

IASUR

International Alliance for Sustainable Urbanization and Regeneration

November 21, 2016

Call for Participants Urawa Misono Smart City Studio Workshop March 19-25, 2017

Dear Graduate Students,

IASUR (International Alliance for Sustainable Urbanization and Regeneration | <http://www.iasur.org>) is joining the “On-Site Workshop” of the “Urawa Misono Smart City Studio” conducted by Associate Professor Perry Yang for School of City and Regional Planning and School of Architecture, College of Design, Georgia Institute of Technology. The aim and the schedule of the studio are described in the following pages.

IASUR is calling for graduate students of architecture, civil engineering, urban planning/design and environmental engineering who are interested in participating in the “On-Site Workshop” part of the studio which will take place in Tokyo, Saitama and Tsukuba from March 19 to 25, 2017.

The details will be explained in the pre-workshop meeting planned to be held in mid to late December 2016. If you are interested in taking part, please send a message with your name and affiliation to Associate Professor Akito Murayama, Department of Urban Engineering, The University of Tokyo by December 11. Please also feel free to ask any questions. The e-mail address for registration and questions is event@up.t.u-tokyo.ac.jp

Best regards,

Akito Murayama

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event@up.t.u-tokyo.ac.jp

School of City and Regional Planning + School of Architecture, College of Design,
Georgia Institute of Technology, in collaboration with
National Institute of Environmental Studies of Japan and Global Carbon Project
International Alliance for Sustainable Urbanization and Regeneration
Department of Urban Engineering, the University of Tokyo

2017 Tokyo Smart City Studio

Misono Project - a Tokyo 2020 Olympics Site

Perry Yang, Georgia Institute of Technology (Contact: perry.yang@design.gatech.edu)
Collaborators: Yoshiki Yamagata, National Institute of Environmental Studies Japan, Global
Carbon Project; Akito Murayama, Department of Urban Engineering, University of Tokyo /
International Alliance for Sustainable Urbanization and Regeneration

What is not yet clearly demonstrated and understood is that human species have created a completely new environment – a human-made one, in which the complexity and scale of the form is comparable to nature [1]. (The Shape of Community, Chermayeff & Tzonis, 1971)

*How does the complexity problem be managed when the system boundary is moved up from the scale of building to urban systems? What are the dynamic relationships of the cross-scale systems? How do we connect energy, material and water flows through **infrastructural systems** and **urban form making** across scales from buildings, blocks, neighborhoods to a city? Based on the Panarchy theory, how do we design **a focal scale** that can be used for bridging scales below (buildings/households) and above (cities and regions) to meet net zero objectives? [2] (The Complexity Question of Urban Systems Design, Yang, 2012)*



Design for urban metabolism: Tokyo Bay proposal 1960, Kenzo Tange

Urban resilience is becoming an increasingly pressing issue after recent natural or human-induced disasters, such as the Tōhoku earthquake and tsunami that caused the Fukushima disaster in Japan in 2011. The 2017 International Urban Design Studio address the question of how cities should be planned, designed, managed and restructured to be more resilient to future changes caused by potential shocks, using the Tokyo 2020 Olympics site as a test bed. In order to better prepare for the 2020 Olympics event and longer term sustainable and resilient future city life, a framework for designing resilient urban forms that adapt to, mitigate or prevent disasters such as earthquake, heat wave, flooding and blackout...etc. will be needed. Contemporary cities, however, were not necessarily designed with resiliency in mind. Urban form, street patterns, block structures and building typologies are often produced according to organizational principles other than resilience to climate change. Tokyo as a global mega city has been seen an urban laboratory that owns intellectual legacy such as the movement of urban metabolism from 1950s that sees cities as adaptable systems for accommodating future changes. Its complex urban form, agglomerations of physical, cultural and technological system provide a test bed for reflecting contemporary urbanism of our time.

The Tokyo Smart City Studio investigates one of Tokyo's 2020 Olympics sites at Misono, a satellite town of Tokyo's metropolitan region, and focuses on how smart city technologies and tools such as 3D GIS, urban energy modeling, eco district certification such as LEED ND, IOT (internet of things), pervasive computing and big data can be incorporated in design processes to address those problems in the shaping of ecologically responsive, system resilient and human sensing urban environment. The Studio is in collaborations with the Global Carbon Projects (GCP), National Institute of Environmental Studies (NIES) at Tsukuba Japan and Department of Urban Engineering of the University of Tokyo. It is an urban design studio that provides an intensive and interactive workshop-like learning environment. We expect students to participate in an international field trip to Tokyo for a workshop during the spring break March 17-27, 2017. The local accommodation will be supported by our local partners. However, students should be prepared to pay for their own airfares, travel insurance and living expenses while in Tokyo (and visa to enter Japan if it is required). The studio welcomes MARCH and MCRP students from various backgrounds, including specializations in urban design, GIS, economic development, environmental planning and health, as well as students enrolled in programs of MSGIST, MS in Architecture (High Performance Building), MSUD and Master of Science in Civil and Environmental Engineering.



The Misono smart city project, a Tokyo 2020 Olympics Site

Studio Schedule (Tentative)

PART I: STUDIO AS AN URBAN LABORATORY (WEEKS 1-9)

- Week 1-3: Modeling urban form
- Week 4-6: Local Climate Zones and Human Comfort in Cities
- Week 7-8: Urban Energy and Urban Carbon Mapping
- Week 9: Alternative Urban Scenarios and Assessment

PART II: CO-DESIGN WORKSHOP (WEEKS 10-12)

- Week 10 – 12: Midterm Report, **Field trip and On-Site Workshop in Tokyo**

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

- Week 13-15: Final design and final report

PART I: STUDIO AS AN URBAN LABORATORY (WEEKS 1-9)

Week 1-3

Modeling urban form

1. Introduction:
1/09 Monday 2pm: Studio space arrangement and data preparation
2pm: Studio briefing and lottery (Architecture group)
4-5pm: MCRP group meeting
1/11 Wednesday 2-3pm: Introduction and MArch group meeting
3-4pm: Urban Metabolism in Japan from 1950s
4-6pm: Outline of tutorial on framework, data and tools
1/13 Friday Tutorial: Data management, GIS mapping: figure-ground & land covers

2. Mapping: 100KM² to 1KM² (Large to Medium scales)
Conceptual Sketches – setting the goals in urban context
1/16 Monday Work Session
1/18 Wednesday Crit Session
Urban form structure, Grid as generator
1/20 Friday Tutorial: 3D GIS - Cities as 3D artificial topography

3. 3D Modeling: 1KM² to street blocks (Medium to Small scales)
Conceptual Sketches – street networks and block typologies
1/23 Monday: Work session
1/25 Wednesday Crit Session
Density and typology
1/27 Friday OIE briefing
Tutorial: Viewshed analysis and Sky View Factor

Week 4 -5

Local Climate Zones and Human Comfort in Cities

4. Local climate zones
Conceptual design I
1/30 Monday Work session
2/01 Wednesday Crit Session
Local Climate Zones, Urban Canyon and Sky View Factor mapping
2/03 Friday Tutorial: Human Movement: Walkability, Connectivity, and Mobility

5. Human movement, walkability and mobility
Conceptual design I
2/06 Monday Work session
2/08 Wednesday Crit Session
Simulation of Sequential Movement (visual quality, sky opening, walkability and human comfort) in cities
2/10 Friday Tutorial: Building Energy modeling

Week 6-7

Urban Energy and Carbon Mapping

6. Building typology and energy performance
Conceptual design I to II – Iteration
2/13 Monday Work session

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|------|-----------|---------------------------------|
| 2/15 | Wednesday | Building energy modeling |
| 2/17 | Friday | Tutorial: GIS Solar analysis |
7. Urban carbon mapping
- Conceptual design II**
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| 2/20 | Monday | Work session |
| 2/22 | Wednesday | Urban carbon mapping |
| 2/24 | Friday | Tutorial: LEED ND assessment/
A synthesis of performance modeling tools |

Week 8-9

From Performance Modeling to Assessment

8. LEED ND assessment/ Geodesign: putting pieces together
- Conceptual design II**
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|-------------|---------------|---|
| 2/27 | Monday | Work session |
| 3/01 | Wednesday | Connecting Performance modeling and LEED ND/ Geodesign |
| 3/03 | Friday | 2-6pm, <u>Midterm Review</u> |
9. Human sensing environment
- Conceptual design II to III: Iteration**
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| 3/06 | Monday | Work session |
| 3/08 | Wednesday | Human sensing environment in cities
<i>(i.e. Using sensors, Internet of Things and Big data)</i> |
| 3/10 | Friday | Work session on midterm report |

PART II: CO-DESIGN WORKSHOP (WEEKS 10-12)

Week 10 - 12

Midterm Report, Field trip and On-Site Workshop in Tokyo

10. Midterm Report and Field trip preparation
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|------|-----------|---|
| 3/13 | Monday | Work session on midterm report |
| 3/15 | Wednesday | Midterm-report submission
Core team to depart from Atlanta to Tokyo |
| 3/17 | Friday | Whole team to depart from Atlanta to Tokyo |
11. On-site workshop in Tokyo
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|------|-----------|--|
| 3/17 | Friday | Core team to arrive Tokyo- Tsukuba |
| 3/18 | Saturday | Whole team to arrive Tokyo- Tsukuba* |
| 3/19 | Sunday | 10am meeting at Misono Urban Design Center (UDCMi)/ Field work on Site at Saitama City - Urawa Misono and Kawagoe |
| 3/20 | Monday | Morning: Field work at Tokyo Olympic Site (Central Tokyo)
Afternoon: Symposium at the University of Tokyo (with Professor Michael Batty) |
| 3/21 | Tuesday | Workshop kick-off meeting at the University of Tokyo |
| 3/22 | Wednesday | Workshop at the University of Tokyo |
| 3/23 | Thursday | Workshop at NIES at Tsukuba |
| 3/24 | Friday | Workshop at NIES at Tsukuba |
| 3/25 | Saturday | On-site Community Meeting and Project Presentation |
| 3/26 | Sunday | City visitation (Tokyo Fish market) |
| 3/27 | Monday | Departure from Tokyo to Atlanta |

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| 12. | Workshop report, journal writing and studio website |
| 3/27 | Monday Back to Atlanta |
| 3/29 | Wednesday Writing journals regarding issues learned from the workshop |
| 3/31 | Friday Workshop report due |
| | Updating the studio website, media and publicity |
| | Reflections on workshop and field trip experiences |
| | Defining the final-stage project framework |

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

Week 13-15

Final design and final report

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| 13. | 4/03 Monday | Revision of the midterm report based on the workshop |
| | 4/05 Wednesday | desk crit |
| | 4/07 Friday | Pin-up session |
| 14. | 4/10 Monday | desk crit |
| | 4/12 Wednesday | desk crit |
| | 4/14 Friday | Pin-up session |
| 15. | 4/17 Monday | Final production |
| | 4/19 Wednesday | Final production |
| | 4/21 Friday | Final Review |

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