WIRELESS NETWORKING AND MOBILE COMPUTING
Semester I (Computer Engineering)
SUB CODE: MECE103

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	3	70	30	20	30	150

LEARNING OBJECTIVES:

The objective of this course is

- To know the details of TCP/IP
- Understand working of Internet
- Know application of TCP/IP
- Manage TCP/IP and prepare foundation for future Networks

OUTLINE OF THE COURSE:

Unit No	Topics
1	Wireless Networking
2	Wireless Networks
3	Introduction to Mobile Computing
4	Multiple Access Techniques
5	Mobile Network And Transport Layer
6	Mobile Ad hoc Network

Total hours (Theory): 45

Total hours (Practical): 30

Total hours: 75

DETAILED SYLLABUS:

Sr. No	Topic	Lecture Hours	Weight age (%)
1	**Wireless Networking:** Introduction to Wireless Networking ,History of wireless networks, Difference between Wireless and Fixed Telephone Networks, Development of Wireless Networks, Wireless Network Architecture, Benefits of Wireless Networks, Wireless Networking Applications	04	10
2	**Wireless Networks:** Introduction, Wireless Technology Satellite Communications: Parameters & configurations, Capacity Allocation Cellular Wireless Networks : Principles, Evolution Wireless LANs: Technology,IEEE 802.11 Wireless LAN Standard, Radio based Wireless LANs,Components,Configuration,Performance, Wi-Fi, Wimax	12	25
3	**Introduction to Mobile Computing:** Emerging Technologies, GSM, SMS, GPRS, EDGE, 3G, 4G	08	17
4	**Multiple Access Techniques:** Frequency Division Multiple access, Time Division Multiple Access, Aloha, Slotted Aloha, CSMA	07	16
5	**Mobile Network And Transport Layer** Mobile IP- Goals and requirements, Entities, IP packet delivery, Agent Discovery, Registration, Tunneling and Encapsulation, Optimizations, Reverse Tunneling, IP micro-mobility support DHCP Traditional TCP-Congestion Control, Slow start, Fast retransmit/fast recovery, Implications of mobility, Classical TCP- Indirect TCP, snooping TCP, Mobile TCP, Transmission/time out freezing and advancements	07	16
6	**Mobile Ad hoc Network:** Introduction, Routing protocols- Routing, Dynamic source routing, Destination sequence distance vector, Overview ad-hoc routing protocols , Application- RFID, Bluetooth, Zigbee, NFC	07	16

INSTRUCTIONAL METHOD AND PEDAGOGY (Continuous Internal Assessment (CIA) Scheme)

- 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.
- Two internal exams will be conducted and average of the same will be converted to equivalent of 15 Marks 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.

STUDENTS LEARNING OUTCOMES:

- On successful completion of the course, the student will be having the basic knowledge of TCP/IP protocol suite and will understand the working of internet.
- Student will be able to manage any TCP/IP network and also design optimized TCP/IP network.

REFERENCE BOOKS:

1. Wireless Communications and Networks – William Stallings Pearson Education
2. Mobile Communications – Jochen Schiller Pearson
3. Wireless Communications Principles and Practice –Theodore S. Rappaport.
4. Wireless Networking – Kumar, Manjunath & Kuri, Morgan Kaufmann Publishers
5. Mobile Computing , Asoke K Telukder, Roopa R Yavagal, TMH

LIST OF PRACTICALS:

Sr.No	Name of Experiment
1	Introduction to J2ME & Net beans
2	Introduction to WML
3	Programs on WML
4	WAP site using WML
5	Introduction to NS2
6	Simulation in wired n/w
7	Simulation in wireless n/w
8	Assignment on ns2
9	Assignment on ns2
10	Assignment on ns2