

IT402: WIRELESS TECHNOLOGIES AND MOBILE COMPUTING
CREDITS = 6(L=4, T=0, P=2)

Course Objective:

To understand the key components, technologies and relevant issues in wireless environment.

Teaching and Assessment Scheme:

| Teaching Scheme | | | Credits | Assessment Scheme | | | | Total Marks |
|-----------------|---|---|---------|-------------------|----|-----------|----|-------------|
| L | T | P | C | Theory | | Practical | | |
| | | | | ESE | CE | ESE | CE | |
| 4 | 0 | 2 | 6 | 70 | 30 | 30 | 20 | 150 |

Course Contents:

| Unit No. | Topics | Teaching Hours |
|----------|--|----------------|
| 1 | <u>Mobile Computing:</u> Introduction, History of mobile communications, Types, Propagation modes wireless network architecture, Applications, Security, Concerns and standards, Benefits, Future, Evolution of mobile computing, What mobile users need, SOC and AOC client, Mobile computing OS, Architecture for mobile computing, Three tier architecture, Design considerations for mobile computing, Mobile computing through internet, Making existing applications mobile-Enabled. | 12 |
| 2 | <u>Mobile Technologies:</u> 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. | 07 |
| 3 | <u>Global System for Mobile Communication(GSM):</u> 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. | 09 |
| 4 | <u>General Packet Radio Service(GPRS):</u> GPRS and packet data network, GPRS network architecture, GPRS network operation, Data services in GPRS, Applications of GPRS, Billing and charging in GPRS. | 08 |

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|---|--|----|
| 5 | <u>Wireless Technologies and Comparison:</u> | 07 |
| | 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, Mobile ad hoc networks and sensor networks, Wireless LAN security, WiFi v/s 3G. | |
| 6 | <u>Voice over Internet Protocol (VOIP):</u> | 04 |
| | Voice over internet protocol and convergence, Voice over IP, H.323 framework for voice over IP, SIP, Comparison between H.323 and SIP, Real time protocols, Convergence technologies, Call routing, Voice over IP applications. | |
| 7 | <u>Bluetooth:</u> | 04 |
| | Radio specification, Baseband specification, Link manager specification and Logical link control and adaption protocol. | |
| 8 | <u>4G Technology:</u> | 09 |
| | Introduction and need for 4G technology, Network architecture of cellular 4G, LTE network architecture, What is OFDMA, Features of 4G technology, Application of 4G technology. | |

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| TOTAL | 60 |
|--------------|-----------|

List of References:

1. William Stallings, *"Wireless Communications & Networks"*, Second Edition, Pearson publication.
2. Asoke K Telukder, Roopa R Yavagal, *"Mobile Computing Technology, Applications and service creation"*, Tata McgrawHills
3. Pradeep Kothari, *"Android Application Development"*, Black Book, Dreamtech press.
4. Dr. Sunilkumar S. Manvi, Dr. Mahabaleshwar S. Kakkasageri, *"Wireless and mobile networks"*, WILEY Publication.
5. P. Nicopolitidis, M. S. Obaidat, G. I. Papadimitriou, A. S. Pomportsis, *"Wireless networks"*, WILEY Publication.
6. Raj Kamal, *"Mobile Computing"*, Oxford.
7. Kumkum Garg, *"Mobile Computing Theory and Practice"*, Pearson Publication.
8. *"Android Wireless Application Development"*, Lauren Darcey and Shane Conder, 2nd ed., Pearson Education, (2011).

Course Outcomes (COs):

At the end of this course students will be able to ...

1. Analyze mobile computing architecture and wireless technologies.
2. Understand mobile technologies and wireless network systems.
3. Analyze and examine new generation of mobile technology.
4. Recognize spread spectrum technologies and differentiate wireless technologies.
5. Identify the working of Bluetooth.
6. Recognize and understand broadband cellular technologies using long term evolution.