BIRZEIT UNIVERSITY
Faculty of Engineering and Technology
Computer Science Department

Mobile Software Development

1- **Course information:**
   A. **Course Code:** COMP 438.
   B. **Course Name:** Mobile App Development.
   C. **Prerequisite:** Comp333
   D. **Co-requisite:**
2- **Instructor information**
   A. **Name: Dr. Samer Zein**
   B. **Email: szain@birzeit.edu**

3- **Course Description**
This comprehensive hands-on programming course targets latest technologies and frameworks in native mobile development. Concise explanations and hand-on case studies will guide students through the different frameworks, tools, and patterns for developing scalable, compelling, and robust mobile apps that can reach customers and clients on a variety of devices. The course focuses on development for Android platform as well as providing platform agnostic knowledge that can help students to understand how other platforms work too. Taught topics include: Android main building components (Activities, Intents, Fragments, Broadcast Receivers, SQLite), life cycle conformance, developing Rest Web Services using Spring Boot, developing in restricted environments, asynchronous programming, connecting with Restful web services (Retrofit, GSON), fluid user interfaces, background processes, unit tests, and test automation.

4- **Course Goals**
   A. Understand the peculiarities of mobile computing in general and native mobile development in particular
   B. Understand the main building blocks of Android platform development.
   C. Create native mobile apps for the enterprise using Android platform.
   D. Understand how to consume scalable RESTful Web Services.
   E. Understand fluid interfaces development strategies.
   F. Understand and apply asynchronous programming.
   G. illustrate test driven development and test automation

5- Course Outcomes

Upon successful completion of this course, the student will be able to:

   A. Knowledge and understanding
   1. Comprehend the building blocks of native mobile applications using Android platform.
   2. Understand asynchronous programming and fluid interfaces.
   3. Apply test driven development and test automation.

   B. Cognitive skills (thinking and analysis).
   4. Establishing a mobile strategy to understand how mobile apps are different than traditional web and desktop applications
   5. Analyse and investigate different development frameworks for mobile applications.
   6. Build mobile application for the enterprise.
   7. Develop Rest web services.

   C. **Communication skills (personal and academic**).
   13. Be able to communicate with other member of the testing team in order to evaluate and develop mobile apps.

   D. Practical skills (Transferable Skills)
   14. Use available Android integrated development environments such as Android Studio and Spring Boot Toolkit.

6- Course Content

Week	Topics	
1	Introduction to native mobile apps and their peculiarities. Android SDK Features, and Android Structure	
2, 3	Activities, Fragments, and Intents	
4	User interfaces and layouts	
5	Fluid user interfaces	
6	Data persistence and offline mode	
7	Asynchronous programming	
8, 9	Connecting with Restful Webservices with Volley, and GSON	
10	Messaging and location based-services	
11, 12	Developing Android background services	
13, 14	Test driven development and test automation	

7- **Teaching and learning methods**
   A. **Lectures**
   B. **Assignments**
   C. **Presentations and Exams.**

8- **assessment methods based on outcomes**
   1. ......Exams ......*To Assess*........ knowledge and understanding.......
   2. ....Practical projects ....*To Assess*........practical skills & cognitive skills.......

9- **Weighting of assessments**

Project Assignments	35%
Midterm (if allowed by university)	30%
Final Exam (if allowed by university)	35%
Total	100%

10- **References**
   A. Essential books /text books
      1. Beginning Android Programming with Android Studio (2016)
      2. Enterprise Android: Programming Android Database Applications for the Enterprise, 2013.
   B. Recommended books and Readings
      1. Professional Mobile Application Development 2012.