**Smart City: Evaluate, Design and Build A Smart Community**

CRP386/BDP 319 Smart City
Instructors: Prof. Junfeng Jiao

*General Information*

<table>
<thead>
<tr>
<th>Title</th>
<th>BDP319/CRP386: Smart City</th>
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<tr>
<td>Unique Number</td>
<td>01348</td>
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<tr>
<td>Faculty</td>
<td>Junfeng Jiao</td>
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<tr>
<td>Credit</td>
<td>3.0</td>
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<tr>
<td>Class Time</td>
<td>Thursday, 3:00-6:00</td>
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<tr>
<td>Location</td>
<td>TBD</td>
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<tr>
<td>Office</td>
<td>SUT 3.120</td>
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<tr>
<td>Email</td>
<td><a href="mailto:jjiao@austin.utexas.edu">jjiao@austin.utexas.edu</a></td>
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*Office Hours*
Junfeng Jiao: Thursday 1:00-3:00 or By Appointment

*Introduction*

With the development of computer technology, wearable devices, Internet of Things (IoT) etc, understanding smart community concepts and being able to analyze smart community/city cases is important for urban planners, managers and policymakers. What is a smart city? What is a smart community? Being smart is not just about technology; a city and a smart community enables better service delivery and quality of life for all of its residents. This class will provide hands on experience for interested students to develop their own smart city projects.
This class first will introduce the smart city concept and analyze different smart city cases in the US and globally. Each student will firstly write one short memo on a smart city concept and then each student will write one longer memo analyzing a specific city. Then, students will be split into teams. Each team will do a real world smart community project with an Austin community. Data will be provided by the entity and/or the instructors. The overall goals of this class are:

- To obtain basic knowledge of smart cities and communities
- To learn how to analyze and compare existing smart city projects.
- To learn how to analyze smart city data using GIS and other related software.
- To provide hands-on experiences on how to evaluate, design and build smart city/community.

This course is organized into two parts: 1) introduction to smart cities and communities; 2) real-world smart community team projects. During the first half of the semester, the course will provide a detailed introduction to smart communities and the current status and development. The instructors will invite planners, engineers, business leaders, government officials, and others, as guest speakers for specific topics. Students will compare and contrast different smart community cases across the world. In the second phase, students will learn how to analyze and build smart community in team projects with Austin entities.

**COURSE CONTENT**

**General**

Students must read the assignments in advance of class and come to class prepared to discuss them. Also, we will have guest speakers in several of our classes, and students must come to class prepared to engage with them. Class participation, oral presentations, writing and team work will be important in this class.

One individual short paper and one individual longer paper in the form of memoranda will be due during the semester. Also, each student will present the second memo to the class. There will not be a midterm or a final; instead, students will participate in a team experimental learning project that will have a written report and a class presentation component. For the final project, professor will help students teams connect with different Austin entities, provide possible project topics, collect research data and help them build up the final experimental learning project. Students can also choose their own topics with the approval of the professors.

Students’ written assignments will be evaluated on content and writing style. Both what you say and how you say it matter. Also, I would suggest reviewing a copy of *The Elements of Style* by Strunk and White, and a grammar source, such as *Minimum Essentials of English* by Barron’s. I will have additional information on writing and presentation in Canvas.

**Introduction to Smart Community**

During the first half of the semester, the course will include the following important smart community concepts:

- Concept of Smart Community
- Smart Transportation (e.g. Shared Micro Mobility)
- Smart Building and Home (e.g. Google/Apple/Amazon Smart home devices)
- Smart Health (e.g. Wearable devices)
• Smart Government (e.g. Data based decision making system)
• Smart Energy and Water (e.g. Smart grid and meters)
• Cybersecurity, Safety, and Privacy (e.g. Face recognition and detection)
• Internet of Things (e.g. Smart Delivery)
• Emerging Technologies (e.g. Blockchain, Artificial Intelligence, and Virtual Reality)

Students will submit their two individual memoranda during the first half of the semester.

Design a Smart Community—Experimental Learning Project
After students develop some basic knowledge about smart communities, the course will become more of a workshop environment. The instructors will work with students to apply their smart community knowledge in real projects with Austin entities, such as Austin Department of Transportation, UT Park and Transportation Service, Austin Energy, Austin Planning and Zoning Development, Texans for the Arts, and possibly others. Students will form research teams and work with selected entities to carry out their own smart city projects. During this process, data will be provided by the Austin entities and the instructors. This could include open data, financial data, GIS etc., in the following areas:

• Transportation
• Health
• Neighborhoods
• Public Safety
• Finance
• Arts
• Others

Possible Research Topics includes:

• Shared Micro Mobility Planning and Regulation (e.g. Lime, Bird) on UT Campus.
• Austin 311 Call and Neighborhood Quality Analysis
• Smart Grid and the Future EV Charging Stations Allocations
• 911 Reports and Crime Prevention in Austin
• CodeNext 2.0?—How to use Data to Make Better Land Use Code Changes
• Homelessness—Where is its place in Smart City and Community
• Students are also welcome to develop their own research idea, collect data, and carry out the final research.

At the end of the semester, each team will make a final presentation to related stakeholders such as: planners, city officials, business leaders, engineers in a professional setting. Each team will also have to submit their final project report in a professional format.

GRADING

Memo 1: 15%
Memo 2: 30% (including class presentation)
Class Participation: 15%
Group Research Project: 40% (including written report & class presentation)
ASSIGNMENTS – DUE DATES

Our submission rule is very simple: NO LATE SUBMISSIONS

September 6: Memo 1 Topic Due
September 27: Memo 1 Due
October 4: Memo 2 Topic Due
October 18: Final Project Topic & Teams Due
October 25: Memo 2 Due and Five Minute In Class Presentation
December 6: Team Research Project Reports Due & Team Research Project Presentations

CLASS PARTICIPATION
You must let instructors know in advance if you are going to be absent from a class.

Class participation is neither about the person who flaps his or her gums the most, nor about being an introvert or an extrovert. In this class, participation is about quality engagement. Students will be expected to lead some class discussions. To participate you must read and contemplate prior to class. Good class participation involves the following: active listening, consideration of your peers, making comments, asking questions, taking risks and giving opinions. Our class will be a safe environment, and I will be assessing whether you can back up your comments by applying the readings and course concepts.

All cell phones, PDA's, and other hand held devices must be turned off during class. Laptops/tablets will be allowed in class only for the purpose of taking notes or consulting course readings, unless I advise you otherwise. Surfing the web, texting or sending emails during class is prohibited; it is a breach of professionalism and will result in a loss of laptop/tablet privileges.

ADDITIONAL INFORMATION

Students with Disabilities:

Qualified students with disabilities may request appropriate accommodations from the Division of Diversity and Community Engagement, Services for Students with Disabilities at http://www.utexas.edu/diversity/ddce/ssd/ or 471-6259.

Academic Dishonesty/Plagiarism:

Students are expected to respect the LBJ School's standards regarding academic dishonesty. You owe it to yourself, your fellow students, and the institution to maintain the highest standards of integrity and ethical behavior. A discussion of academic integrity, including definitions of plagiarism and unauthorized collaboration, as well as helpful information on citations, note taking, and paraphrasing, can be found at the Office of the Dean of Students web page (http://deanofstudents.utexas.edu/conduct/) and the Office of Graduate Studies (http://www.utexas.edu/ogs/ethics/transcripts/academic.html). The University has also established disciplinary procedures and penalty guidelines for academic dishonesty, especially Sec. 11.504 in Appendix C of the Institutional Rules on Student Services and Activities section in UT's General Information Catalog.
Emergency Evacuation Routes:

The following recommendations regarding emergency evacuation from the Office of Campus Safety and Security, 512-471-5767, http://operations.utexas.edu/units/csas/terms.php:

a. Occupants of buildings on The University of Texas at Austin campus are required to evacuate buildings when a fire alarm is activated. Alarm activation or announcement requires exiting and assembling outside.

b. Familiarize yourself with all exit doors of each classroom and building you may occupy. Remember that the nearest exit door may not be the one you used when entering the building.

c. Students requiring assistance in evacuation shall inform their instructor in writing during the first week of class. In the event of an evacuation, follow the instruction of faculty or class instructors.

d. Do not re-enter a building unless given instructions by the following: Austin Fire Department, The University of Texas at Austin Police Department, or Fire Prevention Services office.

e. Behavior Concerns Advice Line (BCAL): 512-232-5050

f. Link to information regarding emergency evacuation routes and emergency procedures can be found at: https://preparedness.utexas.edu/emergency-plans

Religious Holidays:

By UT Austin policy, you must notify me of your pending absence at least fourteen days prior to the date of observance of a religious holy day. If you must miss a class, an examination, a work assignment, or a project in order to observe a religious holy day, you will be given an opportunity to complete the missed work within a reasonable time after the absence.

Campus Safety and Wellness Resources:

More information on how to sign up for emergency text alerts, contact information for various UT offices, wellness resources, and campus initiatives relating to safety and/or wellness can be found at https://www.utexas.edu/campus-life/safety-and-security
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<tr>
<th>Week</th>
<th>In-class</th>
<th>Note</th>
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<tbody>
<tr>
<td>1</td>
<td>Thursday</td>
<td>Introduction</td>
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<tr>
<td></td>
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<td>- What is a Smart City?</td>
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<td>- Definition</td>
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<td></td>
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<td>- Technology (AR, VR, IoT, Drone)</td>
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<td>- Equity &amp; Accessibility</td>
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<td>- Writing memos &amp; Making Presentations</td>
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<td>- Memos</td>
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<td>- Presentations</td>
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<td>2</td>
<td>Thursday</td>
<td>Smart Cities Marco View &amp; Case Studies</td>
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<td></td>
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<td>- Guest: Brian Steiner, Cisco</td>
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<td>3</td>
<td>Thursday</td>
<td>City Politics, Governance, Finance &amp; Participation</td>
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<td>4</td>
<td>Thursday</td>
<td>City Planning &amp; Performance</td>
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<td></td>
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<td>- Guest: Kim Olivares, City of Austin Performance Officer</td>
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<td>- Guest: Mike Trimble, City of Austin Capital Planning Officer</td>
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<td>5</td>
<td>Thursday</td>
<td>Social Media &amp; Digital Inclusion &amp; Arts</td>
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<td>Guest: Arts – Ann Graham</td>
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<td>Guest: Digital Inclusion – Catherine Crago</td>
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<td>6</td>
<td>Thursday</td>
<td>Gis &amp; GEO Data</td>
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<td></td>
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<td>Guest: Christian Carlson, Esri</td>
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<td>Review Smart City Team Project Options</td>
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<td>7</td>
<td>Thursday</td>
<td>Open Data &amp; Analytics</td>
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<td></td>
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<td>Guest: Ted Lehr, City of Austin Data Architect</td>
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<td></td>
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<td>- Guest: Dustin Haisler, Chief Innovation Officer e.Republic - To be confirmed</td>
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<td>8</td>
<td>Thursday</td>
<td>Cybersecurity and privacy</td>
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<td>Guest: Kevin Williams, City of Austin CISO-To Be Confirmed</td>
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<td>9</td>
<td>Thursday</td>
<td>Five Minute Memo Presentations</td>
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<td>Date</td>
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<td>10</td>
<td>Thursday</td>
<td>- Students</td>
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<td></td>
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<td>- Transportation</td>
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<td></td>
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<td>- Guest: Jason John Michael, City of Austin Transportation – To be confirmed</td>
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<td></td>
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<td>- Guest: Kristie Chin, UT Center for Transportation Research – To be confirmed</td>
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<td>Tech Company – To be confirmed</td>
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<td>11</td>
<td>Thursday</td>
<td>- Smart Buildings</td>
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<td></td>
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<td>- Guest: Dr. Juliana felkner (Architecture)</td>
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<td>- Guest: Dr. Zoltan Nagy (Civil Engineering)</td>
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<td>12</td>
<td>Thursday</td>
<td>- Healthcare &amp; Wellness</td>
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<td>- Guest: Tech company – To be determined</td>
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<td>- Guest: Healthcare – To be determined</td>
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<td>13</td>
<td>Thursday</td>
<td>- Final Project Development</td>
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<td>14</td>
<td>Thursday</td>
<td>- No Class</td>
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<td></td>
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<td>Happy Thanksgiving</td>
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<td>15</td>
<td>Thursday</td>
<td>- Final Group Project Presentations to Smart City Practitioners from Academia, Industry, Government and others</td>
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<td>Project Report Due (9am)</td>
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<td>Project Presentations (9-12)</td>
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<td>16</td>
<td>Thursday</td>
<td>- No Class</td>
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<td>Final Project Report Due (5pm)</td>
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**Book Reading List**

Substantial Portions of the following books are on Canvas for readings for this class. Here are some recommended books you might want to look at. See below:

(Note: These are not required books, you can rent or borrow. It is ok not purchasing any of these)

Transforming City Governments for Successful Smart Cities, Editor: Manuel Pedro Rodriguez-Bolivar
ISBN: 978-3-319-03166-8

Smart Cities: Big Data and the Quest for a New Utopia, Anthony M. Townsend,
ISBN: 978-0-393-08287-6

Beyond Transparency: Open Data and the Future of Civic Innovation, Editors: Brett Goldstein with Lauren Dyson

Beyond Smart Cities: How Cities Network, Learn and Innovate, Tim Campbell
ISBN: 978-1-84971-426-6
*Start-Up City*, Gabe Klein  
**ISBN**: 978-1-61091-690-5

*Building Smart Cities: Analytics, ICT and Design Thinking*, Carol L. Stimmel  
**ISBN**: 978-1-4987-0276-8

*Smart Cities for a Bright Sustainable Future: A Global Perspective*, Shark, Toporkoff and Levy  
**ISBN**: 978-1-4973-3945-6

*A New City O/S: The Power of Open, Collaborative and Distributive Governance*, Goldsmith and Kleiman  
**ISBN**: 978-0-8157-3286-0

*The New Localism: How Cities Can Thrive in the Age of Populism*, Katz and Nowak  
**ISBN**: 978-0-8157-3164-1