UP 494-BW, FALL 2016

Civic Technology and the Digital City

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Lecture: Tu, Th 2:00–3:20 PM (Room 223)
Location: Temple Hoyne Buell Hall, Room 223

COURSE DESCRIPTION

Information and communication technologies (ICTs) are fundamentally changing the way we plan, understand, and experience cities. The use of these technologies, from sensors to web-based applications for managing urban systems, lies at the heart of the current investment in and discourse surrounding Smart Cities. In addition to providing a basic understanding of the debate regarding Smart Cities, this course introduces data science fundamentals and emphasizes civic technology as bridge between the technologies themselves, what planners do, and what communities need. Civic technology can help to democratize these advancements and leverage them to help make government more transparent, facilitate more efficient use of existing systems and resources, further social equity, and enhance quality of life.

Students will participate in an intensive two-day workshop designed to "bootstrap" familiarity with tools like Git, R, and databases and are expected to make a daylong trip to Chicago to attend Chi Hack Night and connect with members of the civic technology community in the city. The centerpiece of the course will be the development of a database to store publicly available information related to policing and the criminal justice system here in Champaign-Urbana as well as one or more applications (e.g., dashboard, web-based tool) to visualize and/or analyze these data. Students will work closely with members of the Racial Justice Task Force to ensure that the database and related tech responds to data needs and substantive questions that have been brought forward by the public, local government staff, and law enforcement.

LEARNING OBJECTIVES

The overall objective of the course is to introduce students to range of ways that information and communication technologies (ICTs) and are reshaping cities, urban planning, and the urban experience. Students will develop a foundation in basic data science principles and techniques using open source software and cloud computing resources. Students who have successfully completed UP 494-BW will be able to:

1. Articulate the main arguments for the deployment of Smart City technologies as well as summarize the leading critiques;
2. Explain what civic technology is and how it fits within the broader framework of urban planning practice;
3. Connect with members of the civic tech community in Chicago;
4. Engage in the current debates surrounding racial disparity in policing and incarceration in Champaign-Urbana and beyond;
5. Perform basic data cleaning, visualization, and analysis tasks with R;
6. Understand the fundamentals of database management and cloud computing;
7. Create and populate a database that fills existing gaps and centralizes data related to policing and incarceration in Champaign-Urbana;
8. Create and deploy a web application to support planning and decision-making regarding an important issue of local and national significance.

COURSE FORMAT

A tentative schedule is included in this syllabus. UP 494-BW follows a lecture and discussion format. Specifically, the Monday meetings will consist of a lecture that presents the primary themes and concepts from the assigned readings, with an opportunity for questions and comments from students. The Wednesday sessions alternate between: (1) hands-on work with data and technology that focuses on some aspect of civic technology as a framework for planning in contemporary urban environments and (2) structured discussion of examples and case studies related to the lectures and readings. If you are not able to attend a class session, please notify the instructor via email in advance.

REQUIREMENTS & EVALUATION

Students are expected to attend and participate during class meetings. The class participation component of the final grade consists of (1) attendance at lecture, discussion, and work sessions as well as (2) ***active involvement*** in the discussion, careful listening, and respect for the opinions of others. At the date of the midterm presentation, you will receive a written evaluation of your class participation to date. This is intended to provide an opportunity for students to make adjustments, as necessary.

Two memos (10% of course grade) are required and are intended to document the scope and overall methodology of the term project. A series individual lab exercises corresponding to the "data science" entries on the session schedule contribute an additional 25% of the course grade. A midterm presentation summarizing preliminary work and identifying obstacles as well as remaining tasks will count for 10% and a final presentation will count for an additional 10% of the course grade. The remaining 35% of the course grade is based on the quality of the final report and deliverables produced by the group. Students will be asked to evaluate the contributions of their classmates to group work and these evaluations will be considered in the assignment of course grades. More detailed instructions regarding the format and content of the final report will be provided over the course of the semester and will reflect input from our local partners.

Students are expected to **bring a laptop computer to class** because the software and services we will be using require administrative privileges.

ASSIGNMENT	CONTRIBUTION
Class Participation	10%
Memos (2)	10%
Lab Exercises (5)	25%
Group Presentation (Midterm)	10%
Group Presentation (Final)	10%
Group Final Report, Data, and Code	35%

Assignments must be submitted via the Compass website by 5:00 pm on the day that they are due, unless otherwise noted. If Compass crashes or is unavailable, please send the assignment to the instructor and teaching assistant via email attachment. *In fairness to all students, ten points will be deducted for late assignments, with an additional ten points deducted for each subsequent day until it is received. No exceptions can be made without a formal notice from the Emergency Dean. Due dates for assignments are not flexible, so please make your travel plans and schedule other commitments accordingly.*

The final grade for the course is derived from the components listed above, subject to the percentage weights listed in the preceding table. All of these components are scored on a 100 point scale, which makes it easy for students to gauge their standing as the semester progresses—grades are not curved.

FINAL GRADE	TOTAL
A+	98 to 100
A	94 to 97
A-	91 to 93
B+	88 to 90
B	84 to 87
B-	81 to 83
C+	78 to 80

FINAL GRADE	TOTAL
C	74 to 77
C-	71 to 73
D+	68 to 70
D	64 to 67
D-	61 to 63
F	0 to 60

Detailed instructions for completing each assignment will be provided. Submitted assignments will be graded and returned promptly with detailed feedback. The general grading rubric is as follows:

- An assignment at the A level demonstrates original thought and synthesis of ideas, sophisticated, cogent analysis, and is clearly written or presented. Outstanding work.
- An assignment at the B level presents above average analysis with appropriate evidence to support the ideas and is clearly written or presented. Very good work.
- An assignment at the C level shows a basic level of understanding, with analysis limited to the most obvious arguments. Writing is competent. Adequate work.
- An assignment at the D level misunderstands or misrepresents the material, or is so poorly written or presented as to obscure the analysis. Inadequate work.

Students will have an opportunity to evaluate the contributions of group members for each group assignment to ensure all students are contributing the work products. Remember that in academic discourse, your opinions must be supported with appropriate evidence and logical arguments. Your grade will reflect the quality of your work and fulfillment of the expectations outlined in this syllabus.

READING MATERIAL

There is no required text for this course. All assigned readings and supplementary material are available by clicking the hyperlinks in this document or have been posted on the UP 494-BW **Compass website**: https://compass2g.illinois.edu

However, students are expected to attend a two-day workshop with external presenters which may require a small fee in lieu of purchasing a textbook.

Students will also be expected to participate in field trip to Chicago as well as attending two meetings of Champaign County Racial Justice Task Force (meetings are at the Brookens Administrative Building in Urbana) during the semester.

COURSE POLICIES

Disability Services: This course will accommodate students with documented disabilities. Please refer to the Disability Resource Guide (http://www.disability.illinois.edu/disability-resource-guide) for more information and inform the instructor of any requests at the beginning of the semester.

Academic Integrity: The UIUC Student Code (http://www.admin.illinois.edu/policy/code) requires all students to support academic integrity and abide by its provisions, which prohibit cheating, fabrication, plagiarism, and facilitation of these and related infractions. According to Section § 1-401, "students have been given notice of this rule by virtue of its publication" and "regardless of whether a student has actually read this rule, a student is charged with knowledge of it." The provisions of the Student Code are applicable to this course. *In written work, all ideas (as well as data or other information) that are not your own must be cited.*

Diversity: The Department of Urban and Regional Planning (DURP) is committed to creating an environment of inclusion and opportunity that is rooted in the very goals and responsibilities of practicing planners. Conduct that interferes with the rights of another or creates an atmosphere of intimidation or disrespect is inconsistent with the environment of learning and cooperation that the program requires. By enrolling a course in the Department of Urban and Regional Planning, students agree to be responsible for maintaining a respectful environment in all DURP activities, including lectures, discussions, labs, projects, and extracurricular programs. We will be governed by the University Student Code. Please see the *Student Code Article 1—Student Rights and Responsibilities* for further details (http://admin.illinois.edu/policy/code)..

SUMMARY SCHEDULE OF SESSIONS

SESSION	WEEK	DATE	DAY	TOPIC
1	1	Aug-23	Tu	Introductions and Course Overview: What Is Civic Tech?
2	1	Aug-25	Th	Criminal Justice in Champaign-Urbana: Background (feat. Sanford Hess)
	1	Aug-25	Th	*** RACIAL JUSTICE TASK FORCE MEETING (6:30 PM) ***
3	2	Aug-30	Tu	Understanding the Issues: Racial Disparity in the Criminal Justice System
4	2	Sept-1	Th	Data Science: Working with Data in R (Part 1)
	2	Sept-2	Fr	Training Session #1: Bash and SQL (feat. CyberGIS Center Staff)
5	3	Sept-6	Tu	Understanding the Data: Existing Data, Gaps, and Integration Needs
6	3	Sept-8	Th	Data Science: Working with Data in R (Part 2)
7	4	Sept-13	Tu	Term Project: Begin Drafting Scope, Goals, and Deliverables
8	4	Sept-15	Th	Term Project: Finalize Scope, Goals, and Deliverables (Memo)
	4	Sept-16	Fr	Training Session #2: Git and TBA (feat. CyberGIS Center Staff)
9	5	Sept-20	Tu	*** FIELD TRIP TO CHICAGO (NOON TO MIDNIGHT) ***
10	5	Sept-22	Th	Data Science: Web Scraping with R
11	6	Sept-27	Tu	Term Project: Data Collection, Analysis, and Visualization Strategy (Memo)
12	6	Sept-29	Th	Term Project: Work Session
13	7	Oct-4	Tu	Cloud Computing, GeoServer, and Databases (Revisited)
14	7	Oct-6	Th	Data Science: Building a Database with AWS
15	8	Oct-11	Tu	Term Project: Summarize Work and Preliminary Findings
16	8	Oct-13	Th	*** MIDTERM PRESENTATION ***
17	9	Oct-18	Tu	Best Practices for Data Visualization
18	9	Oct-20	Th	Data Science: Dashboards, Interactive Maps, and Basic Web Apps in R
19	10	Oct-25	Tu	Data Ethics: Balancing Privacy Needs with Policy Questions
20	10	Oct-27	Th	Data Science: Mapping Hotspots
21	11	Nov-1	Tu	Term Project: Work Session
22	11	Nov-3	Th	*** NO CLASS–ACSP CONFERENCE ***
23	12	Nov-8	Tu	Community Engagement and Root Causes of Incarceration in C-U
24	12	Nov-10	Th	Term Project: Testing the Prototype(s)
25	13	Nov-15	Tu	*** ATTEND SPAN SYMPOSIUM SESSION ***
26	13	Nov-17	Th	Term Project: Beta testing with Target User Groups
				*** FALL BREAK ***
27	14	Nov-29	Tu	Documenting and Distributing the Work Products
28	14	Dec-1	Th	Term Project: Final Materials Preparation
29	15	Dec-6	Tu	*** FINAL PRESENTATION ***

SESSION TOPICS AND READINGS

Week 1—August 23 and August 25

Wood, C. 2016. What is Civic Tech? *Government Technology*. August 16, 2016.

White House. 2016. Launching the Data-Driven Justice Initiative: Disrupting the Cycle of Incarceration. [Press Release].

Institute for Law and Policy Planning. 2013. "Executive Summary", "Racial Disparity: Observations in Champaign County", and "Information Technology." (pp. 8-10; 137-140; 145-148) In *Champaign County Criminal Justice System Assessment: Final Report*. [skim the remainder of this report as needed]

Evans, C. 2015. A step towards reconciliation. *Smile Politely*. October 7, 2015.

Build Programs, Not Jails. 2016. Blog.

NOTE: students are expected to attend the Racial Justice Task Force meeting at 6:30 pm on Thursday August 25 @ Brookens Administrative Center, 1776 E. Washington St, Urbana

Week 2—August 30 and September 1

Subramanian, R., R. Delaney, et al. 2015. *Incarceration's Front Door: The Misuse of Jails in America (Report Summary)*. New York, NY: Vera Institute of Justice.

Kitchen, R. 2014. "Open and linked data." In *The data revolution: Big data, open data, data infrastructures and their consequences*. Los Angeles, CA: SAGE. (pp. 48-66)

NOTE: students are expected to attend the first of two training sessions (8:30 am to 12:30 pm) on Friday September 2 @ Architetcure Bldg, Room 301

Skim as Needed:

Bass, S. 2001. Policing space, policing race: Social control imperatives and police discretionary decisions. *Social Justice*, 28 (1), 156-176.

Week 3—September 6 and September 8

Mullainathan, S. 2015. Police Killings of Blacks: Here Is What the Data Say. *New York Times*. October 16, 2015.

Gohil, A. 2015. "A Simple Guide to R." In *R Data Visualization Cookbook*. Birmingham, UK: Packt Publishing. [access online by clicking the link]

Week 4—September 13 and September 15

These sessions allow time to discuss and finalize a memo summarizing the scope, goals, and deliverables for the term project.

No required readings.

NOTE: students are expected to attend the second of two training sessions (8:30 am to 12:30 pm) on Friday September 16 @ Architetcure Bldg, Room 301

Week 5—September 20 and September 22

NOTE: students are expected to attend the field trip to Chicago (noon to midnight) on Tuesday September 20th. We will meet with members of the civic tech community in Chicago, have dinner, then attend the weekly Chi Hack Night event.

Cirillo, A. 2016. "Acquiring Data for Your Project." In RStudio for R Statistical Computing Cookbook. Birmingham, UK: Packt Publishing. [access online by clicking the link]

Radcliffe, D. 2016. Web Scraping in R: A Tutorial Using Super Bowl Data. *RPubs*. January 18, 2016.

Week 6—September 27 and September 29

These sessions allow time to discuss and finalize a memo summarizing the data collection, analysis, and visualization strategies for the term project.

No required readings.

Week 7—October 4 and October 6

Talia, D., et al. 2016. "Introduction to Cloud Computing." In *Data Analysis in the Cloud: Models, Techniques and Applications*. Amsterdam, Netherlands: Elsevier. [access online by clicking the link]

Skim as Needed:

Amazon Web Services. 2016. Creating a MySQL DB Instance and Connecting to a Database on a MySQL DB Instance. AWS User Guide.

Week 8—October 11 and October 13

The Tuesday session allows time to summarize the work to date and prepare for the midterm presentation

NOTE: students are expected to make a brief presentation to the Racial Justice Task Force regarding progress and work remaining (6:30 pm to 8:00 pm) on Thursday October 13 @ Brookens Administrative Center, 1776 E. Washington St, Urbana.

Week 9—October 18 and October 20

Cotgreave, A. 2016. 100 Yrs of Data Visualisation Best Practice. [access online by clicking the link]

RStudio Project. 2016. Teach Yourself Shiny. [access online by clicking the link]

Cheng, J. 2015. Leaflet for R. [access online by clicking the link]

Bivand, R., E.J. Pebesma, and V. Gómez-Rubio. 2013. "Classes for Spatial Data in R." In *Applied spatial data analysis with R, 2nd edition*. New York, NY: Springer. (pp. 21-57)

Skim as Needed:

Gohil, A. 2015. *R Data Visualization Cookbook*. Birmingham, UK: Packt Publishing. [access online by clicking the link]

Week 10—October 25 and October 27

Zhang, S. 2016. "Scientists Are Just as Confused About the Ethics of Big-Data Research as You." *Wired*. May 20, 2016.

Bivand, R., E.J. Pebesma, and V. Gómez-Rubio. 2013. "Spatial Point Pattern Analysis" and "Modelling Areal Data." In *Applied spatial data analysis with R, 2nd edition*. New York, NY: Springer. (pp. 173-211, pp. 263-318)

Week 11—November 1 and November 3

We will only meet as a class on Tuesday, but this time should be used to work on the term project.

Week 12—November 8 and November 10

Clear, T. 2007. "Dealing with Concentrated Incarceration." In *Imprisoning Communities: How Mass Incarceration Makes Disadvantaged Neighborhoods Worse*. Oxford, UK: Oxford University Press. (pp. 175-205).

We will discuss the intersection of urban planning and the criminal justice system with local experts.

Week 13—November 15 and November 17

NOTE: students are expected to attend one of the Scenario Planning Analysis Network (SPAN) Conference sessions being held in the Illini Union on Tuesday November 15th.

We will beta test the prototype(s) with target user groups.

Week 14—November 29 and December 1

We will create help files and documentation for the database, scripts, and web tools that have been developed.

We will also prepare materials for a final presentation to representatives from the Racial Justice Task Force.

Week 15—December 6

Deliver the final presentation to representatives from the Racial Justice Task Force during the normal class period.