Fall 2011

CEG 436-01: Mobile Computing

Prabhaker Mateti
Wright State University - Main Campus, prabhaker.mateti@wright.edu

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Catalog Description: Study networking protocol and system design in mobile computing. Focus on concepts, architecture, design, and performance evaluation of mobile computing principles, protocols and applications, including: wireless TCP, Mobile IP, ad hoc routing, agent techniques, etc. Pre-requisite: CEG 402.

Source Material

- Adapted Materials from Android and iOS development sites

Learning Outcomes

1. Understand the impact of mobility on the network and computing system design.
2. Design and analyze protocol stack enhancements to layers and analysis of interaction and co-operation between wireless protocol layers.
3. Design and analyze Mobile IP.
4. Design and analyze ad hoc routing protocols for the 4th generation wireless network.
5. Design of system and application on mobile platforms, such as Android.

Attendance

Full attendance is expected.

Course Content

Lab work is a significant part of this course. The ordering of lectures, in contrast to the course content topics listed below, is largely due to this influence.

The topics are described at some length because they may be too unfamiliar to you. The numbers in parentheses are a rough estimate of the number of (75-minute) lectures on each topic.
1. Mobility and its impact on Computing
2. Internet Design Principle and Philosophy
3. Transport Layer mobility support and Mobile TCPs
4. Network Layer Mobility Support and Mobile IP
5. Ad Hoc Network Architecture and Capacity
6. Ad Hoc Routing
7. OS Mobility Support
8. Mobile OS case study
9. Software design for Mobile devices, e.g., Android and iOS platforms.

Exams

There are two exams contributing 25% and 30% to the final grade. The mid term is scheduled around the sixth week, and the final during the exam week as set by the Registrar.

Programming Projects

The programming projects contribute 40% to the final grade. I expect to give four projects worth 30% total. Projects must be submitted by midnight on the due date posted. *The subject matter of these projects is included in the exam.*

All lab work can be conducted within various WSU computer labs. But, it is highly recommended that you setup your own desktop/laptop for this work.

In this course, a project generally will begin with studying the source code tree given to you. It may require you to build an executable after suitable reconfiguration using tools such as make. The code will be in Java for Android and Objective C for iOS.

The projects are to be performed by the student individually. This must be work done *solely by you*, except for the parts I provided you with.

Homework Assignments

There are no homework assignments to be turned in.

CEG 636

Students enrolled in CEG 636 are required to do an additional task. This quarter the task is to do an extra project on one of the topics below, and sketch a new lab experiment based on that topic. If a topic beyond this list interests you, let us consider it.

TBD list