COMP4310/6310 Wireless Mobile Computing

Course Overview
Instructor

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- Office Hours:
  - MW: 9:30-11:00am
  - Or appointment by email
About me?

• Research areas: network and wireless security, mobile computing, and information forensics.

• Related projects:
  - Improving wireless performance
  - Wireless protocol design
  - Wireless security and attack analysis

• About you?
Why this course?

GSM, LTE, etc...

RFID, Smart devices, laptop, GSM, UMTS, LTE, Bluetooth, WLAN...
Wireless standards evolution
Mobile devices

Pager
- receive only
- tiny displays
- simple text messages

Smart Phones
- Complex graphical displays
- character recognition
- simplified WWW

Laptop
- fully functional
- standard applications

Mobile phones
- voice, data
- simple graphical displays

Palmtop
- tiny keyboard
- simple versions of standard applications

Sensors, embedded controllers
Overview of the main topics

- Mobile Transport Layer
  - Mobile IP
    - Cellular Systems
    - Satellite Systems
    - WiFi
    - WiMAX
    - Bluetooth
  - Medium Access Control
    - Wireless Transmission
Prerequisite

- Basic programming and math skills.
- Basic understanding on computer networks
  - COMP3825
    - Internet, network layers, IP, TCP, routing, etc
Course Textbook

• Recommended but NOT mandatory:
  - “Mobile Communications (2nd Edition),” Jochen Schiller

• Course slides will be based on wireless networking materials in Dr. Sichitiu’s class @ NC State, Dr. Wang’s @ UofM, and other online resources.
Teaching Assistant

- Muktadir Chowdhury
  - PhD Student,
    Department of Computer Science,
  - Contact and office hour are in the course website.
Course Website

- [http://csa.memphis.edu/~zhuo/classes/COMP 4310-6310/](http://csa.memphis.edu/~zhuo/classes/COMP 4310-6310/)

- Basic info
  - Syllabus
  - Schedule
  - Class slides
  - Homeworks and solutions
  - Project info
Course Schedule

• **Lectures**: Cover a range of wireless topics:
  - Wireless physical layer
  - Medium access control (MAC)
  - WiFi
  - Cellular
  - Mobile IP
  - ...

• **Student paper presentations**: mobile applications:
  - New ideas and applications on emerging smart mobile devices
This course can

• improve your knowledge on wireless networking and mobile communications
  - via lectures

• improve your understanding of challenges in wireless mobile system design
  - via lectures

• give you information on various recent ideas and applications using mobile/smart device.
  - via student presentations
Grading

- Total: 100
  - A: 85-100
  - B: 70-84
  - ...

- Attendance: 5%
- Homework: 20%
- Midterm 1: 20%
- Midterm 2: 20%
- Paper Presentation: 15%
- Final Report: 20%
Attendance Policy

• Students should regularly attend the class.
  - Up to 5 random sign-ups during the semester.
  - One absence is excused.

• Total grading: 5%
  - No or one absence: 5%
  - Two absences: 3%
  - Three: 1%
  - Four or more: 0%
Homework Assignments (20%)

• 2 - 4 assignments in total
  - All work is done individually unless otherwise specified
  - Late homework: 15% penalty each day. Not accepted after THREE days unless there is a documented emergency.

• Homeworks are important!
Midterms (40%)

- There will be two in-class midterm exams
  - work on your own, closed everything (neighbor, laptop, phone, ...)
  - You are allowed to bring a letter-sized (8.5 * 11 inches) cheat sheet.
  - Midterms are not cumulative.
Presentations (15%)

- Students will in turn present recent papers about mobile device applications.

- List of papers will be published on the course website.
  - The instructor will make the presentation assignment at his discretion.
Paper Topics

• Examples in Conference: Mobisys 2015:
  - Turning a Mobile Device into a Mouse in the Air
  - TypingRing: A Wearable Ring Platform for Text Input
  - Visually Fingerprinting Humans without Face Recognition
Final Summary Report (20%)

• All students must form a team of 1 - 3 to complete a final paper summary report.
  - There will be no extra credit for a student working individually on the final project.
  - Get familiar with your classmates to form teams

• The project is to summarize all mobile application paper presented in the class
  - and hopefully present some of your own ideas on developing new mobile applications (5% extra credit)
Type Your Homework/Report

• Homework solutions and project report must be written using word processing software.
  - e.g., Word, Open Office, or LaTeX.

• Submit a well-formatted PDF file.
Plagiarism/Cheating

• All homeworks and midterms submitted by a student is expected to be a student's own work.
• For group projects, a team should work on the project on their own.
• Plagiarism or cheating will lead to a failing grade!
Questions?

- Regarding
  - Course Info?
  - Grading?
  - Assignment?
  - Midterms?
  - Project?