

GUJARAT TECHNOLOGICAL UNIVERSITY

ELECTRONICS & COMMUNICATION (WIRELESS COMMUNICATION TECHNOLOGY) (44)

MOBILE COMPUTING TECHNOLOGY

SUBJECT CODE: 2744401

M.E. 4TH SEMESTER

Type of course: Mobile Computing related branch

Prerequisite: Require understanding of wireless and Mobile communication fundamentals

Rationale:

This course will cover a broad selection of topics in data communications, resource management, network protocols, distributed computing, information management, user interfaces, applications/services, and security. Students will learn the principles of Mobile Computing and its enabling technologies, and explore a young but rich body of exciting ideas, solutions, and paradigm shifts.

Teaching and Examination Scheme:

Teaching Scheme			Credits	Examination Marks						Total Marks
L	T	P		Theory Marks		Practical Marks				
			ESE (E)	PA (M)	ESE (V)		PA (I)			
					ESE	OEP	PA	RP		
4	0	2#	5	70	30	20	10	10	10	150

Content:

Sr. No.	Content	Total Hrs	% Weightage
1	Chapter- I Cellular Mobile Wireless Networks: Systems and Design Fundamentals, Propagation Models Description of Cellular system, Frequency Reuse, Co channel and Adjacent channel interference, Propagation Models for Wireless Networks, Multipart Effects in Mobile Communication, Models for Multipart Reception Evolution of Modern Mobile Wireless Communication System – First Generation Wireless Networks, Second Generation (2G) Wireless Cellular Networks, Major 2G standards, 2.5G Wireless Networks, Third Generation 3G Wireless Networks, Wireless Local Area Networks (WLANs), All-IP Network: Vision for 4GIssues in Mobile computing, Wireless Multiple Access protocols , channel Allocation.	12	25%
2	Chapter – II Data management issues: mobility, wireless communication and portability, data replication Schemes , basic concept of multihopping, Adaptive Clustering for mobile Network , Multicluster Architecture.	10	25%
3	Chapter – III Location Management: Introduction, Location Based Services , Automatically Locating Mobile Users, Locating and Organizing Services, Is Use and future directions, mobile IP, Comparison of TCP wireless.	10	25%

4	Chapter - IV Transaction management: Introduction, Data Dissemination, Cache Consistency, Mobile transaction processing, mobile database research directions, Security fault tolerance for mobile N/W.	10	25%
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Reference Books:

1. Schiller, “Mobile Communications”, Pearson.
2. UIWE Hansmann, Other Merk , Martin-S-Nickious, Thomas Stohe, “Principles of Mobile computing”, Springer international Edition.
3. Mobile Computing by Ashok K. Talukder,Tata McGraw-Hill Education
4. C. K. TOH , “Mobile Adhoc Networks”, TMH
5. Sipra DasBit, Biplab K. Sikdar, “Mobile Computing, PHI, 2009
6. Kumkum Garg, “Mobile Computing”, Pearson

Course Outcome:

Students will learn the principles of Mobile Computing and its enabling technologies, and explore a young but rich body of exciting ideas, solutions, and paradigm shifts

List of Experiments:

1. Setup & Configuration of Wireless Access Point (AP)
2. Study of WLAN: Ad Hoc & Infrastructure Mode
3. Study of Bluetooth Protocol and Applications
4. GSM modem study (Nokia 30) and SMS client-server application
5. Mobile Internet and WML
6. J2ME Program for Mobile Node Discovery
7. Mobile protocol study using omnet++
8. Wireless Network Security: kismet and Netstumbler

Design Engineering Problems/Open Ended Problems:

1. Design and Program Income Tax and Loan EMI Calculator for Mobile Phones.
2. Implementation of Mobile Network using Network Simulator (NS2)

Review Presentation (RP): The concerned faculty member shall provide the list of peer reviewed Journals and Tier-I and Tier-II Conferences relating to the subject (or relating to the area of thesis for seminar) to the students in the beginning of the semester. The same list will be uploaded on GTU website during the first two weeks of the start of the semester. Every student or a group of students shall critically study 2 papers, integrate the details and make presentation in the last two weeks of the semester. The GTU marks entry portal will allow entry of marks only after uploading of the best 3 presentations. A unique id number will be generated only after uploading the presentations. Thereafter the entry of marks will be allowed. The best 3 presentations of each college will be uploaded on GTU website.