

SYLLABUS

Fall 2022 CE 4375/4376/4377/5390

Advanced/Special Topics in Civil Engineering: Intelligent Transportation Systems

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”
- Office: Engineering Building A-205
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Course Meeting Times

- 3:00-4:20 PM, Tuesday and Thursday, Classroom Building C304
- Lectures: 2 sessions per week, 80 minutes per session

Office Hours

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

Course Website

- See Blackboard

Course Objectives

Students who successfully complete the course will have gained a basic understanding and appreciation of the concepts related to ITS technologies and industry applications of the field such as connected and automated vehicles. The students will actively participate in class discussions. Each student will conduct an individual research paper and a comprehensive group research project, on topics related to ITS, to enhance their understanding of a specific topic of their interest.

Textbooks

No prescribed textbook.

Some references:

- Auer Ashely et al., History of Intelligent Transportation Systems: 2021 Update, USDOT Federal Highway Administration (FHWA) Technical Report, 2021
- Wei Heng et al., Disruptive Emerging Transportation Technologies, American Society of Civil Engineers (ASCE), 2022.

- Samuel Morgan, Intelligent Transportation Systems: Technologies and Applications, Clanrye International, 2015.
- Marco Picone, Advanced Technologies for Intelligent Transportation Systems. New York, NY, Springer, 2014.
- Sussman, Joseph. Perspectives on Intelligent Transportation Systems (ITS). New York, NY, Springer, 2010.

Course Assignments and Grading

- Five in-class quizzes (4 marks each)
- Midterm paper (about 10 pages – topics to be discussed with Dr. Ke)
- Group final project (2-3 students per group)
 - Idea proposal (8 marks)
 - Final report (20 marks)
 - Final presentation (12 marks)
- Attendance
- Course evaluation

Contributions towards final mark (out of 100%)

20% quizzes
25% mid-term paper
40% final project
13% 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	8/23 8/25	Syllabus and Intro Overview and History of ITS	
2	8/30 9/1	Overview and History of ITS ITS Architecture and Standards	
3	9/6 9/8	ATMS ATMS	
4	9/13 9/15	ATIS ATIS	Quiz 1 (9/13 Tue)
5	9/20 9/22	AVCS AVCS	
6	9/27 9/29	ITS Sensors and Data ITS Sensors and Data	Quiz 2 (9/27 Tue)
7	10/4 10/6	ITS Control ITS Control	
8	10/11 10/13	Traffic Flow Theory Traffic Flow Theory	Quiz 3 (10/11 Tue) Midterm paper (10/16 Sun)
9	10/18 10/20	Car Following and Lane Changing Car Following and Lane Changing	
10	10/25 10/27	Traffic Simulation Traffic Simulation	Final project proposal (10/30 Sun)
11	11/1 11/3	AI and Advanced Computing AI and Advanced Computing	Quiz 4 (11/1 Tue)
12	11/8 11/10	ITS Security ITS Security	
13	11/15 11/17	Smart Parking Smart Parking	Quiz 5 (11/15 Tue)
14	11/22 11/24	Guest Speech Thanksgiving Holiday	
15	11/29 12/1	Equity in ITS Future of ITS	Final project report (12/4 Sun)
16	12/6 12/8	Final Week	Final presentation (12/6 Tue)