CS310 - Mobile Application Development

Syllabus – Fall 2023/24

Course Objective

The main objective of this course is to provide students with the tools and skills needed to build applications for the Android platform. The course starts with a brief introduction to Java programming environment and moves forward with creating stateful web services using Java and developing mobile applications consuming web services via the Android platform.

Upon completion of this course, students are expected to design, code and implement applications on mobile and hand-held devices with limited resources, understand web services, manage messaging with HTTP and deploy/consume web services residing on Java Application Servers.

Prerequisites

Applicants are expected to have a basic understanding of writing algorithms and familiarity with the basic concepts of object orientation with some experience in a programming language like C#, C++, etc.

Projected Outline

• PART 1 – Java Language and Web API’s (Backend Programming)

  The objective of this part is to review the basics of Java as an Enterprise Programming Framework. Beginning with Java basics, the Spring Framework will be introduced for coding persistent applications backed by document stores for building microservice architectures. Upon completion, students will be able to use the Java language with efficient resource consumption for applications serving on the internet.

  Week-1  4 Oct – 5 Oct  
  Week-2  11 Oct – 12 Oct  
  Week-3  18 Oct – 19 Oct  
  Week-4  25 Oct – 26 Oct  
  Week-5  1 Nov – 2 Nov  
  Week-6  8 Nov – 9 Nov  
  Week-7  15 Nov – 16 Nov

  Submission of Project Groups (Oct 22nd)
  Project Proposal Submission (Oct 31st)
  Online Midterm Exam (SuCourse): Nov 1st, 08:40 – 10:30

• PART 2 – Android Programming (Frontend)

  The main objective of this part is to give students an introduction to programming on the Android platform and help them build skills needed for approaching and solving coding problems on limited
devices. Ergonomic user interface and efficient resource usage (memory, CPU, battery, network, physical disks, etc.) in achieving mobile tasks will be discussed in details.

Week-8  22 Nov – 23 Nov  Introduction to Android Framework
Week-9  29 Nov – 30 Nov  Activities, Views, Activity Life Cycle, Layouts, Observer Pattern

**Project Phase-1 Submission (Dec 3rd)**

Week-10  6 Dec – 7 Dec  Navigation, Tasks & Backstack, Menus, Fragments
Week-11  13 Dec – 14 Dec  Styles, Lists, RecyclerView
Week-12  20 Dec – 21 Dec  Multithreading & Concurrency
Week-13  27 Dec – 28 Dec  Accessing Web
Week-14  3 Jan – 4 Jan  Q/A and Wrap-up

Finals Week  **Project Phase-2 Submission**

Grading

**Midterm Exam (Online)**: 20% (Graded over 100)

**Course Project**: (Gradning details are below, please also check Project Proposal Documentation)

- Proposals: 10% (Pass/Fail)
- Project Phase-1: 15% (Graded over 100)
- Project Phase-2: 15% (Graded over 100)

**Final Exam**: 40% (Graded over 100)

**TOTAL**: 100%

*All exams must be attended and a project must be submitted for not failing the course!*

Instructors

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Office Hours

Teaching Assistants will be providing support at office hours, please follow the announcements.

Required Software

You may use any tool that supports Spring Framework and Android Development. However, TA’s and LA’s will only provide support for the following tools:

**Part 1:**
- Spring Tools 4 (Eclipse Version)  
  [https://spring.io/tools](https://spring.io/tools)
- Docker Desktop (for MongoDB and testing Microservice deployment)

**Part 2:**
- Android Studio  