



# COMPUTER ENGINEERING



POSITIVE QUADRANT  
TECHNOLOGIES  
SERVING INFORMATION WORLDWIDE  
**SEM VI**

# MOBILE COMPUTING

Programming & development

Course Curriculum



# MOBILE COMPUTING SEM VI

## **Module 1 : Introduction to Mobile Computing**

- Introduction to Mobile Computing
- Telecommunication Generations
- Cellular systems
- Electromagnetic Spectrum
- Antenna
- Signal Propagation
- Signal Characteristics
- Multiplexing
  - Spread Spectrum
  - DSSS & FHSS
  - Co-channel interference

## **Module 2: GSM Mobile Services**

- GSM Mobile services
- System Architecture
- Radio interface
- Protocols
- Localization and Calling
- Handover
- Security (A3, A5 & A8)
- GPRS system and protocol architecture
- UTRAN, UMTS core network
  - Improvements on Core Network

## **Module 3: Mobile Networking**

- Medium Access Protocol
- Internet Protocol and Transport layer
- Mobile IP
  - IP Packet Delivery
  - Agent Advertisement and Discovery



- Registration
- Tunneling and Encapsulation
- Reverse Tunneling
- Mobile TCP
  - Traditional TCP
  - Classical TCP Improvements like Indirect TCP
  - Snooping TCP & Mobile TCP
  - Fast Retransmit/ Fast Recovery
  - Transmission/Timeout Freezing
  - Selective Retransmission

## **Module 4: Wireless Local Area Networks**

- Introduction
- Infrastructure and ad-hoc network
- IEEE 802.11
  - System architecture
  - Protocol architecture
  - Physical layer
  - Medium access control layer
  - MAC management
  - 802.11a
  - 802.11b standard
- Wi-Fi security
  - WEP
  - WPA
  - Wireless LAN Threats
  - Securing Wireless Networks
- Bluetooth
  - Introduction
  - User Scenario
  - Architecture
  - protocol stack

## **Module 5: Mobility Management**

- Introduction to Mobility Management
- IP Mobility
- Optimization



- IPv6
- Macro Mobility
  - MIPv6
  - FMIPv6
- Micro Mobility
  - CellularIP
  - HAWAII
  - HMIPv6

## **Module 6: Long-Term Evolution (LTE) of 3GPP**

- Long-Term Evolution (LTE) of 3GPP
  - LTE System Overview
  - Evolution from UMTS to LTE
- LTE/SAE Requirements
- SAE Architecture
- EPS
  - Evolved Packet System
  - E-UTRAN
  - Voice over LTE (VoLTE)
  - Introduction to LTE-Advanced
- Self Organizing Network (SON-LTE)
- SON for Heterogeneous Networks (HetNet)
- Comparison between Different Generations (2G, 3G, 4G and 5G)
- Introduction to 5G

