city.

The studio is connected to the *Sino-U.S.* *Eco Urban Lab*, a research initiative of both COA of Georgia Tech at Atlanta campus and CAUP of Tongji University in Shanghai, in collaboration with Disney Research China, a Disney’s laboratory in Shanghai for the 10KM2 nNED project. The studio is a 6-credit hours, intensive and interactive workshop-like learning environment on Monday, Wednesday and Friday from 2-6pm. We expect students to participate in an international field trip to Shanghai for a workshop during the spring break in March 2016. Students should be prepared to pay for their own airfares, travel insurance and visa to enter China. The local accommodations will be arranged during the period of workshop in Shanghai. The studio welcomes Senior and Junior architecture students, as well as MCRP students from various backgrounds, including specializations in urban design, GIS, economic development, environmental planning and/or those enrolled in other degree programs such as Master of Architecture, MS in GIS, MS in Architecture (High Performance Building) and students from Civil and Environmental Engineering.

**Course objectives**

At the end of semester, students will be able to:

* Conduct problem definitions for an urban design project
* Conduct the site and urban analysis using mapping tools and diagrammatic techniques
* Be familiar with basic elements of urban form and principles of urban design
* Conduct performance-based analysis using simple modeling tools based on students’ individual focus in the studio project, ranging from GIS-based vertical overlay mapping, urban form and density measure, accessibility and connectivity analysis, visual quality analysis, urban microclimate modeling, building energy modeling and/or parametric design for simple 3D form making.
* Design a process for organizing data collection, analysis and scenario making.
* Design a process to engage participants and stakeholders in planning context
* Prepare an urban design master plan, and organize a professional urban design and planning report.

**Criteria of Performance Evaluation and Grading Protocol**

1. 10% Stage one: First project from Week one to Week three
2. 40% Stage two: Midterm Review and Midterm Report
3. 50% Stage three: Final Review and Final Report

**Course Policy**

In general, the following guidelines apply to this course:

1. Engage yourself in class activities so you can maximize your learning. Before coming to the class, please review required materials and be prepared for discussion. Class participation grades will reflect your participation in these activities, not just your attendance.
2. If events prevent you from attending a class, please let me know in advance by e-mail.
3. Please follow the due date on your problem sets or assignments. Late work will not be accepted unless emergent events happen.
4. Academic honor code and student code of conduct**:**

All students should be knowledgeable of the Georgia Institute of Technology Academic Honor Code. The Georgia Tech Academic Honor Code (<http://www.catalog.gatech.edu/rules/18b.php>)  and Student Code of Conduct (<http://www.catalog.gatech.edu/rules/19b.php>)  outline the Institute’s expectations for the integrity of students’ academic work, the procedures for resolving alleged violations of those expectations, and the rights and responsibilities of students and faculty members throughout the process.  Students are responsible for reading these two documents fully and for living up to them.  Among the Codes’ provisions are expectations about unauthorized access, unauthorized collaboration, plagiarism, false claims of performance, grade alteration, falsification, forgery and distortion.  You should be absolutely clear in indicating when you have used ideas or words that are not your own. You are permitted to discuss the written assignments in this course with your fellow classmates, but, except for group assignments, you should not collaborate on your submissions.

1. Students with disabilities:
2. Students with disabilities needing academic accommodation should provide documentation tthe

Office of Disability Services, disabilityservices.gatech.edu, and bring an accommodation letter to the instructor indicating the nature of accommodations required.  This should be done within the first week of class or as soon as possible after a new disability condition arises.  All effort will be made to provide reasonable accommodation

**Studio Schedule**

**PART I: STUDIO AS AN URBAN LABORATORY (WEEKS 1-6)**

***Week 1-3***

***Project ONE - Modeling urban spatial structure: Manhattan, Tokyo and Shanghai***

1. Introduction

1/11 Monday 2pm: Studio space arrangement and data preparation

2pm: Studio briefing and lottery (Architecture group)

4-5pm: **MCRP group meeting**

1/13 Wednesday 2-3pm: **Introduction**

***3pm: Integrated infrastructure and 10KM2 nZED***

***Talk from Ben Schwegler, Director of Disney Research China***

***(Video conference talk, TBA)***

5-6pm: Outline of tutorial on framework, data and tools

1/15 Friday Tutorial: GIS and data grouping on Manhattan, Tokyo and Shanghai

1. Data construction and mapping

1/18 Monday Public Holiday

1/20 Wednesday ***Urban form structure, Grid as generator***

Tutorial: Basic GIS mapping: Figure-ground mapping, overlay mapping

1/22 Friday Tutorial: Environmental mapping, artificial topography

1. Compiling site data, redefining problems and making studio propositions

1/25 Monday: Work session (Tutorial TBA)

1/27 Wednesday ***Cities as perceived environment, measuring immeasurable***

Tutorial: Data management and software integration

1/29 Friday OIE briefing

Group presentation on Urban Spatial Structure

Tutorial: Viewshed mapping

***Week 4 -6***

***Project TWO - Modeling alternative urban forms***

1. Urban form parameters

2/01 Monday Work session (Tutorial TBA)

2/03 Wednesday ***Model A: Science for Design - density, typology and performance***

Tutorial: Skyline mapping

2/05 Friday Small group presentation

Tutorial: Building energy simulation

1. Alternative conceptual design

2/08 Monday Work session (Tutorial TBA)

2/10       Wednesday ***Model B: Design in Science, Design as a creative process***

Tutorial: Solar radiation mapping (1)

2/12       Friday Groups presentation

Tutorial: Solar radiation mapping (2)

1. Geodesign model: putting pieces together

2/15      Monday Work session (Tutorial TBA)

2/17       Wednesday ***Geodesign model: putting pieces together***

Tutorial: MDO

2/19       Friday Internal review of Geodesign

**PART II: INTERNATIONAL CO-DESIGN WORKSHOP (WEEKS 7-12)**

***Week 7 -10***

***Project THREE: – 10KM2 near Zero Energy District (from model to conceptual design)***

***Co-design workshop I -- at Georgia Tech Atlanta***

1. Co-design workshop (process design)

2/22      Monday Disney Lab Director Ben Schwegler and Research Director Cheryl Chi to join the co-design workshop

2/24       Wednesday **12pm:** **Ben Schwegler’s public lecture for the College of Architecture**

**3:30pm: Ben’s talk at Studio on MDO**

2/26       Friday

1. Co-design workshop (prototyping)

2/29      Monday

3/02       Wednesday

3/04       Friday 2-6pm, **Midterm Review**

1. Formulating alternative designs and modeling

3/07 Monday Work session (Tutorial TBA)

3/09 Wednesday Tutorial: Hydrology mapping

3/11 Friday Tutorial: Workflow of urban performance analysis

1. Field trip preparation

3/14 Monday Work session (Tutorial TBA)

3/16 Wednesday **Midterm-report submission**

3/18 Friday Depart from Atlanta to Shanghai

***Week 11 - 13***

***Co-design workshop II – Field trip and On-Site Workshop in Shanghai***

***(Georgia Tech Group to visit Tongji University, Shanghai)***

1. 3/19, 3/20 Arrival Shanghai

**3/21 workshop kick-off meeting**

3/22 site inventory/ Co-working workshop

3/23 site inventory/ Co-working workshop

3/24 workshop

3/25 workshop

3/26 **One-day Symposium and Project Presentation**

3/27 city visitation

3/28 Departure from Shanghai to Atlanta

1. Journal writing and studio website

3/28 Monday Back to Atlanta

3/30 Wednesday Writing journals regarding issues learned from the workshop

4/01 Friday Updating the studio website, media and publicity

Reflections on workshop and field trip experiences

Defining the final project and final report framework

**PART III: PLAN MAKING AND FINAL PRODUCTION (WEEKS 13-15)**

***Week 13-15***

***Final design and final report***

1. 4/04 Monday Revision of the midterm report based on the workshop

4/06 Wednesday desk crit

4/08 Friday **Pin-up session**

1. 4/11 Monday desk crit

4/13 Wednesday desk crit

4/15 Friday **Pin-up session**

1. 4/18 Monday Final production

4/20 Wednesday Final production

**4/22 Friday Final Review**

**References**

* Batty M, 2011, “Cities as flows, cities of flows”, in *Environment and Planning B: Planning and Design*, Volume 38 195-19.
* Head P, 2009, *Entering the Ecological Age: the Engineers’ Role*. ARUP, Site for download: <http://publications.arup.com/Publications/E/Entering_the_Ecological_Age_the_engineers_role.aspx>
* [Hewlett](mailto:mark.hewlett@atkinsglobal.com?subject=ELC%20Urban%20Planning%20Methodology%20-%20information%20request) M, 2014. *Eco-Low Carbon Urban Planning Guidance for China*. ATKINS, Site for download: <http://www.atkinsglobal.com/en-GB/group/sectors-and-services/services/future-proofing-cities/overview>
* Koolhaas R, Obrist H U, 2012, *Project Japan: Metabolism Talks*, Taschen.
* Lynch K, 1990, *City Sense and City Design: Writings and Projects of Kevin Lynch*, edited by T. Banerjee and M. Southworth, MIT Press.
* Oswald F, Baccini P, 2003, *Netzstadt: Designing the Urban*. Birkhauser, Berlin.
* World Architecture (WA), 2010, *Ecological Urbanism*, January Issue in *WA*, Tsinghua University, Beijing China.
* Yang, Perry P. J. 2014. Energy resilient urban planning, in *Geodesign: Integrating design and geospatial science*, Scholten H, Lee D and Dias E eds., Springer.