Syllabus   CSCI 235

Foundations of Mobile and Ubiquitous Computing

Fall Term 2015

Prof. Mark Sterling mark.sterling@nu.edu.kz **Office 7-25**	**Prof. Mona Rizvi** mona.rizvi@nu.edu.kz **Office 7-235**	**TA Assulan Nurkas** anurkas@nu.edu.kz **Office 7-510**

Fall Term Schedule

CSCI 235-1L MWF 13:00 – 13:50, 7.422, Prof. Rizvi
CSCI 235-2L MWF 14:00 – 14:50, 7.422, Prof. Sterling

Course Description

This course will give students a practical introduction to mobile application development using the Android platform. It will also provide an overview of the basic concepts and issues associated with mobile and ubiquitous computing.

Course Outcomes

After taking and successfully passing this course, the students will:

- Understand the software and hardware architectures of mobile devices
- Be proficient in mobile application development and deployment in the Android ecosystem
- Understand the history and economics of cellular telephone systems, handheld computing, and mobile applications

Course Materials

Sources for the course will include the Android developer documentation available at developer.android.com and relevant research articles and tutorials from scholarly publications (see below).

- Osseiran, A., Boccardi, F., et. al, "Scenarios for 5G mobile and wireless communications: the vision of the METIS project," *Communications Magazine, IEEE* , vol.52, no.5, pp.26,35, May 2014
- Cheng-Xiang Wang; Haider, F.; et. al, "Cellular architecture and key technologies for 5G wireless communication networks," *Communications Magazine, IEEE* , vol.52, no.2, pp.122,130, February 2014

Java is the language of Android application development. We will use the officially supported Android Studio IDE, which is based on the IntelliJ development environment.

Time permitting, look at development for the mobile web with Javascript, HTML, and CSS.

Class Structure

The model of instruction will emphasize a blend of lecture, presentation, demonstration, and hands-on exercises. The class meetings will be conducted in a hybrid computer lab, 7.422, designed to accommodate the full range of course activities.   Android devices may be provided for students who do not have access to one of their own.

Students are expected to attend class. Credit will not be given for homework assignments handed in late except under extenuating circumstances. There will be approximately 4 homework assignments and students will have about 1 week to complete each. In addition to homework, in class lab sessions will be conducted regularly and will be relevant to the week's topic.

In-class exercises are designed to help students practice the current material and may be done and submitted in pairs. Discussion with classmates, the instructor and the TAs is encouraged during these exercises. Homework assignments are intended to be individual work, unless instructed otherwise. Tests and exams are always individual work.

Course Assessment

The final grade will be calculated as follows:

- Mid-Term Exam   15%
- Final Exam   25%
- Homework   15%

- Course Project   20%
- Quizzes   15%
- Class Participation   10%

Grading Scale

A	95 and above
A-	90 - 94
B+	85 - 89
B	80 - 84
B-	75 - 79
C+	70 - 74
C	65 - 69
C-	60 - 64
D+	55 - 59
D	50 - 54
F	49 or below

Tentative Course Outline

Week	Dates	Topics	Homework
1	Aug 17,19,21	Introduction to Mobile Concepts, Java Fundamentals	
2	Aug 24,26,28	Mobile Device Architecture, Cellular Concept, Android Development Environment Project Structure, Gradle	
3	Aug 31, Sep 2,4	Basic Application Development, Activities, Intents, Resources, Manifest and Layouts	HW #1
4	Sep 7,9,11	Interaction, GUI Components (Views), Action Bars	Quiz #1
5	Sep 14,16,18	Graphics and Multimedia	HW #2
6	Sep 21,23,25	Sensor Platform: Camera, Microphone Location, Orientation, Movement	Quiz #2
7	Sep 28,30, Oct 2	Network, Social Networking, Debugging, Profiling	HW #3

8	Oct 5,7,9	Data Persistence and Mobile Web (bootstrap.js)	Mid-term Exam
Break	Oct 12,14,16	**Fall Break**	
9	Oct 19,21,23	Introduction to Ubiquitous Computing, Internet of Things, Wearables	
10	Oct 26,28,30	Enabling Technologies: Bluetooth, NFC, Cloud Computing Services	HW #4
11	Nov 2,4,6	Overview of Mobile Projects	Quiz #3
12	Nov 9,11,13	Data Processing for Mobile Applications	
13	Nov 16,18,20	Security, Privacy, and Economics	HW #5
14	Nov 23,25,27	Deployment and Maintenance	Quiz #4
15	Nov 30, Dec 2,4	Review of Materials	
Exam Period	Dec 6—11	**Exam Week**	**Final Exam**

Add deadline is Aug 21, drop deadline is Aug 28, withdrawal deadline is Oct 21.

Academic Integrity

Nazarbayev University and The School of Science and Technology have established high standards for academic integrity, using an approach in which students are trained to produce original work according to professional standards, and to properly cite and reference the work of others when it is appropriate to do so.

The specific guidelines are published in the NU Student Handbook. In particular,
- The assignments in this class are designed to introduce important concepts and techniques, and enable you to explore the material independently so as to gain insight and comprehension of the subject. Doing the work is much more important than getting the right answer.
- The course is designed such that each new week's material builds on the skills developed in the preceding week, thus, any action that interferes with this process (missing class, skipping the assignment, copying) will seriously impede your progress.
- You are welcome—and encouraged—to talk through concepts and ideas with your fellow students and to study with them, but do not give or receive direct help from your classmates on a graded assignment.
- Homework should be completed individually. If you distribute your work to others, even if you are not intending them to copy it, this is still considered academic misconduct.

- Even the appearance of cheating or inappropriate copying should be avoided.
- Students should be aware that the homework submission process incorporates an automated plagiarism detector.
- You may only get help on graded assignments from designated people—the professors or TAs for the course.

If you are struggling with an assignment, by all means, please seek help from them. In the event that academic misconduct such as plagiarism or cheating is discovered, the student will receive no credit for the work, and the event reported to the Senior Administrator for Students. Egregious cases, or a second offense, can result in failure of the course and potential suspension or expulsion from the university. When a student suspects that another student has violated the academic honesty policy, a report should be made to the appropriate faculty member.

Behavior

Students are expected to maintain respectful decorum in the classroom and laboratories, and in all interactions with fellow classmates, Teaching Assistants, Research Assistants and NU faculty and staff. Class time is short, and valuable, and thus should be used effectively; students are expected to refrain from such distractions as texting, phone calls, on-line chats, personal web browsing, the use of social networking sites, and excessive chatting or greetings during class time.

Students should come to class well-prepared, having completed the background reading and related assignments and possessing proper resources for the class meeting (books, paper, writing implements, computers, etc.), as needed.