

**MASTER OF COMPUTER APPLICATIONS (MCA) – SIXTH SEMESTER**

Sixth Semester		
Sr. No.	Name of Subject	Credits
1	Mobile Technology	5
2	Distributed System	5
3	Cryptography & Network Security	5
4	Project Work & Viva	7
<b>Total</b>		<b>22</b>

**Subject Name: MOBILE TECHNOLOGY**

- 1. Introduction to wireless communication:** Need and Application of wireless communication. Wireless Data Technologies Market for mobile.
- 2. Wireless transmission:** Frequency for radio transmission signal antennas, signal propagation Multiplexing Modulation, Spread and Cellular systems.
- 3. Medium Access Control:** Specialized MAC, SDMA, FDMA, TDMA, and CDMA.
- 4. Telecommunication Systems:** GSM, DECT systems –Architecture and protocols, Tetra frame structure, UMTS basic architecture and UTRA modes.
- 5. Wireless LAN:** Introduction Infrared v/s Radio transmission Infrastructure and ad-hoc network IEEE, 802.11, HIPERLAN, Blue Tooth.
- 6. Wireless ATM:** WATM services, Location Reference model function radio access layer handover Location management, Addressing, Mobile QoS, Access point control protocol.
- 7. Mobile Network Layer:** Mobile IP, DHCP.
- 8. Mobile Transport Layer:** TCP, Fast and selective retransmission and recovery Transaction oriented TCP.
- 9. Support for Mobility:** File systems, World wide web and Wireless Application Protocol with example applications.
- 10. Wireless Telephony Applications:** Overview of the WTA Architecture, The WTA client Framework, The WTA Server and security, Design considerations, Application Creation Toolbox.

**Subject Name: DISTRIBUTED SYSTEM**

- 1. Characterization of Distributed Systems-Introduction, System Models-Architectural-Fundamental. Inter-process Communication-Introduction-API for Internet protocols-External data representation and marshaling--Client-server communication-Group communication- Case study: Inter-process Communication in UNIX.**

2. Distributed Objects and Remote Invocation- Introduction-Communication between distributed objects-Remote procedure calls-Events and notifications.
3. Operating System Support-Introduction-OS layer-Protection-Processes and threads- Communication and invocation OS architecture.
4. Distributed File Systems-Introduction-File service architecture-Case Study: Sun Network File System-Enhancements and further developments. Name Services-Introduction-Name Services and the Domain Name System-Directory Services.
5. Time and Global States-Introduction-Clocks, events and process states-Synchronizing physical clocks-Logical time and logical clocks-Global states-Distributed debugging. Coordination and Agreement-Introduction-Distributed mutual exclusion-Elections-Multicast communication-Consensus and related problems.
6. Distributed Shared Memory-Introduction-Design and implementation issues-Sequential consistency and Ivy case study Release consistency and Munin case study-Other consistency models.

**Subject Name:** CRYPTOGRAPHY & NETWORK SECURITY

1. **Introduction:** OSI Security Architecture - Classical Encryption techniques – Cipher Principles – Data Encryption Standard – Block Cipher Design Principles and Modes of Operation - Evaluation criteria for AES – AES Cipher – Triple DES – Placement of Encryption Function – Traffic Confidentiality.
2. **PUBLIC KEY CRYPTOGRAPHY:** Key Management - Diffie-Hellman key Exchange – Elliptic Curve Architecture and Cryptography - Introduction to Number Theory – Confidentiality using Symmetric Encryption – Public Key Cryptography and RSA.
3. **AUTHENTICATION AND HASH FUNCTION:** Authentication requirements – Authentication functions – Message Authentication Codes – Hash Functions – Security of Hash Functions and MACs – MD5 message Digest algorithm - Secure Hash Algorithm – RIPEMD – HMAC Digital Signatures – Authentication Protocols – Digital Signature Standard.
4. **NETWORK SECURITY:** Authentication Applications: Kerberos – X.509 Authentication Service – Electronic Mail Security – PGP – S/MIME - IP Security – Web Security.
5. **SYSTEM LEVEL SECURITY:** Intrusion detection – password management – Viruses and related Threats – Virus Counter measures – Firewall Design Principles – Trusted Systems.

**Note:** The Normal Rule and Regulation pertaining to the Examination and other issues will be applicable in Faculty of Engineering and Technology as per Arunachal University of Studies Act 2012, Subsequent Statute and Rules & Regulations.