Diploma Branches in which this subject is offered: Computer Engineering

Objective:

Students taking this course will develop an understanding of the ways that mobile technologies can be used for communication. They will also consider the impact of mobile computing on the field of education as a whole.

Credits Earned: 4 Credits

Course Outcomes:
After learning the course the students should be able:
  ➢ To classify various modulation techniques, multiple access techniques for wireless communication and propagation models.
  ➢ To learn wireless operations with its standards.

  ➢ To Understand the design of various component, process and design of wireless network.

  ➢ To Understand mobile network using GSM/GPRS technologies.

  ➢ To Understand working of Android Studio

Pre-requisite of course: NA.

Teaching and Examination Scheme

Teaching Scheme (Hours)			Credits	Theory Marks			Tutorial/ Practical Marks		Total Marks
Theory	Tutorial	Practical		ESE (E)	Mid Sem (M)	Internal (I)	Viva (V)	Term work (TW)	
2	0	4	4	50	30	20	25	25	150

Contents:

Unit	Topics	Contact Hours
1	**What is Mobile Computing:** History, Types, Benefits, Application, Evolution, Security Concern regarding Mobile Computing, Different Propagation Modes, Wireless Architecture and its types, needs of mobile user,	6
2	**Wireless Transmission Fundamentals :** TCP/IP Protocol suit, OSI Reference Model, Modulation, Modulation Techniques FDMA/TDMA/CDMA, WAP Architecture, VoIP, VoIP applications, Mobile IP	6
3	**GSM / GPRS Communication :** **GSM** :- call routing Architecture, PLMN interface, addresses and identifiers, network aspects, frequency allocation, authentication and security, Handoff v/s Handover **GPRS**:- network operation, data services, Applications, Billing and charging	8
4	**Wireless Operations and its Standards:** **Wireless LAN**:- IEEE 802 and IEEE 802.11 Protocol Architecture and Services, **Cellular Networks:-** Channel allocation, multiple access, location management, Handoffs Technique.	4
5	**Introduction to Android :** APIs, Architecture, Framework Application, Application components, manifest file, Android source and installation , Development Environment exploration, first Android application, Working with Activities, **Layouts:-** Linear Layout, Relative Layout, Scroll view Layout, Table Layout, Frame Layout **Views, Buttons and Menu:-** Text View, Edit Text View, Button View, Radio Button, Check Box, Image Button, Rating Bar, options Menu, Context Menu.	4
	Total Hours	**28**

References:

1. Mobile ComputingTechnology,Applications and service creation ,Asoke K Telukder, Roopa R Yavagal by TMH.
2. Mobile Computing,Raj Kamal by Oxford
3. Wireless Communications & Networks, Second Edition,William Stallings by Pearson
4. Mobile Computing Theory and Practice-Kumkum Garg-Pearson

Suggested Theory distribution:

The suggested theory distribution as per Bloom's taxonomy is as per follows. This distribution serves as guidelines for teachers and students to achieve effective teaching-learning process

Distribution of Theory for course delivery and evaluation					
Remember	Understand	Apply	Analyze	Evaluate	Create
35%	35%	30%	-	-	-

List of Experiments:

Sr. No.	Unit No.	Name of Topics	Contact Hours
1	5	Installation of Android Studio and understanding of android SDK, Android API Levels and configuring emulators.	2
2	5	Create a Hello World Application	2
3	5	Create an application to display image and its description using TextView and ImageView	2
4	5	Create an application with TextView and Buttons to understand the event handling in android.	2
5	5	Create applications with different controls to understand various android layout like Linear Layout, Relative Layout, Constraint Layout	4
6	5	Create Pizza Ordering App, add buttons increase the quantity of pizzas, calculate and display total amount.	4
7	5	Extends Pizza Ordering app to add multiple types of pizza and display calculated amount on different activity.	4
8	5	Create calculator app with two textboxes and 4 buttons which calculates the basic mathematical functions.	2
9	5	Creates a menu/navigation and put event handler to navigate to various activity using menu/navigation.	4
10	5	Develop an android app which displays a form to get following Info. 1.Username 2.password 3.Email 4.phone number 5.state 6.country Form should be followed by a "Submit" button. when clicked shows the entered information (List of states should be displayed in spinner automatically)	4
11	5	Using android, Create a login Activity. It asks for "username" and	4

		"password". If username and pass word is valid, Display Welcome message.	
12	5	Making app's APK file and deploy it on user's mobile phone or play store.	2

Instructional Method:

a. The course delivery method will depend upon the requirement of content and need of students. The teacher in addition to conventional teaching method by black board, may also use any of tools such as demonstration, role play, Quiz, brainstorming, MOOCs etc.

b. The internal evaluation will be done on the basis of continuous evaluation of students in the laboratory and class-room.

c. Practical examination will be conducted at the end of semester for evaluation of performance of students in laboratory.

d. Students will use supplementary resources such as online videos, NPTEL videos, e-courses, Virtual Laboratory

Supplementary Resources:

1. https://developer.android.com/index.html
2. www.tutorialspoint.com/mobilecomputing
3. http://www.wirelessdevnet.com/
4. http://www.protocols.com/
5. https://developer.apple.com/
6. https://www.udemy.com
7. http://nptel.ac.in