



COURSE SUBJECT, NUMBER AND TITLE

Civ Engr 579 004 Seminar on Automated Driving Systems

CREDITS

1 credit

CANVAS COURSE URL

<https://canvas.wisc.edu/courses/230457>

COURSE DESIGNATIONS AND ATTRIBUTES

This course carries both the undergraduate and graduate course attributes.

MEETING TIME AND LOCATION

Fri. 12:05 PM - 12:55 PM, 2255 Engineering Hall

INSTRUCTIONAL MODALITY

In-person

SPECIFY HOW CREDIT HOURS ARE MET BY THE COURSE

One hour of classroom or direct faculty/instructor instruction and a minimum of two hours of out of class reading each week over approximately 15 weeks.

REGULAR AND SUBSTANTIVE STUDENT-INSTRUCTOR INTERACTION

Substantive Interaction

INSTRUCTORS AND TEACHING ASSISTANTS

a. Instructor Title and Name

Bin Ran, Professor

Yang Cheng, Assistant Researcher

b. Instructor Availability

Friday, 1PM-2PM

c. Instructor Email/Preferred Contact

Bin Ran, Room 1212 Engr. Hall, (608) 262-0052, bran@engr.wisc.edu

Yang Cheng, Room 1241 Engr. Hall, (608) 262-2524, cheng8@wisc.edu

d. Teaching Assistant

Sicheng Fu

e. TA Office Hours

TBD

f. TA Email/Preferred Contact

Sicheng Fu <sfu42@wisc.edu>

OFFICIAL COURSE DESCRIPTION

This course includes presentations and roundtable discussions about the core technologies and policies for automated driving systems. Specifically, it covers topics about current developments for vehicle sensing, prediction, decision making, and vehicle control. The topics extends to a wide spectrum of areas in Connected Automated Vehicles (CAV), Connected Automated Highways (CAH), Connected Automated Vehicle Highway (CAVH) systems, Collaborative Automated Driving System (CADS).

REQUISITES

None

COURSE WEBSITE, LEARNING MANAGEMENT SYSTEM and INSTRUCTIONAL TOOLS

Through the university’s learning management system, Canvas, and Blackboard Collaborate. It is strongly suggested that students explore and become familiar not only with Canvas’ site navigation but with content and resources available for the course.

COURSE LEARNING OUTCOMES

Students are expected to learn the functions and the systems of the automated driving systems, including the vehicle sensing, prediction, decision making, and vehicle control as well as Connected Automated Vehicles (CAV), Connected Automated Highways (CAH), Connected Automated Vehicle Highway (CAVH) Systems, Collaborative Automated Driving System (CADS).

GRADING

Grades are given based on class attendance and the course project report.

DISCUSSION SESSIONS

1/28	Introduction to Automated Driving
2/4	Introduction to CAV (Connected Automated Vehicles), CAVH (Connected Automated Vehicle Highway), CADS (Collaborative Automated Driving System)
2/11	Major Technologies – CADS, CAV and CAVH, Classification of CAH and CADS
2/18	Major Function – Sensing and Perception
2/25	Major Function – Fusion & Prediction
3/4	Major Function – Planning/ Decision Making
3/11	Major Function – Control
3/18	Spring Break
3/25	Telecommunication Systems

4/1	Supporting Systems – Cloud System
4/8	Supporting Systems – Edge Computing
4/15	Supporting Systems – High-Definition Map
4/22	Supporting Systems – High Accuracy Location Identification
4/29	Supporting Systems – Information Security
5/6	Course project report due. No class.

LABORATORY SESSIONS

NA

REQUIRED TEXTBOOK, SOFTWARE & OTHER COURSE MATERIALS

NA

HOMEWORK & OTHER ASSIGNMENTS

NA

CAMPUS SPACES FOR VIRTUAL LEARNING & TESTING

Dedicated on-campus spaces with high-speed internet are available for students to reserve for any exam/quiz taken during the semester. Computers can also be requested.

EXAMS, QUIZZES, PAPERS & OTHER MAJOR GRADED WORK

Project report

PRIVACY OF STUDENT INFORMATION & DIGITAL TOOLS: TEACHING & LEARNING ANALYTICS & PROCTORING STATEMENT

The privacy and security of faculty, staff and students' personal information is a top priority for UW-Madison. The university carefully reviews and vets all campus-supported digital tools used to support teaching and learning, to help support success through learning analytics, and to enable proctoring capabilities. UW-Madison takes necessary steps to ensure that the providers of such tools prioritize proper handling of sensitive data in alignment with FERPA, industry standards and best practices.

Under the Family Educational Rights and Privacy Act (FERPA which protects the privacy of student education records), student consent is not required for the university to share with school officials those student education records necessary for carrying out those university functions in which they have legitimate educational interest. 34 CFR 99.31(a)(1)(i)(B). FERPA specifically allows universities to designate vendors such as digital tool providers as school officials, and accordingly to share with them personally identifiable information from student education records if they perform appropriate services for the university and are subject to all applicable requirements governing the use, disclosure and protection of student data.

PRIVACY OF STUDENT RECORDS and the USAGE of AUDIO RECORDED LECTURES

See information about [privacy of student records](#) and [the usage of audio-recorded lectures](#).

Lecture materials and recordings for this course are protected intellectual property at UW-Madison. Students in this course may use the materials and recordings for their personal use related to participation in this class. Students may also take notes solely for their personal use. If a lecture is not already recorded, you are not authorized to record my lectures without my permission unless you are considered by the university to be a qualified student with a disability requiring accommodation. [Regent Policy Document 4-1] Students may not copy or have lecture materials and recordings outside of class, including posting on internet sites or selling to commercial entities. Students are also prohibited from providing or selling their personal notes to anyone else or being paid for taking notes by any person or commercial firm without the instructor's express written permission. Unauthorized use of these copyrighted lecture materials and recordings constitutes copyright infringement and may be addressed under the university's policies, UWS Chapters 14 and 17, governing student academic and non-academic misconduct.

OTHER COURSE INFORMATION

HOW TO SUCCEED IN THIS COURSE

Things that can be done include but are not limited to: attending the seminars, and interacting with the speakers.

STUDENTS' RULES, [RIGHTS & RESPONSIBILITIES](#)

During the global COVID-10 pandemic, we must prioritize our collective health and safety to keep ourselves, our campus, and our community safe. As a university community, we must work together to prevent the spread of the virus and to promote the collective health and welfare of our campus and surrounding community. More details about these protocols are available at the [Instructional Continuity website](#) and are aligned with broader campus health and safety protocols, outlined on the university's [Smart Restart website](#).

UW-Madison [Badger Pledge](#)

[Campus Guidance on the use of Face Coverings](#)

Face coverings must be correctly worn on campus at all times and in all places (both outside and inside), except by students in their assigned residence hall rooms; by employees when alone in a private, unshared lab or office; when traveling alone in a private vehicle; and when exercising outside in a way that maintains 6 feet of distance from other people.

Students with disabilities or medical conditions who are unable to wear a face covering should contact the McBurney Disability Resource Center or their Access Consultant if

they are already affiliated. Students requesting an accommodation unrelated to disability or medical condition, should contact the Dean of Students Office.

Students who choose not to wear a face covering may not attend in-person classes, unless they are approved for an accommodation or exemption. All other students not wearing a face covering will be asked to put one on or leave the classroom. Students who refuse to wear face coverings appropriately or adhere to other stated requirements will be reported to the Office of Student Conduct and Community Standards and will not be allowed to return to the classroom until they agree to comply with the face covering policy. An instructor may cancel or suspend a course in-person meeting if a person is in the classroom without an approved face covering in position over their nose and mouth and refuses to immediately comply.

Quarantine or Isolation Due to COVID-19

Student should continually monitor themselves for COVID-19 symptoms and get tested for the virus if they have symptoms or have been in close contact with someone with COVID-19. Student should reach out to instructors as soon as possible if they become ill or need to isolate or quarantine, in order to make alternate plans for how to proceed with the course. Students are strongly encouraged to communicate with their Instructor concerning their illness and the anticipated extent of their absence from the course (either in-person or remote). The instructor will work with the student to provide alternative ways to complete the course work.

COURSE EVALUATIONS

Students will be provided with an opportunity to evaluate this course and your learning experience. Student participation is an integral component of this course, and your feedback is important to me. I strongly encourage you to participate in the course evaluation.

Digital Course Evaluation (AEFIS)

UW-Madison now uses an online course evaluation survey tool, [AEFIS](#). In most instances, you will receive an official email two weeks prior to the end of the semester when your course evaluation is available. You will receive a link to log into the course evaluation with your NetID where you can complete the evaluation and submit it, anonymously. Your participation is an integral component of this course, and your feedback is important to me. I strongly encourage you to participate in the course evaluation.

ACADEMIC CALENDAR & RELIGIOUS OBSERVANCES

- See: <https://secfac.wisc.edu/academic-calendar/#religious-observances>

ACADEMIC INTEGRITY STATEMENT

By virtue of enrollment, each student agrees to uphold the high academic standards of the University of Wisconsin-Madison; academic misconduct is behavior that negatively impacts

the integrity of the institution. Cheating, fabrication, plagiarism, unauthorized collaboration, and helping others commit these previously listed acts are examples of misconduct which may result in disciplinary action. Examples of disciplinary action include, but is not limited to, failure on the assignment/course, written reprimand, disciplinary probation, suspension, or expulsion.

ACCOMMODATIONS FOR STUDENTS WITH DISABILITIES STATEMENT

The University of Wisconsin-Madison supports the right of all enrolled students to a full and equal educational opportunity. The Americans with Disabilities Act (ADA), Wisconsin State Statute (36.12), and UW-Madison policy (Faculty Document 1071) require that students with disabilities be reasonably accommodated in instruction and campus life. Reasonable accommodations for students with disabilities is a shared faculty and student responsibility. Students are expected to inform faculty [me] of their need for instructional accommodations by the end of the third week of the semester, or as soon as possible after a disability has been incurred or recognized. Faculty [I], will work either directly with the student [you] or in coordination with the McBurney Center to identify and provide reasonable instructional accommodations. Disability information, including instructional accommodations as part of a student's educational record, is confidential and protected under FERPA. (See: [McBurney Disability Resource Center](#))

DIVERSITY & INCLUSION STATEMENT

Diversity is a source of strength, creativity, and innovation for UW-Madison. We value the contributions of each person and respect the profound ways their identity, culture, background, experience, status, abilities, and opinion enrich the university community. We commit ourselves to the pursuit of excellence in teaching, research, outreach, and diversity as inextricably linked goals.

The University of Wisconsin-Madison fulfills its public mission by creating a welcoming and inclusive community for people from every background – people who as students, faculty, and staff serve Wisconsin and the world.