**PH 532.2 MOBILE APPLICATION DEVELOPMENT WITH ANDROID**

**Total No. of Lectures   :  48                Total Marks:    100                      [L – T – P – S]**

**No. of Lectures / Week:  4                  Credits          :      4                     [3 – 1 - 0 - 2]**

**Learning Objectives:**The objective of this course is to make the students:

* Understand the internal structure of the Android OS
* To facilitate students to understand Android SDK
* To help students to gain a basic understanding of Android application development
* To inculcate working knowledge of Android Studio development tool
* To provide guidelines, design principles and experience in developing applications for small mobile devices.

**Learning Outcomes:**At the end of the module, the student will be able to demonstrate:

* Critique mobile applications on their design pros and cons,
* Utilize rapid prototyping techniques to design and develop sophisticated mobile interfaces,
* Program mobile applications for the Android operating system that use basic and advanced phone features,
* Deploy applications to the Android marketplace for distribution
* A working understanding of the characteristics and limitations of mobile hardware devices including their user-interface modalities.

**Unit - I**

Introduction to Android - Architecture - Features of Android SDK - Introducing the Development Framework, Developing for Android- Android Development Tools- The Android Virtual Device Manager - Android SDK Manager - The Android Emulator - The Dalvik Debug Monitor Service - The Android Debug Bridge. Installing and Configuring Android SDK, ADT and AVD - Android Software Stack, Dalvik Virtual Machine.

**(10hrs)**

**Unit – II**

**Creating Android Applications:** Working of Android Application: Android Application Life Cycle; Building User Interfaces - Introducing Activities, Various Layouts, Fragments, and Adapters. Intents, Intent Filters, Controls, Dialogs, Toasts and Notifications: Displaying Pictures and Menus with Views; Adding Interactivity and Handling UI events.

(**10 hrs)**

**Unit – III**

**Building Blocks of Android:** Activities: Life Cycle and Working; Broadcast Receivers: Creating, Registering and unregistering a Broadcast Receiver. Content Providers: Concept of Content Resolver, Creating and using Content Providers. Services: Bound Services and Unbound Services, Life Cycle of services. **(9 hrs)**

**Unit - IV**

**Data Access in Android:** Creating, Saving and Retrieving Shared Preferences; Introducing the Preference Framework and the Preference Activity; Including Static Files as Resources; Working with the File System. Introducing Android Databases; Introducing SQLite; Content Values and Cursors; Working with SQLite Databases; Creating and Using Content Providers; Using Native Android Content Providers. (10 hrs)

**Unit – V**

Advanced Android: Introducing Services, Using Background Threads, Using Alarms; Controlling Device Vibration; Introducing Android Text-to-Speech; Using Sensors and the Sensor Manager; Using Accelerometer, Compass and GPS; Audio, Video and Using the Camera; Using Telephony and SMS.

**(9 h**rs)

Text Books:

[1]. Reto Meier, Ian Lake, “Professional Android”, 4th edition, 2018,Wiley Wrox Publications.

[2]. Dawn Griffiths, David Griffiths, “Head First Android Development”, 2nd Edition, 2017, O'Reilly Media.

**Reference Books:**

1. Bill Phillips, Chris Stewart, Kristin Marsicano, “Android Programming: The Big Nerd Ranch Guide”, 3rd edition, 2017, Big Nerd Ranch Guides.
2. John Horton, “Android Programming for Beginners”, 2nd edition, 2018, Ingram short title.
3. Paul Dietel, Harvey Dietel, “Android 6 for Programmers : An App Driven approach”, 2016, Pearson
4. Reito Meier, “Professional Android Application Development”, 1st Ed, 2012, Wiley Press.
5. Wei- Meng Lee, “Beginning Android 4 Application Development”, 1st Ed, 2012, Wiley Press.
6. Mednieks, Laird Dornin, Blake Meike, “Programming Android”, 2nd Ed,2012, O’Reilly Media.