



Sardar Patel Institute of Technology

Bhavan's Campus, Munshi Nagar, Andheri (West), Mumbai-400058-India
(Autonomous Institute Affiliated to University of Mumbai)

| Course Code | Course Name | Teaching Scheme (Hrs/week) | | | Credits Assigned | | | |
|-------------|------------------------------------|----------------------------|---|-----|------------------|---------------------|----|-------|
| | | L | T | P | L | T | P | Total |
| CPC604 | Mobile Communication and Computing | 4 | - | -- | 4 | - | -- | 4 |
| | | Examination Scheme | | | | | | |
| | | ISE | | MSE | | ESE | | |
| | | 10 | | 30 | | 100 (60% Weightage) | | |

| | |
|-----------------------------------|---|
| Pre-requisite Course Codes | - |
|-----------------------------------|---|

At end of successful completion of this course, student will be able to

| Course Outcomes | CO1 | To Understand GSM and CDMA Cellular architecture. |
|-----------------|-----|---|
| | CO2 | To Setup and configure wireless access points. |
| | CO3 | To Use Network Simulator tool to simulate mobile network. |
| | CO4 | To Implement small android based applications. |
| | CO5 | To understand the concept of Satellite Communication |

| Module No. | Topics | Ref. | Hrs. |
|------------|--|------|------|
| 1 | Introduction to Mobile Computing Wireless Communication, Applications, Cellular Systems, Antennas,satellite system, GEO, LEO, MEO, GPRS:-Architecture, Network nodes,GPRS support nodes. | 1.2 | 05 |
| 2 | GSM cellular telephony-architecture and system aspects Introduction, Basic GSM architecture, Basic radio transmissionparameters of the GSM system, Logical channel description, GSM timehierarchy, GSM burst structures, Description of the call set-up procedure,Handover, Ensuring privacy and authentication of a user, Modificationsand derivatives of GSM | 1.2 | 08 |
| 3 | Mobile Network Mobile IP, IP Packet Delivery, Agent Advertisement and Discovery,Registration, Tunnelingand Encapsulation,Optimization,ReverseTunneling,Mobile TCP, Fast Retransmit/ Fast Recovery,Transmission/Timeout Freezing, Selective Retransmission. | 1.2 | 06 |
| 4 | Third and Fourth Generation Systems W-CDMA, CDMA 2000; Improvements on Core Networks; Quality of | 1.2 | 06 |



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| | | | |
|--------------|---|-------|-----------|
| | Services in 3G ; Wireless Local Loop; Wireless Local Loop Architecture; Deployment Issues; TR-45 Service Description; Wireless Local Loop technologies. TETRA, UMTS and IMT-2000;UMTS Basic Architecture, UTRA FDD mode, UTRA TDD mode, 4G Architecture, Comparison between 3G and 4G. | | |
| 5 | Mobility Management Co- channel Interference, Mobility: Types of Handoffs; LocationManagement, HLR-VLR scheme, Hierarchical scheme, PredictiveLocation management schemes, cellular IP, PSTN. | 1,2,3 | 04 |
| 6 | Wireless Local Area Networks Introduction, Types of WLANs, Hidden station problem, HIPERLANType 1: HIPERLAN/1 MAC sublayer, HIPERLAN/1 CAC layer, HIPERLAN/1 physical layer. IEEE 802.11 WLAN standards: IEEE802.11 physical layer, IEEE 802.11 MAC sublayer. IEEE 802.11 andHIPERLAN standards for 5 GHz band: HIPERLAN/2 physical layer,HIPERLAN /2 data link control layer. Bluetooth: Introduction, UserScenario, Architecture, protocol. | 1,2 | 08 |
| 7 | Introduction to Android Layers, android components, mapping application to process. Android development basics. Hardware tools, Software tools, Android SDKfeatures | 3,11 | 05 |
| 8 | Security Issues In Mobile Computing Security Issues, Authentication, Encryption, Cryptographic Tools: Hash, Message Authentication Code (MAC), Digital Signature, Certificate. Secure Socket Layer (SSL). Characteristics of SIM, Equipment Identification. | 1,10 | 06 |
| Total | | | 48 |

References:

- [1] Jochen Schiller ,”Mobile Communication “, Addison wisely,Pearson Education
- [2] Krzysztof Wesolowski, “Mobile Communication Systems”, Wiley publication
- [3] W. Frank Ableson,Robi sen, Chris King, “ Android In Action “, Third Edition, Dreamtech Press
- [4] Mobile Computing By Rajkamal (Oxford).
- [5] Uwe Hansmann, Lothar Merk, Martin S. Nicklous, Thomas Stober, “Principles of Mobile Computing”, Springer
- [6] Rappaort, “Wireless Communications Principles and Practices”
- [7] Yi Bang Lin, “Wireless and Mobile Network Architecture”, John Wiley
- [8] P. Nicopolitidis, “Wireless Networks”, John Wiley
- [9] K. Pahlavan, P.Krishnamurthy, “Principles of Wireless Networks”



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- [10] Introduction to Wireless Telecommunication System and Networks by Mullet (Cengage Learning).
- [11] Beginning for Android 4 Application Development By Wei- Meng Lee, Wiley –India Edition.