Birla Institute of Technology & Science, Pilani
Hyderabad Campus

FIRST SEMESTER 2021-2022

Course Handout Part II

Date: 20th August 2021

In addition to part-I (General Handout for all courses appended to the time table) this portion gives further specific details regarding the course.

Course No.	: *CS F314*
Course Title	: *Software development for portable devices*
Instructor-in-Charge	: Dr. Manik Gupta (manik@hyderabad.bits-pilani.ac.in)

Scope and Objective of the Course:

The main objective of the course is to introduce concepts of mobile computing while acquiring skills for creating and deploying mobile applications using development platforms and tools. The main focus of the course will be on Android mobile application development platform with emphasis on underlying concepts as well as hands on experience in developing mobile apps. Essential Android programming concepts will be covered and exposure to build a variety of apps using Java will be provided. Advanced features like user experience, localization, working with device sensors will also be covered.

At the end of the course, the student will be able to:
CO1 Understand mobile computing technology and challenges in developing for a ubiquitous environment.
CO2 Understand mobile application software architecture and design components
CO3 Learn an application development platform for portable devices and gain practical hands on experience

Please note that this is an advanced undergraduate course and requires an essential prerequisite on Object oriented programming and desired prerequisites on Computer networks and Operating systems.

Textbooks:

T1. Mobile Computing 3rd Edition by Raj Kamal, Oxford University Press

Reference Books:

R1. Android Application Development 2nd Edition by Barry Burd, Wiley Publications
R2. Android Programming The big nerd ranch guide 4th Edition by Kristin Marsicano, Brian Gardner, Bill Phillips and Chris Stewart, Big Nerd Ranch Publications

R3. Head first Android Programming 2nd Edition by Dawn Griffiths and David Griffiths, Oreilly Publications

Tentative Course Plan:

Lecture No.	Learning objectives	Topics to be covered	Chapter in the Text Book
1-2	• To learn about mobile computing along with novel applications • To get an understanding of the 3-tier architecture and various design considerations for mobile computing • To get an insight into features, limitations and design constraints of mobile devices	• Introduction to mobile computing - Applications, architecture, design considerations • Mobile client devices and pervasive computing - Classification and characterization of mobile devices, Device design constraints	T1- Chapter 2,3
3-4	• To understand about different computing environments for smartphones – development tools, device emulators, OS platforms • To understand basic Android application and its various features	• Mobile Operating Systems, Development Environments • Introduction to Android Application Development Platform	T1- Chapter 16
5-6	• To learn about android activities and how to use them in app development • To get an understanding of the complete activity lifecycle	• Android Activities • Activity lifecycle	R1- Book 3, Chapter 1
7-8	• To learn about explicit and implicit intents	Intents and Intent Filters	R1- Book 3, Chapter 2
9-10	• To learn how to run background services • To learn how to create and use a broadcast receiver	• Services • Broadcast Receivers	R1- Book 3, Chapter 3,4
11-12	• To understand how database processing works in Android • To learn how to share data using content providers	Working with Databases and Content Providers	R1- Book 3, Chapter 5

13-14	• To understand different layout concepts and widget organization	Creating User interfaces with Layouts and Widgets	R1- Book 4, Chapter 1
15-16	• To learn how to develop apps that work on both phone and tablets • To learn how to program using fragments and manage multi panel activities	Building Apps for Tablets	R1- Book 5, Chapter 1
17-18	• To learn how to create a basic wearable app • To learn to run an Android app on wearable	Developing for Android Wear	R1- Book 5, Chapter 2
19-20	• To learn to connect to device hardware sensors and use them in app development	Working with Device Sensors	R1- Book 5, Chapter 3
21-22	• To learn to create various user interaction elements, add themes and styles to create delightful user experience	User Experience	R2 – Chapter 21/ Online resources
23-24	• To learn to adapt the app based on user specific language settings and vision/hearing/mobility impairments	• Localization • Accessibility	R2 – Chapter 17, 18
25-26	• To introduce mobile app development process for cloud computing and IoT	• Mobile Cloud Computing • IoT based mobile application development	Research papers/Online resources
27-28	• Buffer lectures for invited guest lectures and revision	• Industry Guest Lectures • Course Revision	-

Evaluation Scheme:

Component	Duration	Weightage (%)	Date & Time	Nature of Component
Mid Term Exam	1.5 hours	30	23/10/2021 9.00 - 10.30AM	Closed Book
Lab Project (after mid sem)	--	25	TBA	Take home
Quiz – 1 No. (before mid sem)	--	10	TBA	Open Book In class
Comprehensive Exam	2 Hours	35	27/12 AN	Closed Book

Consultation Hour:
TBA

Notices:
All notices and announcements pertaining to this course will be displayed on the CMS/Google Classroom.

Make-up Policy:

1. No Make-up requests for Quiz and Lab Project will be catered to.
2. Prior permission of the Instructor-in-Charge is required to get make-up for the mid-semester exam. Only on producing documentary proof of absence, proving that student would be unable to appear for the exam the decision of granting the make-up will be taken.
3. Prior permission of AUGSD is required to get make-up for the comprehensive exam.
4. Instructor-in-charge's decision in the matter of granting make-up would be final.

Academic Honesty and Integrity Policy:
Academic honesty and integrity are to be maintained by all the students throughout the semester and no type of academic dishonesty is acceptable.

INSTRUCTOR-IN-CHARGE
CS F314