

Automotive Safety and Security

EEL 5934 Section XXX

Class Periods: Days of week, period, and corresponding time of day

Location: Classroom location

Academic Term: Spring 2019

Instructor:

- Name: Sandip Ray
- Email Address: sandip@ece.ufl.edu
- Office Phone Number: +1 (352) 392-1605
- Office Hours: Th 3-4:30pm BEN 323

Teaching Assistants:

Please contact through the Canvas website

- Name of TA, email address, office location, office hours
- Name of TA, email address, office location, office hours

Course Description

This course provides a tutorial introduction to various robustness requirements in autonomous automotive systems, including safety, security, and reliability. It will examine their cooperation, conflict, and trade-offs, and emergent research in the area.

Course Pre-Requisites / Co-Requisites

No specific pre-requisite. However, students are expected to have a general background on Computer Architecture and Digital Systems Design. Students should also be experience in programming C/C++, debugging, and the Linux operating system.

Course Objectives

Upon completion of the course, students should have a good understanding of the working principles of current and future automotive systems:

- Electronics and software responsible for various autonomous functionality of the vehicle
- Notions such as functional safety, security, and reliability in current and future cars
- Trade-offs and conflicts involved in automotive electronic design
- Variety of automotive standards, certifications, and regulations
- Current practices in automotive safety and security design
- Automotive software challenges

Materials and Supply Fees

None

Required Textbooks and Software

No textbook. Relevant research papers and other notes will be provided in class.

Course Contents (Tentative)

- Introduction to automotive systems and their evolution
- Challenges and characteristics of autonomous automotive systems
- Introduction to automotive robustness: safety, security, reliability
- Functional Safety: ISO26262 and Its variants
- Automotive security: How to hack a car?
- Trade-offs between security, safety, privacy, and real-time constraints
- Automotive systems and transportation infrastructure: communication and conflicts
- Challenges in automotive supply chain

Attendance Policy, Class Expectations, and Make-Up Policy

- Attendance is required, but not monitored. Students are responsible for being up-to-date with all information communicated in class.
- The class is interactive. Feel free to interrupt and ask relevant questions. However, questions not directly related to the topic under discussion or requiring elaborate answers may be relegated to office hours.
- Cell phones may not be used as calculators. Cell phones must be turned off at all times including exams and lectures.
- The communication functions including text messaging on all devices must be turned off during exams.
- Students are not allowed to sell or distribute notes provided for this class.
- Excused absences are consistent with university policies in the graduate catalog (<http://gradcatalog.ufl.edu/content.php?catoid=11&navoid=2486#attendance>) and require appropriate documentation.
- Students who anticipate the necessity of being absent from class due to the observation of a major religious observance must provide notice of the date(s) in writing by the second meeting.
- All late assignments receive zero credits no matter what the reason. This means students must plan to finish their work before deadline to avoid delays due to “technical difficulties”. Online assignments (on Canvas) will timeout at the deadline and cannot be made up. Canvas gets very busy around common due times, such as midnight, so all assignments will be due at 4 AM for this reason. Emailed assignment will have an arrival timestamp. All emails received after the deadline will be considered late submission.
- The instructor reserves the right to interpret the class policies if confusions may occur.

Excused absences are consistent with university policies in the graduate catalog (<http://gradcatalog.ufl.edu/content.php?catoid=11&navoid=2486#attendance>) and require appropriate documentation.

Evaluation of Grades

Assignment	Percentage of Final Grade
Paper presentation	30%
Presentation review	30%
Term paper/project	40%
TOTAL	100%

Grading Policy

Percent	Grade	Grade Points
93.0 - 100	A	4.00
90.0 - 92.9	A-	3.67
87.0 - 89.9	B+	3.33
83.0 - 86.9	B	3.00
80.0 - 82.9	B-	2.67
77.0 - 79.9	C+	2.33
73.0 - 76.9	C	2.00
70.0 - 72.9	C-	1.67
67.0 - 69.9	D+	1.33
63.0 - 66.9	D	1.00
60.0 - 62.9	D-	0.67
0 - 59.9	E	0.00

The class is not curved. If everyone does well, everyone can get an A.

In order to graduate, graduate students must have an overall GPA and a major GPA of 3.0 or better (B or better). Note: A “B-” average is equivalent to a GPA of 2.67, and therefore, it does not satisfy this graduation requirement.

More information on UF grading policy may be found at:
<http://gradcatalog.ufl.edu/content.php?catoid=10&navoid=2020>

Students Requiring Accommodations

Students with disabilities requesting accommodations should first register with the Disability Resource Center (352-392-8565, <https://www.dso.ufl.edu/drc>) by providing appropriate documentation. Once registered, students will receive an accommodation letter which must be presented to the instructor when requesting accommodation. Students with disabilities should follow this procedure as early as possible in the semester.

Course Evaluation

Students are expected to provide feedback on the quality of instruction in this course by completing online evaluations at <https://evaluations.ufl.edu/evals>. Evaluations are typically open during the last two or three weeks of the semester, but students will be given specific times when they are open. Summary results of these assessments are available to students at <https://evaluations.ufl.edu/results/>.

University Honesty Policy

UF students are bound by The Honor Pledge which states, “We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honor and integrity by abiding by the Honor Code. On all work submitted for credit by students at the University of Florida, the following pledge is either required or implied: “On my honor, I have neither given nor received unauthorized aid in doing this assignment.” The Honor Code (<https://www.dso.ufl.edu/sccr/process/student-conduct-honor-code/>) specifies a number of behaviors that are in violation of this code and the possible sanctions. Furthermore, you are obligated to report any condition that facilitates academic misconduct to appropriate personnel. If you have any questions or concerns, please consult with the instructor or TAs in this class.

Software Use

All faculty, staff and student of the University are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against University policies and rules, disciplinary action will be taken as appropriate. We, the members of the University of Florida community, pledge to uphold ourselves and our peers to the highest standards of honesty and integrity.

Campus Resources:

Health and Wellness

U Matter, We Care:

If you or a friend is in distress, please contact umatter@ufl.edu or 352-392-1575 so that a team member can reach out to the student.

Counseling and Wellness Center: <http://www.counseling.ufl.edu/cwc>, and 392-1575; and the University Police Department: 392-1111 or 9-1-1 for emergencies.

Sexual Assault Recovery Services (SARS)

Student Health Care Center, 392-1161.

University Police Department at 392-1111 (or 9-1-1 for emergencies), or <http://www.police.ufl.edu/>.

Academic Resources

E-learning technical support, 352-392-4357 (select option 2) or e-mail to Learning-support@ufl.edu.
<https://lss.at.ufl.edu/help.shtml>.

Career Resource Center, Reitz Union, 392-1601. Career assistance and counseling. <https://www.crc.ufl.edu/>.

Library Support, <http://cms.uflib.ufl.edu/ask>. Various ways to receive assistance with respect to using the libraries or finding resources.

Teaching Center, Broward Hall, 392-2010 or 392-6420. General study skills and tutoring.
<https://teachingcenter.ufl.edu/>.

Writing Studio, 302 Tigert Hall, 846-1138. Help brainstorming, formatting, and writing papers.
<https://writing.ufl.edu/writing-studio/>.

Student Complaints Campus: https://www.dso.ufl.edu/documents/UF_Complaints_policy.pdf.

On-Line Students Complaints: <http://www.distance.ufl.edu/student-complaint-process>.