

NIRMA UNIVERSITY
SCHOOL OF TECHNOLOGY, INSTITUTE OF TECHNOLOGY
B.Tech. Electronics & Communication Engineering
Semester - V
Department Elective I

L	T	P	C
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Course Code	2ECDE53
Course Title	Mobile Programming

Course Outcomes (COs):

At the end of the course, the students will be able to

1. Comprehend the characteristics and architecture of mobile applications.
2. Design and develop mobile applications using the android application development framework.
3. Design and develop multimedia applications on the android platform.
4. Choose sensors to be used for the design of a given mobile application.

Syllabus:

Teaching hours:45

UNIT I: Mobile Programming Languages	07
Object-Oriented Programming language features, Java 2 Micro Edition, Extended Mark-up Language (XML), Android and iOS Introduction.	
UNIT II: Android Programming	08
Layers of Android, Android Components, Building on the Linux kernel, Running in the Dalvik VM, Layout views, Intent, Android components – activity, service, broadcast receiver, content provider, mapping processes to applications, creating an android application, Localization, Networking, Constraints, Services and Permissions, Libraries, Widgets, Data - Saving, Retrieving and Loading, Publishing of Applications.	
UNIT III: Android Software Development Kit	07
Creating an Activity class, Layouts, Exploring connection, Working with views, Exploring common views, Multitasking with Handler views, Intents and Services, Storing and retrieving data, Networking and web-services.	
UNIT IV: Sensors and Multimedia in Android	06
Playing audio in android, video, capturing media, Interacting with the Sensor Manager, Sensors in Mobile Phone, Using Orientation and Accelerometer sensors.	
UNIT V: Localization	06
Introduction to Localization, need for localization, Strategies for localizing an application, Leveraging Android resource capabilities, challenges in localization.	
UNIT VI: Android Native Development Kit	09
Introduction to NDK, Uses for the NDK, Building an application with the NDK, Building the JNI library-Understanding, Implementing the library, Compiling the JNI library, Building the user interface, User interface layout, Integrating the NDK into Eclipse.	
UNIT VII : Case Study	02
Building the SenseBot application.	

Self-Study:

The self-study content will be declared at the commencement of the semester. Around 10% of the questions will be asked from self-study content.

Laboratory Work:

Laboratory work will be based on the above syllabus with a minimum of 10 experiments to be incorporated.

Suggested Readings:

1. W. Frank Ableson, Robi Sen, Chris King, C. Enrique Ortiz, Android in Action, Manning Publications

2. Zigurd R. Mednieks, Laird Dornin, G. Blake, Programming Android, O'Reilly Publication
3. Micheal Burton, Android App Development for Dummies, O'Reilly Publication
4. Shambhu Upadhyaya, Abhijit Chaudhury, Kevin Kwiat and Mark Weiser, Mobile Computing: Implementing Pervasive Information and Communications Technologies, Springer
5. 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