Subject Code: 01CE0701

Subject Name: Mobile Computing

B.Tech. Year - IV

Objective: Students taking this course will develop an understanding of the ways that mobile technologies can be used for teaching and learning. They will also consider the impact of mobile computing on the field of education.

Credits Earned: 4 Credits

Course Outcomes: After completion of this course, student will be able

- To understand concepts of Mobile Communication. (Understand)
- To analyse next generation Mobile Communication System. (Analyze)
- To understand network and transport layers of Mobile Communication. (Understand)
- Analyze various protocols of all layers for mobile and ad hoc wireless communication networks. (Analyze)
- To understand IP and TCP layers of Mobile Communication. (Understand)

Pre-requisite of course: Fundamental of Networking.

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)	
3	0	2	4	50	30	20	25	25	150

Contents:

Unit	Topics	Contact Hours
1	**Detailed Introduction of Mobile Computing:** History, Types, Benefits, Application, Evolution, Security Concern regarding Mobile Computing, Different Propagation Modes, Wireless Architecture and its types, needs of mobile user,	04

2	**The cellular concept:** Cellular system, Hexagonal geometry cell and concept of frequency reuse, Channel Assignment Strategies Distance to frequency reuse ratio	**04**
3	**Telecommunication System:** **GSM**: - Channel allocation ,call routing Architecture, PLMN interface, addresses and identifiers, network aspects, frequency allocation, authentication and security, Handoffs Technique. **GPRS**: network operation, data services, Applications, Billing and charging	**10**
4	**Mobile IP:** Need of mobile IP, IP packet delivery, Agent Discovery, Registration, Tunnelling and encapsulation, Route optimization, IP Handoff	**06**
5	**Mobile Transport Layer:** Overview of Traditional TCP and implications of mobility control. Improvement of TCP: Indirect TCP, Snoop TCP, Mobile TCP, Fast Retransmit/fast recovery, Time-out freezing, Selective retransmission, Transaction-oriented TCP.	**06**
6.	**Wireless Application Protocol:** Introduction of WAP, WAP applications, WAP Architecture, WAP Protocol Stack, Challenges in WAP	**04**
7	**Mobile Ad Hoc wireless networks:** Introduction, Benefits, Difference, Routing protocols for ad hoc wireless networks: DSDV and AODV	**04**
8	**Introduction to 4G:** Introduction, features and challenges, Applications of 4G, 4G network architecture	**04**
	Total Hours	**42**

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
5. TCP/IP Protocol Suite by Behrouz A Forouzan, Third Edition,TMH

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	Analyse	Evaluate	Create
20%	20%	20%	15%	10%	15%

Suggested List of Experiments:

1. Cisco Certification on Mobility Fundamentals.
2. Cisco Certification on Intro to Packet Tracer Mobile.
3. Cisco Certification on Get Connected.
4. Cisco Certification on NDG Linux Unhatched

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. http://www.wirelessdevnet.com/
2. http://www.protocols.com/
3. https://developer.apple.com/
4. https://www.udemy.com
5. http://nptel.ac.in