



# Smart Cities

Bridging Disciplines Programs allow you to earn an interdisciplinary certificate that integrates area requirements, electives, courses for your major, internships, and research experiences.

With the development of information and computer technologies, wearable devices, the Internet of Things (IoT), artificial intelligence (AI), and other innovations, cities and communities are getting smarter. We see new technologies deployed in our cities in numerous ways, from the smart grid for energy to autonomous vehicles, among many other applications. So what is a “smart city”? How can these technologies improve how cities deliver services and enhance the quality of life for all residents? And how can we ensure that these technologies are employed in ethical and socially helpful ways? The Smart Cities BDP will help you answer these questions and equip you with skills and applied learning to advance the development of smart city technologies, and prepare you for smart cities-related careers in public, private, and non-profit sectors. At the same time, you will learn about the complex ethical and human dimensions of these changes to our urban environments. The program includes classes from a variety of disciplines, such as urban planning, public policy, computer science, information studies, engineering, liberal arts, communication, and business.

Upon completion of **19 credit hours** from the options listed to the right, you will earn a certificate in Smart Cities.

The Smart Cities BDP is overseen by a panel of faculty members from across campus. Members include Junfeng Jiao (Architecture), Paul Adams (Urban Studies and Geography), Michelle Addington (Architecture), Sam Baker (English), Casey Boyle (Rhetoric and Writing), Ken Fleischmann (Information), Sherri Greenberg (Public Affairs), Christine Julien (Electrical and Computer Engineering), Alex Karner (Architecture), Donnie Sackey (Rhetoric and Writing), Peter Stone (Computer Sciences), Sharon Strover (Journalism), Weijia Xu (Texas Advanced Computing Center), and Ming Zhang (Architecture).

The Bridging Disciplines Programs offer interdisciplinary certificates in the following areas:

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| Children & Society                                | Human Rights & Social Justice              |
| Conflict Resolution & Peace Studies               | Innovation, Creativity & Entrepreneurship  |
| Design Strategies                                 | Museum Studies                             |
| Digital Arts & Media                              | Patients, Practitioners & Cultures of Care |
| Environment & Sustainability                      | Public Policy                              |
| Ethics & Leadership in Business                   | Smart Cities                               |
| Ethics & Leadership in Health Care                | Social Entrepreneurship & Non-profits      |
| Ethics & Leadership in Law, Politics & Government | Social Inequality, Health & Policy         |

For more information about the Bridging Disciplines Programs, visit FAC 338, go to [www.utexas.edu/ugs/bdp](http://www.utexas.edu/ugs/bdp), or call (512) 232-7564. Follow us on instagram: @ut\_bdp

## Foundation Courses (7-10 Credit Hours)

Foundation courses introduce key methodologies and issues related to Smart Cities. **Choose one course from each of the following categories.** If you choose to complete a second course from the “Skills & Methods” category, you will complete only 3 credit hours of Connecting Experiences and 6 credit hours of Strand Courses.

### **I. Forum Seminar**

BDP 101: Introduction to Smart Cities

### **II. Smart Cities Foundation Courses**

BDP 319: Smart Cities

### **II. Skills & Methods Foundation Courses**

Your Skills & Methods course should expand your tool set beyond what you are already learning in your major. If you are learning programming skills in your major, for example, you might choose to take a course on design thinking or ethnographic research methods. If you choose to take a second Skills & Methods course, you could either learn more outside your major or deepen your knowledge of a skill or method you are learning within your major field. Please consult your BDP advisor to ensure that your Skills & Methods course choice(s) will supplement your major coursework.

*See opposite side of this page for a list of Skills & Methods Foundation course requirement.*

## Connecting Experiences (3-6 Credit Hours)

Your BDP advisor can help you find internships and research opportunities that connect Smart Cities to your major. We call these opportunities “Connecting Experiences” because they play such an important role in integrating your studies. Each Connecting Experience counts for 3 credit hours. **You will need to complete at least one Connecting Experience.**

For more information, visit [www.utexas.edu/ugs/bdp](http://www.utexas.edu/ugs/bdp) and consult with your BDP advisor.

## Strand Courses (6-9 Credit Hours)

In addition to your Foundation Courses and Connecting Experiences, you must complete 6-9 credit hours of approved strand courses, to bring your total credit hours toward the BDP certificate to 19 hours. You should work with your BDP advisor to choose strand courses that will focus your BDP on your specific interests, and that will provide you with an interdisciplinary perspective on your BDP topic.

In order to create an interdisciplinary experience, you must choose courses from a variety of disciplines. Individual course listings for these categories are located on the opposite side of this page.

## Integration Essay

In order to complete your BDP certificate, write a 3-4 page integration essay in which you reflect on what you learned and accomplished through your BDP experience. This essay is your opportunity to draw connections among your interdisciplinary BDP coursework, your Connecting Experiences, and your major. For additional guidelines, please consult your BDP advisor.

### **Required Technology Course**

All students in the Smart Cities BDP must, in the process of completing their certificate requirements, take at least one course designated as including a substantial focus on smart cities-relevant technologies (- T).

### **II. Skills & Methods Foundation Courses**

AFR 302M: Numbering Race  
AFR 317D: Intro to East Austin Ethnography  
ARC 328R: GIS Visual Communication - T  
ARC 328R: GIS Planning - T  
ARC 328R: Urban GIS - T  
C S 303E: Elements of Comp & Progmng  
\*CRP 384: 6-Metro Trans Studies w/ GIS-T  
\*CRP 384: Transportation Equity Anlys-T  
\*CRP 386: 5-Urban Geographic Info Sys-T  
\*CRP 386: 2-Applied Methods-T  
\*CRP 386: 6-Intro Visual Comm and GIS-T  
EDP 371: Introduction to Statistics  
GRG 310C: Spatial Data and Analysis-T  
GRG 460G: Envir Geog Info Systems-T  
INF 304D: Intro to Information Studies  
ITD 301D: Intro to Design Thinking  
\*P A 388L: Mobilizing the Community & Engaging Volunteers  
RHE 314: Cmptr Programmg Humanities  
RHE 330C: When Topic is Appropriate  
SDS 301: Elementary Statistical Methods  
SDS 306: Statistics in Market Analysis  
SDS 322: Introduction to Scientific Programming  
SDS 335: Science and Technical Computing - T  
SDS 374E: Visualization & Data Analysis for Scientists & Engineers - T  
SOC 317M: Intro to Social Research

### **Strand Courses (6-9 Credit Hours)**

Complete 6-9 credit hours of strand courses drawn from the list below. In order to create an interdisciplinary experience, you must choose courses from a variety of disciplines. **Note that only one of your strand or skills & methods courses may come from your major department(s), or from courses cross-listed with your major department(s).**

#### **School of Architecture**

ARC 327C: Urban Design History/Theory/Crit  
ARC 327R: Design of New Communities

#### **School of Architecture (Continued)**

ARC 327R: Nature of Public Spaces  
ARC 327R: Urban Trans Policy Planning  
\*ARC 386M: Futures and Cities  
\*CRP 384: 4-Land Use and Transport Plan  
\*CRP 384: Planning for Megaregions  
\*CRP 386: Smart Cities-T

#### **School of Business**

MAN 337: Tech Transfer/Entrepreneurship  
MIS 373: 17-Pred Analytic & Data Mining-T

#### **College of Communication**

ADV 324: Communicating Sustainability  
CMS 332D: Digital Ethics  
CMS 350C: Crowds, Clouds and Community  
J 308D: Data, Privacy, And You  
J 355F: Living In Information Age

#### **School of Engineering**

ARE 371: Energy Simulatn in Bldg Design-T  
C E 321: Transportation Systems  
C E 367T: Traffic Engineering  
M E 360: Vehicle Sys Dynams & Controls-T  
M E 379M: Energy, Technology & Policy

#### **College of Fine Arts**

DES 322: Design & the Social Environment

#### **School of Information**

INF 304D: Intro to Information Studies  
INF 335C: Information in Cyberspace-WB  
INF 350E: Concepts of Info Retrieval-T  
INF 350G: Information in Society –All Topics  
INF 350G: Trust & Transparency

#### **College of Liberal Arts**

AFR 317D: Community Policing in US  
AFR 322D: Race and the Digital  
AFR 372C: Race, Gender, and Surveillance  
AFR 372F: Urban Unrest  
AMS 370: Global Cities in The U.S.  
ANT 324L: Anthropology of Infrastructure  
ECO 334K: Urban Economics  
GOV 370L: Urban Politics  
GRG 356: The Healthy, Livable City  
GRG 356T: Geoprocessing-T  
GRG 356T: Human Health & the Environment  
GRG 356T: Urban Publics

#### **College of Liberal Arts (Continued)**

RHE 309K: When Topic Is Appropriate  
RHE 330C: Access Designed - T  
RHE 330C: Mobile Environments – T  
RHE 330C: Rhetoric and Data Visualization  
RHE 330C: When Topic Is Appropriate  
SOC 304: Envrnmntl Inequality/Health  
SOC 323S: Building the Sustainable City  
URB 310: Introduction to Urban Studies

#### **College of Natural Sciences**

C S 303E: Elements of Computers & Programmings  
C S 363D: Introduction to Data Mining - T  
C S 378: Behavioral Ethics: Digital Age

#### **School of Public Affairs**

\*P A 383C: Policymaking in Cities  
\*P A 388K: Smart Cities – T  
\*P A 388L: Leadrshp as Catalyst for Community Change  
P A 393L: Urban Economics & Policy

*\*Graduate-level course. Instructor permission is required*

### **Important Notes on Fulfilling Your BDP Requirements**

- **PREREQUISITES:** Some courses may have prerequisites. Please consult your BDP advisor to determine your eligibility for enrolling in specific courses.
- **CROSS-LISTINGS:** Note that many courses on this list may be cross-listed with other departments. You may take these courses under any of the cross-listed numbers. Please consult the course schedule or your BDP advisor for cross-listing information.
- **GRADES AND GPA REQUIREMENTS:** In courses taken for a letter grade, you must obtain a grade of C- or better to meet BDP requirements. The cumulative GPA of all courses counting toward your BDP certificate must be at least 2.0.
- **PASS/FAIL:** Only one BDP course, including connecting experience courses, may be taken pass/fail. Any exceptions will be considered by the faculty panel on an individual basis.
- **SIGNATURE COURSES:** Many of the First-Year Signature Courses (UGS 302 and UGS 303) that include significant content related to Smart Cities may also count toward your certificate; please consult your BDP advisor for more information.
- **PETITIONS:** You may be able to count courses toward your BDP certificate that do not appear on this curriculum sheet, if enough of the course content relates to your BDP topic. Please consult your BDP advisor if you would like to petition for a course to count toward your BDP.