The University of Texas at Austin
Bridging Disciplines Programs
School of Undergraduate Studies

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), Dev Niyogi (Geological Sciences & Civil, Architectural, and Environmental Engineering), 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:

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

For more information about the Bridging Disciplines Programs, go to www.ugs.utexas.edu/bdp or email us at bdp@austin.utexas.edu.
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 options.

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 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 315C: Intro to East Austin Ethnography
ARC 328R: Geo Info Systems Planning
ARC 328R: GIS Visual Communication - T
ARC 328R: GIS Urban Planning
ARC 328R: Urban GIS - T
C S 326E: Elements of Comp & Progmg
*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 312E: Digital Earth
GRG 350E: Geoprocessing
GRG 460G: Envir Geog Info Systems - T
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
ARC 327R: Nature of Public Spaces
ARC 327R: Urban Trans Policy Planning

School of Architecture (Continued)

ARC 327R: Design of New Communities
ARC 327R: Modern American City
ARC 369J: City Architecture
*ARC 386M: Futures and Cities
*CRP 384: 4-Land Use and Transport Plan
*CRP 384: Planning for Megaregions
*CRP 384: 6-Metro Trans Studies With GIS
*CRP 384: Transportation Equity Anlys
*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 323: Public Comm of Sci Tech
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 363M: Energy, Technology & Policy

College of Fine Arts

DES 322: Design & the Social Environment

School of Information

I 301: Intro To Informatics
I 320: Information In Cyberspace
I 320: Blckchain Web3 Intrnt Cmptr

College of Liberal Arts

AFR 302M: Numbering Race
AFR 317D: Community Policing in US
AFR 322D: Race and the Digital
AFR 360D: Race, Gender, and Surveillance
AFR 360F: Urban Unrest
AMS 370: Global Cities in The U.S.

College of Liberal Arts (Continued)

ANT 324L: Anthropology of Infrastructure
ANT 324L: Sensing: Elemental Data
ECO 334K: Urban Economics
GOV 370U: Urban Politics
GRG 322D: Human Health & the Environment
GRG 325E: The Healthy, Livable City
GRG 356T: Urban Publics
HIS 317L: 14-Building America
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 307Q: Envrnmntl Inequality/Health
SOC 323S: Building the Sustainable City
URB 301: Introduction to Urban Studies
URB 352: The Digital City

College of Natural Sciences

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

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.

(Updated: January 2022)