

# CS310 - Mobile Application Development

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## Syllabus – Spring 2022/23

***We may have to revise the course plan according to the countrywide reassessment to be made regarding higher education. This is expected to happen at the beginning of April. The content to be delivered is certain but the method of course delivery, the number and dates of exams, and some other details are subject to change.***

### 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	28 Feb - 1 Mar	Java Introduction - The Big Picture - Classes and Objects -
Week-2	7 Mar - 8 Mar	Java Classes and Objects
Week-3	14 Mar - 15 Mar	Java Collections and Inner Classes and Exceptions <b>Project Proposal Submission (Mar 19<sup>th</sup>)</b>
Week-4	21 Mar - 22 Mar	Introduction to Spring Framework and Microservices
Week-5	28 Mar - 29 Mar	Persistence with Document Stores (MongoDB) <b>Midterm Exam (SuCourse): Mar 29<sup>th</sup>, 14:40 – 16:30</b>
Week-6	4 Apr - 5 Apr	Spring Data
Week-7	11 Apr - 12 Apr	Spring Web and Rest

- **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	18 Apr - 19 Apr	Introduction to Android Framework
Week-9	25 Apr - 26 Apr	Activities, Views, Activity Life Cycle, Layouts, Observer Pattern <b>Project Phase-1 Submission (Apr 30<sup>th</sup>)</b>
Week-10	2 May - 3 May	Navigation, Tasks& Backstack, Menus, Fragments
Week-11	9 May - 10 May	Styles, Lists, RecyclerView
Week-12	16 May - 17 May	Multithreading & Concurrency
Week-13	23 May - 24 May	Accessing Web
Week-14	30 May - 31 May	Q/A and Wrap-up
	Finals Week	<b>Project Phase-2 Submission</b>

## Grading

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

**Course Project** : *(Grading details below, please 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

### Part 1:

- Java SE Development Kit (JDK) . JDK 8 or newer.  
<https://www.oracle.com/java/technologies/downloads/#jdk17-windows>
- Spring Tools 4  
<https://spring.io/tools>
- Docker Desktop (for MongoDB and testing Microservice deployment)

### Part 2:

- Android Studio

<https://developer.android.com/studio>