**NIRMA UNIVERSITY**
**Institute of Technology**
**B. Tech. Computer Science and Engineering**
**Open Elective (open to all branches except Dept. of CSE)**

| L | T | P | C |
|---|---|---|---|
| 2 | 0 | 2 | 3 |

| | |
|---|---|
| **Course Code** | 2CSOE79 |
| **Course Title** | Mobile Application Development |

## Course Outcomes:

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

1. explain the basic principles and constructs of object-oriented programming
2. design, develop, execute, debug and validate programs in object oriented programming environment
3. apply various tools and technologies to conceptualize and develop variety of mobile applications

## Syllabus:

**Teaching Hours**

**Unit I** — **03**

**History and overview of Java**: Creation of Java, features of Java, byte code, Evolution of Java, three OOP principles (Inheritance, Polymorphism, Encapsulation), lexical issues.

**Unit II** — **05**

**Data types, Variables, Control statements, Arrays**: primitive data types, literals, variables, type conversion and casting, automatic type promotion in expressions, type promotion rules, operators, one dimensional array, multi-dimensional array, alternative array declaration statements, control statements

**Unit III** — **07**

**Classes and Methods**: class fundamentals, declaring objects, assigning object reference variables, adding methods to a class, returning a value, constructors, this keyword, garbage collection, finalize method, overloading methods, argument passing, object as parameter, returning objects, access control, static, final, nested and inner classes, command line arguments, variable-length arguments

**Unit IV** — **03**

**Introduction to Android:** Introduction to Mobile Computing, Introduction to `Mobile application development technologies, development Environment, Features of Phone Gap

**Unit V** 04

**Factors in Developing Mobile Applications:** Setting up multiple development environments for different platforms, Building and Debugging on Multiple Platforms, Mobile Software Engineering, Frameworks and Tools

**Unit VI** 04

**User Interfaces:** Generic UI Development, Designing the Right UI for Mobile Devices, Text-to-Speech Techniques, Multichannel and Multimodal UIs, UI Design Patterns, Notifications

**Unit VII** 04

**Storing and Retrieving Data:** Synchronization and Replication of Mobile Data, Storing and retrieving data from SQLite, Working with a Content Provider, Reading and Writing to Contacts, Firebase and PHP connection with android.

## 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 applications of the above syllabus with minimum 10 experiments to be incorporated.

## Suggested Readings^:


1. Herbert Schildt, Java – The Complete Reference, Tata McGraw Hill
2. Balagurusamy, Programming with Java – A primer, Tata McGraw Hill
3. Reto Meier, Professional Android 4 Application Development, Wrox Publication


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

^this is not an exhaustive list