Course code: Course Title	Course Structure			Pre-Requisite
SE419: Wireless and Mobile Computing	L	T	P	Computer Networks
	3	0	2	

Course Objective: To understand the concept of wireless communication, mobile computing paradigm, its novel applications and limitations.

S. NO	Course Outcomes (CO)
CO1	Describe fundamental concepts of mobile computing, and wireless telephony technologies.
CO2	Apply wireless networking protocols, and WAP technologies to develop efficient mobile communication applications.
CO3	Illustrate data management techniques, replication strategies, and mobile agent security mechanisms in wireless environments.
CO4	Analyze and implement different adhoc routing protocols, QoS considerations, and security algorithms for enhancing wireless network performance.
CO5	Design optimized mobile computing solutions for real-world applications.

S. NO	Contents	Contact Hours
UNIT 1	**Introduction, issues in mobile computing, overview of wireless telephony:** cellular concept, GSM: air-interface, channel structure, location management: HLR, VLR, hierarchical, handoffs, channel allocation in cellular systems, Cellular telephone, Digital Cellular Standards, Call Routing in GSM, Satellite Technology, FDMA, TDMA, CDMA and GPRS.	5
UNIT 2	**Wireless Networking, Wireless LAN Overview:** MAC issues, PCF, DCF , Frame types, addressing, IEEE 802.11 standards, Blue Tooth: Architecture , Layers and protocols, Wireless multiple access protocols, TCP over wireless, Wireless applications, data broadcasting, Mobile IP, WAP: Architecture, protocol stack, application environment, applications, WAP application environment(WAE), WML, WSP, WTP and WTLS.	9
UNIT 3	**Data management and data replication:** Data management issues, data replication for mobile computers, Replication through data allocation, User profile replication scheme, optimistic replication and active replication, adaptive clustering for mobile wireless networks, File system, Disconnected operations.	6
UNIT 4	**Mobile Agents computing**: Introduction, Advantages, Application Domains; security and fault tolerance: Protecting server, code signaling, Firewall approach; security techniques and algorithms: DES, 3DES, AES, Diffie Hellman, RSA: transaction processing in mobile computing environment: Structure, properties, Data consistency, Transaction relation, Recovery and wireless data Dissemination.	9
UNIT 5	Ad Hoc networks, localization, Routing protocols: Global state routing (GSR), Destination sequenced distance vector routing (DSDV), Fisheye state routing (FSR), Dynamic source routing (DSR), ABR, Route Discovery, Route Repair/Reconstruction, Establishment, Maintenance; Ad Hoc on demand distance vector routing (AODV). File Directories, File Sharing, Implementation Issues.	9
UNIT 6	Temporary ordered routing algorithm (TORA), Quality of Service in Ad Hoc Networks, and applications.	4

	TOTAL	42

REFERENCES		
S.No.	**Name of Books/Authors/Publishers**	**Year of Publication / Reprint**
1	Jochen Schiller, "Mobile Communications", Pearson Education India, 2nd Edition.	**2008**
2	Dharma Prakash Agarwal, Qing-An Zeng, "Introduction to Wireless and Mobile Systems", CL Engineering, 2nd Edition.	**2007**
3	Raj Pandya, "Mobile and Personal Communication Systems and Services", IEEE.	**1999**
4	Asoke K Talukder, Hasan Ahmed, Roopa Yavagal, "Mobile Computing-Technology, Applications and Service Creation", McGraw Hill Education, 2nd Edition.	**2017**