

SYLLABUS

Spring2023 SC5302 & CE4375/4376/4377

Adv. Topics in Civil Engr. -- Smart Cities Design

Instructor

Prof. Ruimin Ke, Ph.D.

- Assistant Professor of Civil Engineering
- You can call me Dr. K, or Ruimin, or sometimes I go with “Roman”
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Volunteering TA

- Talha Azfar, PhD student
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Course Meeting Times

- 3:00-4:20 PM, Tuesday and Thursday, Undergraduate Learning Center 340
- Lectures/labs: 2 sessions per week, 80 minutes per session

Office Hours

- 4:30-5:30 PM, Thursday
- At Engineering Building A-205

Course Website

- See Blackboard

Course Objectives

Students who successfully complete the course will have gained a basic understanding of Smart City and the skills to use a few popular smart city related software/hardware tools, including OpenRefine, Anaconda, Arduino, and QGIS. Smart City is a broad and interdisciplinary concept driven by the advances in information and communication technologies (ICT). The three key components of a smart city are the Internet of Things (IoT), big data, and smart services. Upon the completion of the course, the students are expected to learn fundamental concepts and approaches to design and implement smart city platforms. Students will have hands on experience through the lab sessions and projects.

Textbooks

No prescribed textbook.

Course Assignments and Grading

- Smart City reading discussion/presentation
 - Session #1: Students present an article/report among the ones selected by Dr. Ke
 - Session #2: Students present an article/report selected by themselves
- Lab report
 - For each lab, write a short summary of what you learned
- Final Exam
 - One cheat sheet
 - Multiple choice
- Group or individual final project (1-2 students per group)
 - Idea proposal (8 marks)
 - Final report (20 marks)
 - Final presentation (12 marks)
- Attendance
- Extra credit: Course evaluation

Contributions towards final mark (out of 100%)

15% reading presentation/discussion
15% lab summary
20% final exam
40% final project
10% attendance
2% course evaluation

Letter grades will be assigned based on the final course marks (out of 100):

A: 90 – 100
B: 80 – 89.99
C: 70 – 79.99
D: 60 – 69.99
F: < 60

Scholastic Integrity

Academic dishonesty is prohibited and is considered a violation of the UTEP Handbook of Operating Procedures. It includes, but is not limited to, cheating, plagiarism, and collusion. Cheating may involve copying from or providing information to another student, possessing unauthorized materials during a test, or falsifying research data on laboratory reports. Plagiarism occurs when someone intentionally or knowingly represents the words or ideas of another as ones' own. Collusion involves collaborating with another person to commit any academically dishonest act. Any act of academic dishonesty attempted by a UTEP student is unacceptable and will not be tolerated. All suspected violations of academic integrity at The University of Texas at El Paso must be reported to the [Office of Student Conduct and Conflict Resolution](#) (OSCCR) for possible disciplinary action. To learn more, please visit [HOOP: Student Conduct and Discipline](#).

Disability

If you have any disability and you need special assistance in taking this course, please contact the Center of Accommodations and Support Services (CASS), formerly known as Disable Student Service at Union East. Your identity will be kept confidential.

Tentative Weekly Schedule

Subject to progress of class

| Wk | Date | Topic | Deadline |
|----|----------------|--------------------------------------------------------------------------|-------------------------------------------|
| 1 | 01/17 01/19 | Smart City Introduction Smart City Introduction | |
| 2 | 01/24 01/26 | Data Cleaning Data Cleaning | |
| 3 | 01/31 02/02 | OpenRefine Lab OpenRefine Lab | OpenRefine Lab Summary (02/05) |
| 4 | 02/07 02/09 | Data Mining Machine Learning | |
| 5 | 02/14 02/16 | Data Mining Lab Machine Learning Lab | DM / ML Lab Summary (02/19) |
| 6 | 02/21 02/23 | Smart City Reading Presentation #1 Smart City Reading Presentation #1 | |
| 7 | 02/28 03/02 | Data Visualization Data Visualization Lab | Data Visualization Lab Summary (03/05) |
| 8 | 03/07 03/09 | Internet of Things Project Proposal Discussion | Project Proposal (03/12) |
| 9 | 03/14 03/16 | Spring break | |
| 10 | 03/21 03/23 | Internet of Things Edge Computing | |
| 11 | 03/28 03/30 | Edge Computing Lab (Arduino) Edge Computing Lab (Arduino) | Edge Computing Lab (04/02) |
| 12 | 04/04 04/06 | Smart City Reading Presentation #2 Smart City Reading Presentation #2 | |
| 13 | 04/11 04/13 | Computer Vision Computer Vision Lab | Computer Vision Lab (04/16) |
| 14 | 04/18 04/20 | Human Factors in Smart City Guest Lecture | |
| 15 | 04/25 04/27 | Project Discussion Final Exam | |
| 16 | 05/02 05/04 | Final Project Presentation Final Project Revision | Final Report (05/07) |