Course Description

Title: Mobile and Application Development Lab Code: 18B28CI408
L-T-P scheme: 0-0-2 **Credit: 2**

Prerequisite: Student must have passed the course "Software Development Fundamentals", and the knowledge of Object-Oriented Programming is desirable.

Objective:

1. To make students capable to design and implement a fully-functional mobile phone application for Android mobile phones that must be sufficiently robust so that it can be deployed with actual users.
2. To help students learn to work as a team.

Learning Outcomes:

Course Outcome	Description
CO1	Describe those aspects of mobile programming that make it unique from programming for other platforms,
CO2	Utilize rapid prototyping techniques to design and develop sophisticated mobile interfaces.
CO3	Program mobile applications for the Android operating system that use basic and advanced phone features
CO4	Integrate mobile applications with cloud-based services like databases.
CO5	Deploy applications to the Android marketplace for distribution.

Course Content:

The following assignments will be carried out in synchronization with the theory classes.

Unit-I: Relooking classes, methods, objects, relationships, polymorphism, overriding and other object-oriented concepts, making inheritance-based designs, containership, abstract classes and interfaces.

Unit-II: Installing Android Studio, familiarity with the Android Studio environment, Working with buttons, captions and basic view types. Animations, setting duration, scaling, alpha and other translation methods, working with grid layouts.

Unit-III: Working with media, embedding video, audio and controlling audio controls using a seek bar. Downloading and displaying image and text data from an Internet resource. Working with regular expressions.

Unit-IV: Activity switching(intents), working with Google Map API, Latitudes and Longitudes, map markers, zooming-in and zooming-out, asking for location access, daily purpose apps based on Google Map and location access, deploying mobile applications. Working with alert dialogues and lists view, create, insert and delete operations with SQLite database, working with web views and freely available APIs like hacker news.

Unit-V: Uploading an image from a device to Google's Firebase Storage, performing authentication through Google's Firebase, Deleting records from Google's Firebase. Introduction to cross-platform development tool like Flutter or React Native, Native vs. Cross-Platform vs. Hybrid approach, Choosing a development approach for your mobile app.

Note: Two labs are reserved for project development, doubt sessions, and to cover any pending topic.

Mapping of Units to Labs:

Unit	Labs
I	1, 2, 3
II	4, 5
III	6, 7, 8
IV	9, 10, 11
V	12

Teaching Methodology:

This project-oriented course examines the principles of mobile application design and development. Students will learn application development on the Android platform. Most classes will be divided into two parts. The first hour of the class will be devoted to a lecture and question and answer period on a technical concept. In the remaining two hours of each class, students solve an exercise based entirely on the concepts learned in the first hour. Although there are design and programming projects along the way, they are all designed to support the development of an outstanding final project. Students are expected to work on a project that produces a professional-quality mobile application. Projects will be deployed in real-world applications. Course work will include project conception, design, implementation, and pilot testing of mobile phone software applications.

Evaluation Scheme:

Exams		Marks	Coverage
P-1		15 Marks	**Based on Lab Exercises: 1-6**
P-2		15 Marks	**Based on Lab Exercises: 7-13**
Day-to-Day Work	Viva	20 Marks	**70 Marks**
	Demonstration	20 Marks	
	Lab Record	15 Marks	
	Attendance & Discipline	15 Marks	
Total		**100 Marks**	

Learning Resources:

Study material of Software Development Fundamentals Lab (will be added time to time): Digital copy will be available on the JUET server.

Text Book:

[1] Burnette, Ed, Hello, Android: Introducing Google's Mobile Development Platform. {This is a good introduction for someone who knows Java or C# but is new to Android and Eclipse.}
[2] Jerome (J.F.) DiMarzio, Android: A Programmer's Guide, McGraw Hill.

Reference Books/Material:

[1] Jones, M. and Marsden, Mobile Interaction Design

Web References:

[1] https://www.tutorialspoint.com/android/index.htm
[2] https://www.javatpoint.com/android-tutorial