Established by Govt. of Arunachal Pradesh vide Act 9 of 2012, the Arunachal University of Studies Act, 2012 Recognized as per u/s 2(f) of University Grants Commission Act, 1956 NH-52, Namsai, Arunachal Pradesh -792103

BACHELOR OF COMPUTER APPLICATION MASTER OF COMPUTER APPLICATION INTEGRATED – SEMESTER TEN

Tenth Semester			
S. No.	**Name of Subject**	**Credits**	**Total Marks**
1	Distributed System	6	100
2	Cryptography & Network Security	6	100
3	Project Work & Viva	10	100
Total		**22**	

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.

Subject Name: PROJECT WORK & VIVA

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