Subject Code: IT605D-N	**Subject Title:** Mobile Computing
Pre-requisite	Computer Networks

Teaching Scheme (Credits and Hours)

Teaching scheme				Total Credit	Evaluation Scheme					
L	**T**	**P**	**Total**		**Theory**		**Mid Sem Exam**	**CIA**	**Pract.**	**Total**
Hrs	**Hrs**	**Hrs**	**Hrs**		**Hrs**	**Marks**	**Marks**	**Marks**	**Marks**	**Marks**
03	00	02	05	04	03	70	30	20	30	150

Course Objective:

To learn the architecture of GSM , GPRS and CDMA networks.

Know about the various Ad Hoc or Personal Area Network like Bluetooth, WiFi etc

Outline of the Course:

Sr. No	Title of the Unit	Minimum Hours
1	Basic history of Mobile Computing	8
2	Overview of Wireless n/w. and Technologies	14
3	General packet radio service(GPRS)	8
4	Wireless Application Protocol(WAP) WAP,MMS,GPRS application	10
5	Mobile ADHOC Networks	8

Total hours (Theory):48
Total hours (Lab):32
Total hours:80

Detailed Syllabus

Sr. No	Topic	Lecture Hours	Weight age(%)
1	Basic history of Mobile Computing Architecture for mobile computing, Three tier architecture, design considerations for mobile computing, mobile computing through internet, Wireless network architecture, Applications, Security, Concerns and Standards, Benefits, Future. Evolution of mobile computing.	8	17
2	**Overview of Wireless n/w. and Technologies** Introduction, Different generations, Introduction to 1G, 2G, 3G and 4G, Bluetooth, Radio frequency identification(Rfid),Wireless Broadband, Mobile IP: Introduction, Advertisement, Registration, TCP connections, two level addressing, abstract mobility management model, performance issue, routing in mobile host, Adhoc networks, Mobile transport layer: Indirect TCP, Snooping TCP, Mobile TCP, Time out freezing, Selective retransmission, transaction oriented TCP ,IPv6 Wireless network topologies, Cell fundamentals and topologies, Global system for mobile communication, Global system for mobile communication, GSM architecture, GSM entities, call routing in GSM,PLMN interface, GSM addresses and identifiers, network aspects in GSM,GSM frequency allocation, authentication and security, Short message services, Mobile computing over SMS,SMS, value added services through SMS,accessing the SMS bearer, Security in wireless networks.	14	29
3	**General packet radio service(GPRS)** GPRS and packet data network, GPRS network architecture, GPRS network operation, data services in GPRS, Applications of GPRS, Billing and charging in GPRS.	8	17
4	**Wireless Application Protocol(WAP) WAP,MMS,GPRS application CDMA and 3G** Spread-spectrum Technology, CDMA versus GSM, Wireless data, third generation networks, applications in 3G Wireless LAN, Wireless LAN advantages,IEEE802.11 standards ,Wireless LAN architecture, Mobility in Wireless LAN, Deploying Wireless LAN, Deploying Wireless LAN, Mobile ad hoc networks and sensor networks, wireless LAN security, WiFi v/s 3G Voice over Internet protocol and convergence, Voice over IP,H.323 framework for voice over IP,SIP, comparison between H.323 ad SIP, Real time protocols, convergence technologies, call routing, call routing, voice over IP applications, IMS, Mobile VoIP, 13 30 Security issues in mobile Information security, security techniques and algorithms, security framework for mobile environment.	10	20
5	**Mobile AdHoc Networks** Ad Hoc Basic Concepts, Characteristics, Applications, Design Issues, Routing, Essential of Traditional Routing Protocols, Popular Routing Protocols, Vehicular Ad Hoc Networks (VANET), MANET vs VANET	8	17
	Total	48	100

Instructional Method and Pedagogy:

- At the start of course, the course delivery pattern, prerequisite of the subject will be discussed.
- Lectures will be conducted with the aid of multi-media projector, black board, OHP etc.
- Attendance is compulsory in lecture and laboratory which carries 10 marks in overall evaluation.
- One internal exam will be conducted as a part of internal theory evaluation.
- Assignments based on the course content will be given to the students for each unit and will be evaluated at regular interval evaluation.
- Surprise tests/Quizzes/Seminar/tutorial will be conducted having a share of five marks in the overall internal evaluation.
- The course includes a laboratory, where students have an opportunity to build an appreciation for the concepts being taught in lectures.
- Experiments shall be performed in the laboratory related to course contents.

Learning Outcome:

On successful completion of this course, the student should be able to:

1. Students can explain the basics of Mobile Telecommunication System
2. Choose the required functionality at each layer for given application
3. Design their own Ad Hoc system

List of Experiments:

1	What is Mobile Computing? Explain the three tier architecture of mobile computing with diagram.
2	Write a WML program to create a card.
3	Write a WML program to create a deck that contain two cards and provide the Functionality of calling two cards from one another.
4	Write a WML program to display list of following card and provide the functionality to load a particular card, a. Sales b. Product c. Services
5	Write a WML program for usage of template tag.
6	Write a WML program to display the text in the following format. a) Bold b) Underlined c) Emphasized d) Big font e) Small font f) Strong font
7	Write a WML program to create the following table.

Honda	Suzuki	Yamaha
Mitsubishi	Ford	Maruti

8	Write a WML program to implement the functionality of Login by username.
9	Write a WML program to display special characters on the screen.
10	Write a WML program to create following selection list. a. Red b. Green c. Yellow d. Blue
11	Write a WML program to create following option group. 1. Honda 1.1 CD 100 1.2 CD Dawn 2. Suzuki 2.1 Max 100 2.2 Samurai
12	Write a WML program to display the image on the screen after 5 seconds.
13	Write a WML program to develop the calculator.

Reference Books:

1. Mobile Computing , Asoke K Telukder, Roopa R Yavagal, TMH
2. Mobile Communications, Jochen Schiller, Pearson

3. Wireless Communications and Networks, 3G and beyond, ITI Saha Misra, TMH.
4. Principle of wireless Networks by Kaveh Pahlavan and Prashant Krishnamurthy, Pearson 2002.