Syllabus & Course Policies

Course Overview

Mobile devices today have outnumbered computers worldwide. Since mobile devices, such as smart phones provide convenient anytime anywhere access to the Internet and the ability to make phone calls, run apps centered around our lives, they have become enticing targets for cyber criminals. This course is designed to address this growing threat to mobile devices, networks and services delivered over the mobile infrastructure.

This is a graduate-level course that provides an introduction to mobile security. We explore the unique challenges facing mobile security while comparing and contrasting it with what we’ve learnt from computer and network security. This course provides a good conceptual overview of the security principles incorporated in the design of several generations of mobile networks, from GSM (2G), UMTS (3G) up until LTE (4G). We also explore platform security models of the popular mobile device platforms including IOS, Android and the Windows Phone. This course also covers the security of mobile services, such as VoIP, text messaging, WAP and mobile HTML.

Prerequisites

- Undergraduate level knowledge of computer systems and networks.
- Owning a smart mobile device, such as a smart phone, will provide an added advantage.

Textbooks

1. Mobile Application Security, Himanshu Dviwedi, Chris Clark and David Thiel, 1st Edition
2. Security of Mobile Communications, Noureddine Boudriga, 2010

Course Topics

1. Introduction to Mobile Security
2. Building Blocks – Basic security and cryptographic techniques.
3. Security of GSM Networks
4. Security of UMTS Networks
5. LTE Security
6. WiFi and Bluetooth Security
7. SIM/UICC Security
8. Mobile Malware and App Security
9. Android Security Model
10. IOS Security Model
11. Security Model of the Windows Phone
13. Security of Mobile VoIP Communications
14. Emerging Trends in Mobile Security

Course Load

The course has four homework assignments, one test, one project and one research paper presentation. Apart from that, you will also have to contribute to topics on discussion forums. This course will be run in the graduate style where students are encouraged to be independent, take initiative and explore new topics on their own. The homework assignments and the test will be based on the course material and topics covered in the discussion forums.

Homework Assignments: The homework assignments will be in a Q/A form.

Final Exam: The final exam will assess your knowledge and mastery over the lecture material. It will be remotely proctored.

Research Paper Presentation: Each student will have to pick a research paper to present in the virtual classroom from a list of papers that I will be circulating. The student has to prepare a half an hour long presentation covering that topic.

Project: The project has to be conducted in teams of three. For the project, you will pick a topic again - the project might involve experimentation, coding, simulation or anything of your choosing. Choose a topic for your project and get it approved as well. Write a project proposal summary - a couple of paragraph description of what you plan to do for your project (by the end of Week 3) and get it approved by me. At the end of the semester, you will submit a detailed project report describing your project, the experimentation methodology and results (if any). If you cannot choose a topic on your own, I will have a list of projects that you can choose from.

Lectures: Listen to the lecture material on a weekly basis. I will be reviewing the lecture material in the virtual classroom sessions that I will conduct. Please attend these sessions, as it will give you the opportunity to get your questions answered.

Grading Policy

Homework Assignments: 20%
Research Paper Presentation: 10%
Project and Project Presentation: 30%
Online Participation: 10%
Final Exam: 30%
**Interaction Policy**

- Virtual classroom sessions will be held every week on Thursday from 9 am to 10 am Eastern time. Please join this session via the WebEx link on the left hand menu.
- Questions will be answered via email or through the virtual classroom sessions. For additional questions and interaction, please schedule an appointment.
- For grading related questions, please email the TA and keep me the instructor in cc.

**Student Responsibilities**

- **Online lectures:** Each lecture will consist of slides and video lectures. You are expected to read the relevant material in the textbook, and follow the video lectures.
- You are required to check online site daily for: Information, announcements, discussions, updated lecture notes, assignments, reading material etc.
- **Late Policy:** Submit assignments and tests on time - no extensions will be granted.

**Academic Integrity Policy**

Students must behave ethically at all times. All work should represent the students’ original ideas and thoughts. When doing the assignment you may consult any relevant source or person, but if you take information in a substantial way from someone or somewhere, you should reference it. You are **NOT** allowed to copy code/content in **ANY FORM** from any source. All tests will be individual and open book, but timed, and you may not consult anyone during the test. Any violation of the academic integrity policy will be awarded **ZERO** points.