ECE 4930/6930 Network Security and Privacy

Fall 2020

Class Location/Time: Daniel Hall 307/3:30 pm - 4:45 pm, Thursday

Instructor: Linke Guo

Email: Linkeg@clemson.edu Office: 305 EIB

Office Hours: TBD

COURSE MODALITY: Hybrid

Course Description

This is a 1-credit seminar course. In this course, student will learn the fundamental principles of computer and network security and privacy by studying attacks on computer systems, network, and the Web. The focused areas include applied cryptography, cloud computing, IoT, security and privacy in social networks, health system, and wireless networks. This course mainly consists of lectures, seminars, discussions, and course project.

Course Objectives

The primary goal of the class is to expose students to cutting edge research and prepare them for conducting research independently. By reading and analyzing research papers recently published in prestigious international conferences and academic journals, the students are expected to construct a big picture of the focuses and trends in the network security area, master skills of learning through literatures, and develop the corresponding research capability.

Required Materials

The course material will be papers from top journals and conferences.

Topical Outline

This can be organized by weeks (15 weeks for fall/spring semesters) or hours (3 hours per credit hour).

1. Overview of Network Security Problems (1 hour)
2. Introduction to Cryptography (2-3 hours)
3. Security and Privacy in Cloud Computing (2 hours)

4. Security and Privacy in IoT (2 hours)
5. User authentication in Mobile Systems (2 hours)
6. Machine Learning Security and Privacy (2 hours)
7. Security and Privacy in eHealth/mHealth System (1 hour)
8. Security and Privacy in Wireless Networks, including Location-based Service, Wireless sensor networks, WiFi, etc. (1-2 hours)
9. Blockchain/Web Security (1 hour)

Grading

- Paper Reading/Presentation Assignments 40%
  - Paper Discussion and Presentations (10% x 2)
  - Paper Reading Reports (4 ~ 5 pages) (10% x 2)
- Research Project 50%
  - Project Proposal   (10%)
  - Project Presentation (20%)
  - Final Project Report (10 ~ 12 pages) (20%)
- Participation   10%

Letter-number grade mapping: [95-100] is A; [90-95) is A-; [87-90) is B+, [83-87) is B, [80-83) is B-, [77-80) is C+, [73-77) is C, [70-73) is C-, [60-70) is D, [0-60) is F.

Attendance

Unless otherwise stated on the course specific syllabus, **students are expected to attend class, and to arrive on time.**

In the event of an **emergency**, students should contact the course instructor, preferably before class or the exam. Students should speak with instructors regarding any scheduled absence as soon as possible and develop a plan for any make-up work, if allowed by the instructor. It is the student's responsibility to secure documentation of emergencies, if required by the instructor. A student with an excessive number of absences may be withdrawn at the discretion of the course instructor.

If the instructor is late, students are expected to wait 15 minutes for the instructor to arrive.

Any further attendance policies in place will be listed on the course specific syllabus, and will serve to supplement these policies.

Inclement Weather Policy

Any exam that was scheduled at the time of a class cancellation due to inclement weather will be given at the next class meeting unless contacted by the instructor. Any assignments due at the time of a class cancellation due to inclement weather will be due at the next class meeting unless contacted by the instructor. Any extension or postponement of assignments or exams must be granted by the instructor via email or Canvas within 24 hours of the weather related cancellation.

Academic Integrity

As members of the Clemson University community, we have inherited Thomas Green Clemson's vision of this institution as a 'high seminary of learning.' Fundamental to this vision is a mutual commitment to truthfulness, honor, and responsibility, without which we cannot earn the trust and respect of others. Furthermore, we recognize that academic dishonesty detracts from the value of a Clemson degree. Therefore, we shall not tolerate lying, cheating, or stealing in any form. In instances where academic standards may have been compromised, Clemson University has a responsibility to respond appropriately to charges of violations of academic integrity.

Further information on Academic Integrity can be found in the *Undergraduate Announcements* (Links to an external site.) and in the *Graduate School Policy Handbook* (Links to an external site.).

Access Accommodations

Clemson University values the diversity of our student body as a strength and a critical component of our dynamic community. Students with disabilities or temporary injuries/conditions may require accommodations due to barriers in the structure of facilities, course design, technology used for curricular purposes, or other campus resources. Students who experience a barrier to full access to this class should let the professor know, and make an appointment to meet with a staff member in Student Accessibility Services as soon as possible. You can make an appointment by calling 864-656-6848, by emailing studentaccess@lists.clemson.edu, or by visiting Suite 239 in the Academic Success Center building. Appointments are strongly encouraged – drop-ins will be seen if possible, but there could be a significant wait due to scheduled appointments. Students who receive Academic Access Letters are strongly encouraged to request, obtain and present these to their professors as early in the semester as possible so that accommodations can be made in a timely manner. It is the student's responsibility to follow this process each semester. You can access further information here: https://www.clemson.edu/academics/studentaccess/index.html (Links to an external site.) .

Anti-Harassment and Non-Discrimination

Clemson University is committed to a policy of equal opportunity for all persons and does not discriminate on the basis of race, color, religion, sex, sexual orientation, gender, pregnancy, national origin, age, disability, veteran's status, genetic information or protected activity in employment, educational programs and activities, admissions and financial aid. This includes a prohibition against sexual harassment and sexual violence as mandated by Title IX of the Education Amendments of 1972. This policy is located at http://www.clemson.edu/campus-life/campus-services/access/title-ix/ (Links to an external site.). Ms. Alesia Smith is the Clemson University Title IX Coordinator, and the Executive Director of Equity Compliance. Her office is located at 110 Holtzendorff Hall, 864.656.3181 (voice) or 864.656.0899 (TDD).

Emergency Procedures

Emergency procedures have been posted in all buildings and on all elevators. Students should review these procedures for their own safety. Students are required to monitor their university email (see https://www.clemson.edu/studentaffairs/student-handbook/universitypolicies/email-communications.html (Links to an external site.)) thus establishing this as a convenient method for official communication to students. Students are also encouraged to enroll in CU-Safe alerts. See https://www.clemson.edu/cusafety (Links to an external site.) for more information.

Copyright Statement

Materials in some of the courses are copyrighted. They are intended for use only by students registered and enrolled in a particular course and only for instructional activities associated with and for the duration of the course. They may not be retained in another medium or disseminated further. They are provided in compliance with the provisions of the Teach Act. Students should be reminded to refer to the Use of Copyrighted Materials and "Fair Use Guidelines" policy in on the Clemson University website for additional information: https://www.clemson.edu/library/

Attendance Policy (Hybrid classes)
1. A statement about the hybrid process that explains that the university will assign students a day of the week they are to come this class; on other days, they must attend online.
2. A statement about whether attendance is mandatory or optional on days students are to come physically. Note that the university strongly discourages mandatory physical attendance requirements.
3. A statement about whether online attendance is mandatory or optional. (Three cases here: hybrid students on their online days, hybrid students on their physical attendance days – meaning a hybrid student who chooses on their physical attendance day to attend online that day, and students who have chosen to be fully online.)
4. A statement about what happens in the event of a class cancellation on a test day, etc.
5. A statement about using the Notification of Absence module in Canvas or email to inform the instructor of student absences.
6. A statement about classroom entry and dismissal. To maintain physical distancing, individuals arriving first to the classroom should sit farthest from the door. Similarly, at the conclusion of class, students closest to the door should leave first.
7. This statement about face masks is *strongly* recommended: While on campus, face coverings are required in all buildings and classrooms. Face coverings are

also required in outdoor spaces where physical distance cannot be guaranteed. If a student does not have a face covering or refuses to wear an approved face covering without valid documented accommodation, the instructor will ask the student to leave the academic space and may report the student's actions to the Office of Community & Ethical Standards as a violation of the Student Code of Conduct. If the student's actions disrupt the class to the extent that an immediate response is needed, the instructor may call the Clemson University Police Department at 656-2222.

8. A statement like the following: Please note that the University may convert to a purely online mode at any time. University classes are initially in a purely online mode and will remain so until Sept. 21.

MODIFICATION STATEMENT:
The instructor reserves the right to modify any aspect of the syllabus at any time during the semester for reasons including but not limited to COVID-related situations.
08/11/2020