NIRMA UNIVERSITY
SCHOOL OF TECHNOLOGY, INSTITUTE OF TECHNOLOGY
M. Tech. in Electronics and Communication Engineering (Embedded System)
M.Tech. Semester - II
<u>Department Elective III</u>

L	T	P	C
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Course Code	3EC32D301
Course Title	Mobile Programming

Course Outcomes (COs):
At the end of the course, students will be able to -
1. Design and develop Mobile User Interfaces for given embedded system.
2. Evaluate and choose suitable wireless connectivity, mobile security and mobile development process for embedded systems.
3. Develop mobile applications using the Android Programming for given specification for embedded system.

Syllabus: **Teaching Hours:**

UNIT I: Mobile Programming Languages   **05**
Java, Extended Mark-up Language(XML), Unified Modelling Language (UML), Mobile Development Platforms (Android and iOS)

UNIT II: Design and Development Platform   **04**
Mobile Application Development and Debugging, Android Studio, Android Virtual Device, Dalvik Compiler, Additional Dimensions of Mobile Application Development: Mobile agents and peer-to-peer architectures for mobile computing

UNIT-III Android Programming   **05**
Layout, views, Resources, Scrolling Views Activities, Intent, Activities and Intents, User Interfaces, Activity Life Cycles and managing states, Localization, Networking, Constraints, Services and Permissions , Libraries, Widgets, Data - Saving, Retrieving and Loading, Publishing of Applications

UNIT-IV Sensors and Multimedia in Android   **05**
Sensors in Mobile Phone, Using Orientation and Accelerometer sensors, Taking pictures , Media Recorder, Rendering previews, Multimedia Supported Test, Image, Audio, Video formats, Simple media playback

UNIT V: Wireless Connectivity   **05**
Making calls, Monitoring data connectivity and activity, Accessing phone properties and status, Controlling the phone, Sending messages, Synchronization and replication of mobile data, Mobility and location information, Active transactions

UNIT VI: Mobile Security   **06**
Security: Storing Data, Internetworking, Android Permissions, Intents, Broadcast Receiver, Activities, Content Providers, Files, mobile development process architecture, design, and technology selection, Mobile application implementation hurdles, Testing

Self-Study:
The self-study contents will be declared at the commencement of semester. Around 10% of the questions will be asked from self-study contents.

Laboratory Work:
Laboratory work will be based on above syllabus with minimum 10 experiments to be incorporated.

Suggested Readings:

1. Zigurd R. Mednieks, Laird Dornin, G. Blake Programming Android , O'Reilly
2. Micheal Burton, Android App Development for Dummies, O'Reilly
3. Shambhu Upadhyaya, Abhijit Chaudhury, Kevin Kwiat and Mark Weiser, Mobile Computing: Implementing Pervasive Information and Communications Technologies, Springer
4. Reza B'Far, Mobile Computing Principles: Designing and Developing Mobile Applications with UML and XML, Cambridge University Press

L = Lecture, T = Tutorial, P = Practical, C = Credit