

Spring 2016  
URPL-GP.2614

## **Intelligent Cities: Technology, Policy and Planning**

Fridays, January 25 – May 9, 2016, 10 - 11:40 a.m.  
Waverly Building, 24 Waverly Place, Room 566A

Instructor:

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Office hours: Fridays 11am-12pm (right after class) or by appointment, at Puck Building, Room 2303.

### **COURSE OVERVIEW**

Global urbanization is driving demand for an estimated \$40 trillion in infrastructure over the next two decades. At the same time information technology is spreading off the desktop and out of offices and homes into buildings, infrastructure and objects. As these two trends collide, a broad range of stakeholders -- the information technology industry, real estate developers, technology startups, citizens and civic leaders – are all looking for new opportunities to address both existing and emerging urban problems using “intelligent” systems. This course will explore the landscape of technologies being used in urban planning and policymaking today and will discuss:

- What are intelligent cities really?
- What are the intended and unintended potential consequences?
- What is the role of urban policy and planning in shaping their evolution?

The Spring 2016 edition of this course will focus on emerging topics in intelligent cities: data and predictive analytics, open data, citizen science, smart transportation and digital master planning.

Students are expected to have some basic knowledge of fundamentals of urban affairs. This is not a technology or engineering course – technical concepts will be explored during the lectures as needed to explain their significance for cities.

*Students are expected to do the required reading before class and be prepared to discuss the readings in class.*

*Plagiarism will result in a failing grade.*

### **REQUIRED AND SUPPLEMENTAL READING**

#### **Course Texts (Available at NYU Bookstore):**

*Smart Cities: Big Data, Civic Hackers and the Quest for A New Utopia.* Anthony M. Townsend.  
(W.W. Norton & Co., 2013)

*The Responsive City: Engaging Communities Through Data-Smart Governance 1st Edition.* Stephen Goldsmith and Susan Crawford. (Jossey-Bass, 2014)

*Beyond Transparency: Open Data and the Future of Civic Innovation.* Brett Goldstein (Editor). (Code for America Press, 2013) This text is available as a book or online for free at <http://beyondtransparency.org/>

**Additional Required Readings:** There will be additional required reading(s) every week. All course readings are available for download on the NYU Classes site for this course.

## **COURSE WEBSITE**

**Publishing on Medium:** To submit signals, news-focused writing assignments (detailed below), throughout the semester, you will need to setup an account on Medium (medium.com) Medium is a very simple system for web publishing; I'll give a brief demo in the first class.

Once you have set up your account, please send me your username (sarahkaufman@nyu.edu) by February 2nd so I can add you as a writer for this collection. Anything you post here will be public. Let me know if you are not comfortable with this and we can make other arrangements to submit signals.

The course publication (collection of writings) will be here:

<http://medium.com/intelligent-cities>

We will be curating submitted class signals into this collection.

## **ASSIGNMENTS & GRADING**

Grading Breakdown:

Participation in class discussions – 15%

Future Signals -- 25%

Policy Memo – 20%

Final Project – 40%

### **Participation in class discussions – 15%**

Students must contribute to group discussions with ideas, reactions and questions indicating a thorough reading of assignments and engagement in class topics.

### **Future Signals (5% per assignment, 25% of overall grade)**

For five classes, students must submit a “signal” of a recent development in intelligent cities, related to the reading and the upcoming week’s topic. Signals are submitted by posting them to your Medium account. Please email me (sarahkaufman@nyu.edu) once you’ve posted as confirmation.

Sign up for your signal weeks on this spreadsheet: <http://bit.ly/ICsignals>

**\*\*\*SIGNALS ARE DUE THURSDAYS AT NOON\*\*\***

Description: A signal is a news item, research paper, photograph, video or other content that represents a direction of change or emerging trend. Each signal should contain a pointer to the document (a URL, or APA-style citation) and a 200-250 word (~1 page) synopsis highlighting the key development(s) in the signal and your interpretation of its significance for urban policy, planning or design.

You should choose and document the signals so that they are building on each other rather than being a random collection of links. In successive weeks, draw connections back to what you submitted in earlier weeks. Basically, you should think of this process as research, note-taking, and idea refinement for your final paper.

### **Policy Memo (20% of grade)**

Students must submit a policy memo of 3-4 pages recommending a policy problem be solved with:

- A specific data set and why it was chosen
- Method of analyzing the data set
- Recommended actions based on data
- Assumed outcomes
- Potential challenges and limitations

**\*\*\*MEMOS ARE DUE MARCH 21<sup>st</sup> at 5pm\*\*\***

Memos should be submitted by email or Google Doc (with email notification).

### **Final project: paper and presentation (40% of grade)**

Students must submit a written position paper of 8-10 pages (maximum 2500 words, plus images and illustrations) examining some aspect of the following topics:

- The use of data/big data in urban policy, planning or research involving universities, city governments, citizen scientists, or some combination of them.
- The practice of long-range technology planning in local government.

Your paper must be based on original research (i.e. primary documents, interviews, or objects – not media or blog syntheses). It should be expository – making an argument about the efficacy or deficiency of some intelligent city policy, planning or design issue or problem. Other kinds of design, technology or research projects will be considered by special request. This project will also be presented in one of the last two class sessions.

**\*\*\*FINAL PROJECTS ARE DUE MAY 15<sup>th</sup> at 5pm\*\*\***

Papers should be submitted by email.

### **CLASS FORMAT**

Each class will generally consist of: student sharing of signals, instructor lecture about weekly topic, class discussion, and tech demos. Several classes will have guest speakers working on the topics at hand. They will be announced before class; please come prepared with questions.



## CLASS SCHEDULE

### **January 29 (Week 1): Welcome; Course expectations; perspectives and assignments**

Smart Cities and the Data Revolution: Past, Present and Future

Historical relationship between urbanization and information technology – contemporary urbanization – rise of ubiquitous computing – the “smart cities” movement – key stakeholders – model “smart cities” in Korea and Abu Dhabi – big urban data – emerging conflicts and precedents in 20th urban policy, planning and design.

Readings:

- *Smart Cities*: Preface, Introduction “Urbanization and Ubiquity”, & Ch. 1 “The \$100 Billion Jackpot”
- *Beyond Transparency*, Ch. 1, “Open Data and Open Discourse at Boston Public Schools,” Ch. 2, “Open Data in Chicago: Game On”
- Survey: “Clever Cities”, *The Economist*, September 7, 2013. (Available on NYU classes)

Tech demos:

- Setting up a Medium blog.
- Video: 48 Hours on Citi Bike - <http://www.citylab.com/commute/2014/04/48-madcap-hours-life-citi-bike/8778/>

### **February 5 (Week 2): Technology and Local Government**

\*\*\*Please note: 1st signal due by Thursday 12pm.\*\*\*

Local government emergent role as master integrator of smart city solutions – Application areas for technology-enabled infrastructure, service delivery and governance solutions – Leading cities – Open government movement and open data – Long-range technology strategy and digital master planning.

Required Readings:

- *Smart Cities*, Ch. 7, “Reinventing City Hall”
- *Beyond Transparency*, Ch. 4, “Lessons from the London Datastore”
- *The Responsive City*, Foreword, Introduction.
- Choose one: *The City of Chicago Technology Plan* or *A Digital Master Plan for Dublin* (or locate an urban technology plan of your choosing)

### **February 12 (Week 3): Urban Automation & Predictive Analytics**

Origins of cybernetics and computer simulation of cities and urban policy – the rise and fall of big urban models – evolution of GIS and planning support systems, decision-support systems – predictive urban analytics and big urban data – role of technology companies, think tanks, and universities as technical advisors to city governments – NYC MoDA.

Readings:

- *Smart Cities*, Ch. 2 “Cybernetics Redux”
- *Beyond Transparency*, Ch. 15 “Beyond Open Data: The Data-Driven City”
- *The Responsive City*, Ch. 4, “The City as Digital Platform”

### **February 19 (Week 4): Local government and the civic tech movement**

“Civic Hacktivism” – smart city startups – hackathons and civic hackers – open source and open data - Freedom of Information Act – open hardware, and open networks – the case of NYU’s ITP program – prospects and evolution of civic tech movement.

Reading:

- *Smart Cities*, Ch. 4 “The Open-Source Metropolis” and Ch. 5 “Tinkering Towards Utopia”, Ch. 8 first section on “Summer of Smart”
- *Beyond Transparency*, Ch. 9, “Oakland and the Search for the Open City,” and Ch. 10, “Pioneering Open Data Standards: The GTFS Story”

### **February 26 (Week 5): Citizen science**

Unofficial data sources – Data accuracy and ethics – analysis - Sensors on people and infrastructure - Cell phone data - Social media analytics  
Case studies: NYC Parks Department Trees Count, WNYC Cicada Tracker

Readings:

- *Beyond Transparency*, Ch. 11, “Making a Habit out of Civic Engagement: How the Culture of Open Data is Reframing Civic Life”
- All Tech Considered, “A Data Analyst’s Blog Is Transforming How New Yorkers See Their City,” Dec 2014.

### **March 4 (Week 6): Data Analysis**

Introduction to tools for data analysis and visualization - Methods for incorporating output from these tools into policy reports, presentations and websites.

Tech Demo: CartoDB

Readings:

- *Beyond Transparency*, Ch. 12, “The Beginning of a Beautiful Friendship: Data and Design in Innovative Citizen Experiences,” Ch. 13, “Generating Economic Value Through Open Data,” and Ch. 16, “Why Data Must Drive Decisions in Government”
- Glaeser et al, “Big Data and Big Cities: The Promises and Limitations of Improved Measures for Urban Life,” December 2015.

## **March 11 (Week 7)**

### **In-class data deep dive group exercise**

Students will be presented with an urban policy issue. Working together, the class will investigate the issue using publicly accessible data and will map and communicate results. This exercise will be a model for the Policy Memo assignment.

## **March 18 (Spring Break - no class)**

## **March 21, 5pm - Policy Memos due**

## **March 25 (Week 8): Autonomous Vehicles**

Planning for driverless cars from a technical, structural, policy, legal, and safety point of view.

Readings:

- “Imagining the Driverless City,” Patrick Kiger, *Urban Land Magazine*
- Townsend, “Reprogramming Mobility”
- “Google’s Driverless Cars Run Into Problem: Cars With Drivers,” NYTimes, Sept 1, 2015

## **April 1 (Week 9): The Risks of Intelligent Cities**

Data ethics: anonymization, aggregations, privacy, inclusiveness and ownership.

Readings:

- *Smart Cities*, Ch. 6, 9
- GothamGazette, “TLC’s Unintended Taxicab Confession,” June 25, 2014
- “Cisco Poised to Help China Keep an Eye on Its Citizens”, Wall Street Journal

## **April 8 (Week 10)**

### **The Challenges to Intelligent Cities**

Bureaucracy, aging infrastructure, climate change, workforce needs.

Readings:

- “The Future Of Smart Cities: Cyber-Physical Infrastructure Risk,” U.S. Department of Homeland Security: Executive Summary and one subject area.
- “Errant Code? It’s Not Just a Bug,” Ellen Ullman, New York Times.
- Existing city infrastructure can be ‘reprogrammed,’ Forum for the Future
- “Why Quants Don’t Know Everything”, Felix Salmon for WIRED
- Smart Cities and the Ageing Population, Wireless World Research Forum.

- “The sense-able city,” Carlo Ratti, *The European*.

## **April 15 (Week 11)**

### **Public communications and collaboration**

The public interface of civic tech: government websites and apps; communicating data-driven reports to the public; crowdsourcing and social media; civic hackers; New York’s civic tech scene

#### Readings

- *Beyond Transparency*, Ch. 8, “A Journalist’s Take on Open Data”
- *The Responsive City*, Ch. 1, “The Return of Retail Governance,” and Ch. 3, “The Interactive City”

## **April 22 (Week 12): Fostering urban innovation - startup city**

What best practices are emerging, and how are they going to be identified and circulated. We’ll look at some of the emerging organizations that are harvesting, standardizing and cross-fertilizing good ideas for intelligent city policy, planning and design. We will also discuss how cities use economic development policy and urban planning to encourage the development of local technology innovation clusters.

#### Readings:

- *Smart Cities*, Ch. 8, Remainder after “Summer of Smart” section
- *Beyond Transparency*, Ch. 21, “New Thinking in How Governments Deliver Services”
- “Connecting cities: an interview with Sascha Haselmayer,” Cluster, 2010.
- “New Tech City”, Center for an Urban Future
- “In New Civic Tech Hub, A Family Legacy of Community Building Continues,” GothamGazette

## **April 29 (Week 13): Intelligent Cities of the Future; Presentations and Discussions**

Forthcoming developments in civic technologies: Internet of things, Internet policy, net neutrality, open data, government tracking, Sunlight laws and the Freedom of Information Act. New roles for leadership.

#### Readings:

- Townsend, Ch. 10
- *Beyond Transparency*, Ch. 22, “Open Data and Algorithmic Regulation”
- *The Responsive City*, Ch. 7, “Rethinking Government” and Ch. 8, “Toward Responsive Cities”



- Hollands, “Will the Real Smart City Please Stand Up?”
- “Social Life of Cities”, Cisco-sponsored report

**May 6 (Week 14): Presentations and Discussions**

**\*\*\*Final papers due Friday, May 13, 5 p.m.**

**Papers should be submitted by email or shared Google doc to sarahkaufman@nyu.edu.**