

CS683 Mobile Application Development (Fall 2022)

Department of Computer Science

Metropolitan College

Boston University

Syllabus

Instructor Information

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Course Information

Lecture

EPC 206 Mon 6:00 PM - 8:45 PM

Prerequisites

[MET CS 342](#) or CS520 or CS521 or instructor's consent.

Preferred TextBook:

Head First Android Development: A Learner's Guide to Building Android Apps with Kotlin, 3rd ed. By Dawn Griffiths and David Griffiths (December, 2021)

How to Build Android Apps with Kotlin: A hands-on guide to developing, testing, and publishing your first apps with Android.

by Alex Forrester, Eran Boudjnah, Alexandru Dumbravan, Jomar Tigcal.

Publisher: Packt Publishing; 1st edition (February 26, 2021)

There are a number of Android programming books available on the market. The following books are also good references:

- Android Programming: The Big Nerd Ranch Guide, 4th edition by Bill Phillips, Chris Stewart and Kristin Marsicano
- Android Studio 4.2 Development Essentials - Kotlin Edition by Neil Smyth

Due to the constant update of Android APIs, we will always refer to the official Android developer website for updated information.

Other Reading Materials

- Official Android Developer Website (This is the most important resource):
<https://developer.android.com>
- OWASP Top 10 Mobile Risks:
https://www.owasp.org/index.php/OWASP_Mobile_Security_Project#tab=Top_10_Mobile_Risks

Description (from Catalog)

The course discusses the principles and issues associated with mobile application development using Android as the development platform. Topics covered will include Android application components (Activities, Services, Content Providers and Broadcast Receivers), ICC (Inter-component Communication), UI design, data storage, asynchronous processing, Android sensing, 2D graphics, and Android security. We will also introduce Kotlin as the main language for Android development. Students will develop their own apps in Kotlin (or Java if they really want) using Android Studio in their semester-long projects. It would be better to have prior knowledge of Java programming.

Learning Outcomes

By successfully completing this course students will be able to:

- Describe basic components of an Android application and their communication
- Explain the lifecycle of an Android application
- Read and write programs in Kotlin
- Develop simple to complex Android applications using various Android UI elements
- Develop simple to complex Android applications with local or remote data storage
- Develop simple to complex Android applications with asynchronous processing
- Describe various security issues in Android applications
- Describe basics of Android graphics and Android sensing

Course Requirements

- Class participation
- Reading and study
- Labs and the Semester-long project
- Exam

Course Policies

Grading Policy

The grade for the course is determined by the following:

Overall Grading Percentages	
Project assignments (in 6 parts)	50%
Labs	10%
Quizzes	6%
Class Participation	4%
Final Exam	30%

Project Percentages	
Assignment 1 (Project Planning Report)	10%
Assignment 2 - 5 (Project Progress Report)	15% (each)
Assignment 6 (Project Final Report)	20%
Final Project Presentation	10%

Every assignment has a due date. The late submissions will be penalized **within a week** with **3 points per day**. No assignments will be accepted three days after the deadline unless for some extraordinary reasons. It is the students' responsibility to keep secure backups of all assignments.

Letter grade/numerical grade conversion is shown below:

A (95-100) A- (90-94)

& references listed

B+ (85-89) B (80-84) B- (79-77)

C+ (74-76) C (70-73) C- (65-70)

D (60-65) F (0 – 59)

Attendance Policy

Attendance is expected at all class meetings. You are responsible for all material discussed in class. In general, no makeup quizzes and exams will be given unless an extremely good, verifiable reason is given in advance. Please respect your classmates by silencing your cell phones and other electronic devices before class begins.

Academic Integrity

Academic conduct in general and MET College rule in particular require that all references and uses of the work of others must be clearly cited. All instances of plagiarism must be reported to the College for action. *For the full text of the academic conduct code, please check*

<http://www.bu.edu/met/for-students/met-policies-procedures-resources/academic-conduct-code/>.

Course Schedule

Class #	Date	Topics	Assignments
1	09/12	Introduction to Android and Android application	Lab1 Project Assignment 1
2	09/19	Introduction to Android Application Development Using the Software Engineering Approach Introduction to Kotlin	
3	09/26	MVC, Basics of User Interface Elements, Intents	Lab2 <u>Quiz 1</u>
4	10/03	Fragments, MVVM	
5	10/11	Adapters and Adapter Views (Class is on Tuesday)	Lab3 Project Assignment 2
6	10/17	Inter-component Communication and Fragment Communication, navigation	
7	10/24	Shared Preferences SQLite and Room Databases	Lab4 <u>Quiz 2</u>
8	10/31	Repository, Network Storage Content Providers, Testing	
9	11/07	Broadcast Receiver Process and Thread, Kotlin Coroutines	Lab 5 Project Assignment 3

10	11/14	Handler, Services	
11	11/21	Service, Job, Worker	Project Assignment 4 <u>Quiz 3</u>
12	11/28	Android Application Security	
13	12/05	Images and Graphics, Sensors	
14	12/12	Project Presentation & Review	Project is Due
15	12/19	Exam	

The above schedule is tentative, subjected to change according to the progress of the class and the feedback of the students.

You should read related book chapters for each topic. The additional reading material may also be assigned. Students are responsible for **ALL** the materials covered in the lectures and lab sessions including any topics not in the textbooks.