

Spring 2018 School of City and Regional Planning and School of Architecture
College of Design, Georgia Institute of Technology
CP6836-C/ ARCH6447-PY/ ARCH4803-PY
Urban Ecological Design

Perry P. J. Yang
Contact: perry.yang@design.gatech.edu
Time: Friday 9am-12pm; Venue: TBA



Abstract: The course engages the contemporary issues of urban ecology and its articulation to design in urban settings. The new commitment of the co-habitation of nature and built environment has drawn attentions of city planners, urban designers and architects. The discourses of urban sustainability have to move away from social sufficiency, ecological efficiency to systems compatibility by linking the urban forms and ecological flows in urban, industrial and natural systems. The climate challenges require design and planning professionals to deal with how cities could be analyzed, designed, managed, evaluated, represented and changed to meet the goals of shaping ecological, sustainable and resilient urban future. Defined by two categories *Forms* and *Flows*, the course covers theories, methods, tools and case studies of ecologically sound urban systems design. The first session *Theory and Method* introduces foundational theories in urban design, urban ecology, ecological design, and engages contemporary debates in urban sustainability and ecological urbanism. The second session *Forms and Flows* deals with urban form and its relationship to ecological flows such as energy, water, landscape ecological structure and information. The third session: *Urban Systems Design* covers theories and issues that address the concepts of urban ecosystems, urban metabolism and how cities are structured and designed based on those principles. The course concludes with a synthesis of design method for ecological urban systems, in which urban design is seen as an ecological intervention and modeling tools for synthesizing complex system issues. Students are expected to participate in lecture series, tutorials and seminars actively. The course this year has a special focus on smart city design. By selecting one specific theme under the course framework, students will participate in research teamwork and work on individual term paper over the semester.

PART I - Theory and Method

1. 1/12 Introduction: Urban design, urban ecology and ecological design
2. 1/19 Urban sustainability, ecological urbanism and smart city movement
Ecological city-regions in global context

PART II – Forms and Flows:

3. 1/26 Landscape ecological flow: design for ecologically sound landscape patterns
4. 2/02 Urban-nature edges and landscape urbanism
Global waterfront design and redevelopment
5. 2/09 Energy and urban form
6. 2/16 Smart building and internet of things (Kanae Matsui)
7. 2/23 Informational city and Geodesign
8. 3/02 Seminar: 1) density and urban form; 2) energy, urban form and design
9. 3/09 Seminar: 3) water-energy-food nexus in urban design; 4) eco city performance metrics

PART III: Urban Systems Design

10. 3/16 Urban ecosystems (Marc Weissburg/ TBA)
11. 3/23 Spring Break
12. 3/30 Design for urban metabolism and organized complexity
13. 4/06 Students' project presentation (1)
14. 4/13 Students' project presentation (2)
15. 4/20 A synthesis: urban systems design for smart cities