Department of Electrical and Computer Engineering
EEE 4717 – Introduction to IoT Security
Fall 2022

Instructor   :   Dr. Mohammad Shah Alam
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Catalog Description:

In this class, students will learn the basic topics on security of Internet of Things by gaining hands on training on an IoT system. Specifically, the students will have a chance to investigate realistic security issues utilizing real IoT devices. Both key security concepts (e.g., confidentiality, authentication, integrity, access control, non-repudiation, and availability) and the state-of-the-art security solutions will be reinforced and explored.

Course Objectives:

Upon completing this course, students will be able to:

1. learn the fundamental security mechanisms within the IoT realms.
2. understand the advanced concepts in software and hardware architecture of the IoT devices.
3. understand the simple energy-efficient design principles for the IoT platform.
4. demonstrate secure design principles for the state-of-the-art IoT devices.

ABET Relationship of course to program outcomes:
  (Select corresponding boxes below to applicable program outcomes for the course.)
  ☒ 1. an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.
  ☒ 2. an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.
  ☐ 3. an ability to communicate effectively with a range of audiences.
  ☐ 4. an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.
  ☐ 5. an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.
  ☐ 6. an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.
  ☒ 7. an ability to acquire and apply new knowledge as needed, using appropriate learning strategies.

Reference Textbook:
Title: Computer Security: Principles and Practice
ISBN: 9780134794181   Edition: 4th

Grading Scale:		the University's Code of Academic Integrity http://academic.fiu.edu/academic_misconduct.html
A	>=95	"Florida International University is a community dedicated to generating and imparting knowledge through excellent teaching and research, the rigorous and respectful exchange of ideas, and community service. All students should respect the right of others to have an equitable opportunity to learn and honestly to demonstrate the quality of their learning. Therefore, all students are expected to adhere to a standard of academic conduct, which demonstrates respect for themselves, their fellow students, and the educational mission of the University. All students are deemed by the University to understand that if they are found responsible for academic misconduct, they will be subject to the Academic Misconduct procedures and sanctions, as outlined in the Student Handbook."
A-	90-94	
B+	87-89	
B	83-86	
B-	80-82	
C+	77-79	
C	70-76	
D	60-69	
F	< 60	

Department Regulations Concerning Incomplete Grades
To qualify for an Incomplete, a student:
1. Must contact (e.g., phone, email, etc.) the instructor before or during missed portion of class
2. Must be passing the course prior to that part of the course that is not completed
3. Must make up the incomplete work through the instructor of the course
4. Must see the instructor. All missed work must be finished before last two weeks of the following term.

University policies: on sexual harassment, and religious holidays, and information on services for students with disabilities

http://academic.fiu.edu/
http://drc.fiu.edu

Policies:
- **Academic Misconduct:** For work submitted, it is expected that each student will submit their own original work. Any evidence of duplication, cheating or plagiarism will result at least a failing grade for the course.

- **Unexcused Absences:** Two unexcused absences are permitted during the term. More than two will result in the loss of points from your final grade. (**1 point** per absence above two**, 3 points** per absence above 5).

- **Excused Absences:** Only emergency medical situations or extenuating circumstances are excused with proper documentation. After reviewing documentation, you are **required to email** a description of the excuse and absence dates as a written record to moalam@fiu.edu.

- **On Time:** As in the workplace, on time arrival and preparation are required. Two

"lates" are equivalent to one absence. (Leaving class early is counted the same as tardy.)

- **Deadlines:** Work is due before midnight on the date specified. Late submissions within one week will receive up to half credit. After one-week, late work will not be accepted. Late submissions are graded after the final exam. Participation deadlines are absolute – no late completions or makeups.

- **Submissions:** This class is paperless. Submissions are made using the web form listed on the class web site (both online and in class sections). All submissions must be a) a single document, b) web accessible by anyone and readable with a browser c) accessible using a single URL reference

- **DO NOT** send assignments by email unless asked by the instructor to do so.

- Instructor reserves right to change course materials or dates as necessary.

Plagiarism
Please note copying and pasting directly from the resources rather than expressing things in your own words is not allowed and is plagiarism. Please check the FIU''s note on plagiarism at the following links:
https://case.fiu.edu/opportunities/internships-jobs/clinical-experiences/plagiarism-tutorial/fiu-and-plagiarism/

Grading Scale:

Course Requirements	No of Items	Weight (%)
Assignments including discussions	5	30
Labs	4	20
Midterm Exam	1	20
Final Exam	1	30
Total	11	100%

Course Schedule

Module #	Topics to be covered
1	Overview of IoT and Security
2	Cryptographic Tools
3	User Authentication
4	Access Control
5	Denial of Service Attacks
6	Symmetric Encryption
7	Public-Key Cryptography and Message Authentication
8	Transport Level Security (Internet Security Protocols and Standards)