REVISED SYLLABUS OF B.Sc. (COMPUTER MAINTENANCE) UNDER CBCS FRAMEWORK WITH EFFECT FROM 2020-2021

PROGRAMME: FOUR-YEAR B.Sc.
(B.Sc. Computer Maintenance)

(With Learning Outcomes, Unit-wise Syllabus, References, Co-curricular Activities & Model Q.P.)

For Fifteen Courses of 5 Semester
(To be Implemented from 2020-21 Academic Year)
# Structure of Computer Maintenance Skill Enhancement Course

**Programme:** B.Sc. with Computer Maintenance as one of the stream.  
**Discipline:** Computer Science

<table>
<thead>
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<th>Year</th>
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6A Wireless Communication and Networks

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<td>Wireless Communication and Networks</td>
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Course Outcomes

- Understand the concepts of wireless communication systems and their applications
- Know about the mobile radio propagation techniques and detailed understanding in wireless mobile communication
- Understand communication networks and detailed analysis of wireless communication networks.
- Understand the different protocols used for wireless communication systems and networks.

UNIT–I The Cellular Concept- System Design Fundamentals:

UNIT –II Radio wave Propagation:
UNIT III Mobile Radio Propagation:
Small-Scale Fading and Multipath: Small Scale Multipath propagation-Factors influencing small scale fading, Doppler shift, Impulse Response Model of a multipath channel-Relationship between Bandwidth and Received power, Small-Scale Multipath Measurements-Direct RF Pulse System, Spread Spectrum Sliding Correlator Channel Sounding, Frequency Domain Channels Sounding, Parameters of Mobile Multipath Channels-Time Dispersion Parameters, Coherence Bandwidth, Doppler Spread and Coherence Time, Types of Small-Scale Fading-Fading effects Due to Multipath Time Delay Spread, Flat fading, Frequency selective fading, Fading effects Due to Doppler Spread-Fast fading, slow fading, Statistical Models for multipath Fading Channels-Clarke’s model for flat fading, spectral shape due to Doppler spread in Clarke’s model, Simulation of Clarke and Gans Fading Model, Level crossing and fading statistics, Two-ray Rayleigh Fading Model.

UNIT IV Equalization and Diversity:

UNIT V Wireless Networks:
Introduction to wireless Networks, Advantages and disadvantages of Wireless Local Area Networks, WLAN Topologies, WLAN Standard IEEE 802.11, IEEE 802.11 Medium Access Control, Comparison of IEEE 802.11 a, b, g and n standards, IEEE 802.16 and its enhancements, Wireless PANs, HiperLan, WLL.

TEXTBOOKS
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</table>

LAB : - Any one Hands on Practice from each Unit.
**Course Objective:**
- To Study in detail about kernel structures associated with various Operating systems
- To Study in detail about various system calls, statements and their arguments as associated with Unix.
- To Study in detail about various system calls, statements and their arguments as associated with Linux

**Course Outcome:**
After completion of the course students will be able to
- Get complete knowledge regarding different types of operating systems and their Kernel structures.
- Work effectively on Unix Platform
- Work effectively on Linux Platform

**UNIT I**
**INTRODUCTION**

**UNIT II**
**UNIX I:** Overview of UNIX system, Structure, files systems, type of file, ordinary & Special files, file permissions, Introduction to shell. UNIX basic commands & command arguments, Standard input / output Input / output redirection, filters and editors, System calls related file structures, input / output process creation & termination.

**UNIT III**
**INTERPROCESS COMMUNICATION IN UNIX:** Introduction, file and record locking, Client–Server example, pipes, FIFOs, Streams & Messages, Name Species, Systems V IPC, Message queues, Semaphores, Shared Memory, Sockets & TLI.
UNITIV

INTRODUCTION TO NETWORKS AND NETWORK PROGRAMMING IN UNIX:


UNITV


TEXTBOOKS:

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LAB : - Any one Hands on Practice from each Unit.
6 C Cryptography and Network Security

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**Course Objective:**
- To study about the need and role of security and cryptography in computer networks.
- To study about different techniques associated with encryption.
- To study about different algorithms associated with computer networks.
- To study about different security architecture and designing issues related to firewalls.

**Course Outcome:**
After completion of this course, students will be able to know
- The need and role of security and cryptography in computer networks.
- Gain knowledge about different techniques associated with encryption.
- Functioning of different algorithms associated with computer networks.
- Gain knowledge regarding different security architecture and designing issues related to firewalls.

**UNIT–I**
**Introduction:** Attacks, services and mechanisms, security attacks, security services, a model for internetwork security, protection through cryptography, the role of cryptography in network security.

**UNIT–II**
**Conventional Encryption:** Substitution techniques and transposition techniques, block cipher principles, block cipher design principles, block cipher modes of operation. The data encryption standard

**UNIT–III**
**Public-key cryptography:** Principles of public-key cryptosystems, the RSA algorithm, key management. Authentication requirements, authentication functions, message authentication codes, hash functions.

**UNIT–IV**
**Digital Signatures and Authentication Protocols:** Digital signatures, Digital signature standard, Authentication Protocols, MD5, message digest algorithm, secure hash algorithm, HMAC.
UNIT–V

Mallsecurity&IPsecurity: Prettygood privacy, IPsecurity overview, IPsecurityarchitecture, Intruders, viruses and related threats, firewall design principles

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LAB : - Any one Hands on Practice from each Unit.
7A Data Storage Technologies and Networks

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Course Outcomes:
- To provide learners with a basic understanding of Enterprise Data Storage and Management Technologies
- Study storage technologies: SAN, NAS, IP storage etc., which will bridge the gap between the emerging trends in industry and academics.

Course Outcomes:
- Explain the Optical, Semiconductor media and techniques for read/write operations
- Overview of Virtualization Technologies, Storage Area Network
- Discuss the Networked Attached Storage and Networking issues.
- Classify the applications as per their requirements and select relevant SAN solutions.


UNIT-II: Usage and Access – Positioning in the Memory Hierarchy, Hardware and Software Design for Access, Performance issues.


Text Books:
2. Data Storage Networking: Real World Skills for the CompTIA Storage by Nigel Poulton

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LAB : - Any one Hands on Practice from each Unit.
Course Objectives:

- Students will gain the understanding of core network programming by using sockets and transport layer protocols like TCP and UDP
- Students will gain the understanding of inter process communication and implementation of different forms of IPC in client-server environment
- Students will get an exposure to various application layer protocols which are designed using sockets and transport layer protocols

Course Outcomes:

- Explain the client-server paradigm and socket structures.
- Describe the basic concepts of TCP sockets and TCP echo client-server programs.
- Discuss the UDP sockets and UDP echo client-server programs.
- Explain Socket options and ability to understand IPC.
- Apply the applications of sockets and demonstrate skill to design simple applications like FTP, TELNET etc.


UNIT-II: TCP: introduction to TCP-TCP connection establishment and termination-TIME_WAIT State. Elementary TCP sockets – Socket-connect-bind-listen-accept-fork-exec function-concurrent servers-Close function-read and write functions

UNIT-III: TCP echo client server program-getsockname and getpeername functions I/O multiplexing: I/O models-Select function-TCP echo server using select function-shutdown function-Poll function

UNIT-IV: UDP: Introduction to UDP-difference between TCP and UDP-recvfrom( ) and sendto( ) functions-UDP echo client server program-UDP echo client server using select function. Socket Options: IPv4 socket options-IPv6 socket options

Text Books:
1. Unix Network programming, the socket networking API, W.Richard Stevens, bill fenner, Andrew m.rudoff ,PHI.

References Books:
1. Advanced programming in the UNIX environment, W.Richard Stevens ,pearson education

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<td>NETWORK PROGRAMMING -LAB</td>
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LAB : - Any one Hands on Practice from each Unit.
Course Objectives:
- Understand when, where, how, and why to apply Intrusion Detection tools and techniques in order to improve the security posture of an enterprise.
- Apply knowledge of the fundamentals and history of Intrusion Detection in order to avoid common pitfalls in the creation and evaluation of new Intrusion Detection Systems
- Analyze intrusion detection alerts and logs to distinguish attack types from false alarms

Course Outcomes:
- Explain the fundamental concepts of Network Protocol Analysis and demonstrate the skill to capture and analyze network packets.
- Use various protocol analyzers and Network Intrusion Detection Systems as security tools to detect network attacks and troubleshoot network problems.

UNIT-I: History of Intrusion detection, Audit, Concept and definition, Internal and external threats to data, attacks, Need and types of IDS, Information sources Host based information sources, Network based information sources.

UNIT-II: Intrusion Prevention Systems, Network IDs protocol based Ids, Hybrid IDs, Analysis schemes, thinking about intrusion. A model for intrusion analysis, techniques Responses requirement of responses, types of responses mapping responses to policy Vulnerability analysis, credential analysis non credential analysis.

UNIT-III: Introduction to Snort; Snort Installation Scenarios, Installing Snort, Running Snort on Multiple, Network Interfaces, Snort Command Line Options. Step-By-Step Procedure to Compile and Install Snort Location of Snort Files, Snort Modes Snort Alert Modes.

UNIT-IV: Working with Snort Rules, Rule Headers, Rule Options, and the Snort Configuration File etc. Plug-in, Pre-processors and Output Modules, Using Snort with My-SQL.
UNIT-V: Using ACID and Snort Scarf with Snort, Agent development for intrusion detection, Architecture models of IDs and IPs.

Text Books:

Reference Books:

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LAB : - Any one Hands on Practice from each Unit.
## Board of Studies Computer Science / Applications / Information Technology

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<td>Member</td>
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<td>Sri. Shaik Abjal Jeelani Basha</td>
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