

Syllabus

CSC 4980/6980 Topics in Computer Science: Security in IoT

CRN: 93894/93894

Fall 2022

Instructor: Dr. Haoxin Wang

Office: 25 Park Place, Room 745

Office Hours: Monday & Wednesday, 1:00 pm – 2:00 pm, OR by appointment

E-mail: haoxinwang@gsu.edu

Class Times: Monday & Wednesday, 10:00 am – 11:45 am

Location: Aderhold Learning Center 306

Grader Contact Info:

Ghare Priyanka Mahendra

Email: pghare1@student.gsu.edu

Texts:

1. *Security in Wireless Communication Networks*, by Yi Qian, Feng Ye, and Hsiao-Hwa Chen, ISBN: 978-1-119-24436-3
2. *Rethinking the Internet of Things: A Scalable Approach to Connecting Everything*, by Francis daCosta, ISBN: 978-1-4302-5740-0, 2013
3. A list of research papers and other reading materials will be provided throughout the semester. We will use the GSU iCollege system at <https://icollege.gsu.edu/>

Please check out the course materials and announcements on the system each time before and after the class. After the course materials including research papers, homework & solutions, and all the announcements will be posted on this system.

Prerequisite:

Basic knowledge of computer and wireless networks

Course Overview:

Security in IoT is a very important topic and attracting more and more attention from industry, research, and academia. This course gives a comprehensive overview on the recent advances in wireless network and IoT system security. It will cover security issues and solutions in emerging IoT systems & applications as well as wireless networks.

Learning Outcomes and Goals:

- Understand the impact of IoT technologies
- Be able to draw the big picture of IoT ecosystem

- Be able to describe the essential components of IoT
- Have the knowledge of the emerging technologies of IoT
- Be able to examine the security and privacy challenges of IoT
- Be able to find appropriate security/privacy solutions for IoT
- Have hands-on experience on IoT and security projects

Course Outlines: (Subject to Changes)

- Introduction
- Basic IoT concepts & applications
- Networking fundamentals
- Ad-hoc and sensor networks
- Basic network security concepts
- Wireless LAN security
- IoT ecosystem, advanced topics
- Security challenges in connected & automated vehicles
- Security challenges in AR/VR
- Security challenges in smart home
- Security challenges in smart cities
- Security challenges in healthcare IoT

Homework:

- Each homework must be converted (or scanned) into PDF file. It should include student name, course number, and due date.
- Submit all the homework online to iCollege by due date.
- Makeup work is neither given nor accepted. If you submit an assignment after it is due, you will be given a grade of “0” for the assignment. The availability of the assignments and their due dates are listed in the iCollege course calendar. It is your responsibility to check the calendar and to turn in your work on time.
- You are encouraged to discuss the problems with each other, but you must solve the problem alone. Direct copying of homework from another student or from solution is unacceptable and considered as cheating.

Exam:

- There will be a midterm exam for this course. The time of the exams will be determined.

Grading:

- Participation 10%
- Quiz 20%
- Midterm Exam 25%
- Team project 45%
-

Team Project:

- Up to 3 students per team

- Option A: select a topic, read papers (at least three), team project presentation (graduate students: write a term paper)
- Option B: hands on project using Raspberry Pi + poster & demo
- If you choose option B, please propose a project & make an appointment with me to discuss it
- Decision must be made by 9/14/2022 (firm deadline)

Grading Scale:

A	$P \geq 90$
B	$90 > P \geq 80$
C	$80 > P \geq 70$
D	$70 > P \geq 60$

Attendance Policy:

Attendance is strongly encouraged. Any student missing a lesson is responsible for all material assigned or covered in class during his or her absence. Other Disruptive classroom behavior will not be tolerated. See the student catalog for more information. Class participation is strongly encouraged, please ask questions, make comments.

Last Date for Withdrawal:

October 11, 2022 (Tuesday)

Academic Honesty:

The academic honesty policy as described in the University Faculty Handbook as well as the Student Handbook will be strictly enforced. Please review the document here

<https://provost.gsu.edu/document/academic-honesty-policy/>

1. All assignments are supposed to be individual work and any collaboration or cheating would result in a zero score for the assignment.
2. A second incident of dishonest work will result in an automatic F grade for the class.

Special Needs:

Students who wish to request accommodation for a disability may do so by registering with the Office of Disability Services. Students may only be accommodated upon issuance by the Office of Disability Services of a signed Accommodation Plan and are responsible for providing a copy of that plan to instructors of all classes in which accommodations are sought.

Students with special needs should then make an appointment with me during the first week of class to discuss any accommodations that need to be made.

Course Evaluation:

Your constructive assessment of this course plays an indispensable role in shaping education at Georgia State. Upon completing the course, please take time to fill out the online course evaluation.

Disclaimer:

This syllabus reflects a plan for the semester. Deviations may become necessary as the semester progresses.