BACHELOR OF VOCATION (B.VOC.)
HARDWARE TECHNOLOGY AND NETWORKING (Faculty of Science and Technology)
B.VOC. Degree Course-Semester Pattern
Subject Theme
Skill Development Component Credits: 18
Semester - I

S. N	Theory Paper/Practical	Subjects	Teaching Scheme/(Hrs./Week)			Credits	Examination Scheme					
			Th.	Pr.	Total		Duration (Hrs.)	Max.Marks		Total Marks	Min.Passing Marks	
								External Marks (Th.)	Internal Marks (IA)		Th.	Pr.
1	Computer Fundamentals	Paper- I	4	=	4	4	3	70	30	100	40	=
2	Computer & Networking Organization-1	Paper-II	4	=	4	4	3	70	30	100	40	=
3	Practical-1/ Workshops-1/ Labs-1/ Internship-1	Practical Based on Paper I of skill development	=	5	5	4	6	70	30	100	=	40
4	Practical-II/ Workshops-II/ Labs-II/ Internship-II	Practical Based on Paper II of skill development	=	5	5	4	6	70	30	100	=	40
5	Field Work/ Industrial Visit/Production (Report Writing/Presentation)	=	=	=	=	2	=	=	50	50	=	20
		Total	8	10	18	18	=	280	170	450	80	100

NOTE:

1. Th. Theory; Pr.=Practical; WS=Workshops/ LB=Labs/PR=Production/FW=Field Work/INT=Internship, IA=Internal Assessment

2. Minimum marks for passing will be 40% of the total marks allotted to that paper/practical

3. Credit Calculations

One credit would mean equivalent of 15 periods of 60 minutes each for Theory & Practical. For Internship/Field Work, the Credit Weightage for equivalent hours shall be 50% of that for lectures.

The strength of Batch of Practical/Workshop/Internship/Field Visit/production for Under Graduate Classes shall be 16 with an additional of 10% with the permission of the Hon. Vice- Chancellor

BACHELOR OF VOCATION (B.VOC.)
HARDWARE TECHNOLOGY AND NETWORKING (Faculty of Science and Technology)
B.VOC. Degree Course-Semester Pattern
Subject Theme
Skill Development Component Credits: 18
Semester - II

S. N	Theory Paper/Practical	Subjects	Teaching Scheme/(Hrs./Week)			Credits	Examination Scheme					
			Th.	Pr.	Total		Duration (Hrs.)	Max. Marks		Total Marks	Min. Passing Marks	
								External Marks (Th.)	Internal Marks (IA)		Th.	Pr.
1	Operating Systems	Paper- I	4	=	4	4	3	70	30	100	40	=
2	Computer & Network Organization-II	Paper-II	4	=	4	4	3	70	30	100	40	=
3	Practical-1/ Workshops-1/ Labs-1/ Internship-1	Practical Based on Paper I of skill development	=	5	5	4	6	70	30	100	=	40
4	Practical-II/ Workshops-II/ Labs-II/ Internship-II	Practical Based on Paper II of skill development	=	5	5	4	6	70	30	100	=	40
5	Field Work/ Industrial Visit/Production (Report Writing/Presentation)	=	=	=	=	2	=	=	50	50	=	20
		Total	8	10	18	18	=	280	170	450	80	100

NOTE:

1. Th. Theory; Pr.=Practical; WS=Workshops/ LB=Labs/PR=Production/FW=Field Work/INT=Internship, IA=Internal Assessment

2. Minimum marks for passing will be 40% of the total marks allotted to that paper/practical

3. Credit Calculations

One credit would mean equivalent of 15 periods of 60 minutes each for Theory & Practical. For Internship/Field Work, the Credit Weightage for equivalent hours shall be 50% of that for lectures.

The strength of Batch of Practical/Workshop/Internship/Field Visit/production for Under Graduate Classes shall be 16 with an additional of 10% with the permission of the Hon. Vice- Chancellor

BACHELOR OF VOCATION (B.VOC.)
HARDWARE TECHNOLOGY AND NETWORKING (Faculty of Science and Technology)
B.VOC. Degree Course-Semester Pattern
Subject Theme
Skill Development Component Credits: 18
Semester - III

S. N	Theory Paper/Practical	Subjects	Teaching Scheme/(Hrs./Week)			Credits	Examination Scheme					
			Th.	Pr.	Total		Duration (Hrs.)	Max. Marks		Total Marks	Min. Passing Marks	
								External Marks (Th.)	Internal Marks (IA)		Th.	Pr.
1	Computer Hardware & Network Administration	Paper- I	4	=	4	4	3	70	30	100	40	=
2	Network Programming	Paper-II	4	=	4	4	3	70	30	100	40	=
3	Practical-1/ Workshops-1/ Labs-1/ Internship-1	Practical Based on Paper I of skill development	=	5	5	4	6	70	30	100	=	40
4	Practical-II/ Workshops-II/ Labs-II/ Internship-II	Practical Based on Paper II of skill development	=	5	5	4	6	70	30	100	=	40
5	Field Work/ Industrial Visit/Production (Report Writing/Presentation)	=	=	=	=	2	=	=	50	50	=	20
		Total	8	10	18	18	=	280	170	450	80	100

NOTE:

1. Th. Theory; Pr.=Practical; WS=Workshops/ LB=Labs/PR=Production/FW=Field Work/INT=Internship, IA=Internal Assessment
2. Minimum marks for passing will be 40% of the total marks allotted to that paper/practical
3. Credit Calculations
One credit would mean equivalent of 15 periods of 60 minutes each for Theory & Practical. For Internship/Field Work, the Credit Weightage for equivalent hours shall be 50% of that for lectures.

The strength of Batch of Practical/Workshop/Internship/Field Visit/production for Under Graduate Classes shall be 16 with an additional of 10% with the permission of the Hon. Vice- Chancellor

BACHELOR OF VOCATION (B.VOC.)
HARDWARE TECHNOLOGY AND NETWORKING (Faculty of Science and Technology)
B.VOC. Degree Course-Semester Pattern
Subject Theme
Skill Development Component Credits: 18
Semester - IV

S. N	Theory Paper/Practical	Subjects	Teaching Scheme/(Hrs./Week)			Credits	Examination Scheme					
			Th.	Pr.	Total		Duration (Hrs.)	Max. Marks		Total Marks	Min. Passing Marks	
								External Marks (Th.)	Internal Marks (IA)		Th.	Pr.
1	Mobile Computing	Paper- I	4	=	4	4	3	70	30	100	40	=
2	Internet Routing Design	Paper-II	4	=	4	4	3	70	30	100	40	=
3	Practical-1/ Workshops-1/ Labs-1/ Internship-1	Practical Based on Paper I of skill development	=	5	5	4	6	70	30	100	=	40
4	Practical-II/ Workshops-II/ Labs-II/ Internship-II	Practical Based on Paper II of skill development	=	5	5	4	6	70	30	100	=	40
5	Field Work/ Industrial Visit/Production (Report Writing/Presentation)	=	=	=	=	2	=	=	50	50	=	20
		Total	8	10	18	18	=	280	170	450	80	100

NOTE:

1. Th. Theory; Pr.=Practical; WS=Workshops/ LB=Labs/PR=Production/FW=Field Work/INT=Internship, IA=Internal Assessment
2. Minimum marks for passing will be 40% of the total marks allotted to that paper/practical
3. Credit Calculations
One credit would mean equivalent of 15 periods of 60 minutes each for Theory & Practical. For Internship/Field Work, the Credit Weightage for equivalent hours shall be 50% of that for lectures.

The strength of Batch of Practical/Workshop/Internship/Field Visit/production for Under Graduate Classes shall be 16 with an additional of 10% with the permission of the Hon. Vice- Chancellor

BACHELOR OF VOCATION (B.VOC.)
HARDWARE TECHNOLOGY AND NETWORKING (Faculty of Science and Technology)
B.VOC. Degree Course-Semester Pattern
Subject Theme
Skill Development Component Credits: 18
Semester - V

S. N	Theory Paper/Practical	Subjects	Teaching Scheme/(Hrs./Week)			Credits	Examination Scheme					
			Th.	Pr.	Total		Duration (Hrs.)	Max. Marks		Total Marks	Min. Passing Marks	
								External Marks (Th.)	Internal Marks (IA)		Th.	Pr.
1	Information & Network Security	Paper- I	4	=	4	4	3	70	30	100	40	=
2	Linux OS Server	Paper-II	4	=	4	4	3	70	30	100	40	=
3	Practical-1/ Workshops-1/ Labs-1/ Internship-1	Practical Based on Paper I of skill development	=	5	5	4	6	70	30	100	=	40
4	Practical-II/ Workshops-II/ Labs-II/ Internship-II	Practical Based on Paper II of skill development	=	5	5	4	6	70	30	100	=	40
5	Field Work/ Industrial Visit/Production (Report Writing/Presentation)	=	=	=	=	2	=	=	50	50	=	20
		Total	8	10	18	18	=	280	170	450	80	100

NOTE:

1. Th. Theory; Pr.=Practical; WS=Workshops/ LB=Labs/PR=Production/FW=Field Work/INT=Internship, IA=Internal Assessment

2. Minimum marks for passing will be 40% of the total marks allotted to that paper/practical

3. Credit Calculations

One credit would mean equivalent of 15 periods of 60 minutes each for Theory & Practical. For Internship/Field Work, the Credit Weightage for equivalent hours shall be 50% of that for lectures.

The strength of Batch of Practical/Workshop/Internship/Field Visit/production for Under Graduate Classes shall be 16 with an additional of 10% with the permission of the Hon. Vice- Chancellor

BACHELOR OF VOCATION (B.VOC.)
HARDWARE TECHNOLOGY AND NETWORKING (Faculty of Science and Technology)
B.VOC. Degree Course-Semester Pattern
Subject Theme
Skill Development Component Credits: 18
Semester - VI

S.N	Subjects	Examination Scheme				
		Duration (Hrs.)	Max. Marks		Total Marks	Min.Passing Marks
			External Marks	Internal Marks		
1	Project Work	3	200	100	300	120
2	Project Seminar	3	100	50	150	60
	Total	=	300	150	450	18

NOTE:

1. Th. Theory; Pr.=Practical; WS=Workshops/ LB=Labs/PR=Production/FW=Field Work/INT=Internship, IA=Internal Assessment

2. Minimum marks for passing will be 40% of the total marks allotted to that paper/practical

3. Credit Calculations

One credit would mean equivalent of 15 periods of 60 minutes each for Theory & Practical. For Internship/Field Work, the Credit Weightage for equivalent hours shall be 50% of that for lectures.

The strength of Batch of Practical/Workshop/Internship/Field Visit/production for Under Graduate Classes shall be 16 with an additional of 10% with the permission of the Hon. Vice- Chancellor

Detail Syllabus For

Bachelor of Vocation

(B.Voc.) Hardware Technology and Networking (Faculty of Science & Technology)

Skill Development Component

Bachelor of Vocation (B.Voc.)

Skill Development Component

Hardware Technology and Networking (Faculty of Science & Technology)

(Semester I)

Paper I

Computer Fundamentals

UNIT I: Defination, Characteristics and Classification of computer, Generation of computer, Functional Block Diagram of Computer,Input and Output Devices, Monitor, BIOS, POST, Booting, How system starts its day.

UNIT II: Memory Static & dynamic, RAM, ROM, PROM, EPROM, EEPROM, flash and Cache. Storage Devices: Hard Disk, its working physical and logical techniques, Zip Disk and Optical Disk. Pen Drive, Blue Ray. File systems FAT, NTFS, Types of Files, Organization of Files, Data Processing. Factors affecting File Organisation, Partition, Format concept and its practical implementation.

umber system- Binary, Octal, Hexadecimal, their Conversions.
Binary Codes- BCD, ASCII, EBCDIC. Computer Hardware and Software; Various types of Peripherals and their specifications, CD-Rom Drive, Zip Drive, MODEMS, Ethernet Card, Hub.
Translators- Compiler, Interpreter and Assembler.

UNIT III: Study of Mother Board, Study of different inputs, connectors, slots & cables. Study of form factors of M.B., Computer Hardware and Software; Various types of Peripherals and their specifications, CD-Rom Drive, Zip Drive, MODEMS, Ethernet Card,, printers working (Inkjet & Laser) and installation.

UNIT IV: Introduction to Operating System: Types and Functions. DOS – Introduction, Versions, DOS Commands, Internal, External, Root Directory. Windows – Introduction, Working with desktop, Control Panel settings.

List of Practical's :

1. Boot device selection.
2. Creating Partitions in hard disk of different file systems.
3. Formatting of hard disk.
4. Installation of drivers of Mother Board.
5. Installation of drivers of different hardware.
6. Study of Control panel. (Lab1).
7. Study of Control panel (Lab2).
8. Inkjet Printer installation.
9. Laser printer installation.
10. Study of different ports of motherboard.

Reference Books:

1. Computer Today – Donald Sanders
2 Understanding Computers - Dineshkumar
3. Computer Fundamentals – P. K. Sinha
4. Office Automation – K. K. Bajaj (MacMilan)
5. IT Today – S. Jaiswal.

Bachelor of Vocation (B.Voc.)

Skill Development Component

Hardware Technology and Networking (Faculty of Science & Technology)

(Semester I)

Paper II

Computer & Network Organization – I

UNIT I : Basic Network Concepts, Network Operating Systems, Types of Networks, Network Interface Card, Hub, Cables, Expansion Devices, Wireless Networking, Connecting a Peer-to-Peer Network, Setting Up Windows Networking, Installing the NIC Driver, Installing the Clients and Protocols.

UNIT II : Networking devices like repeaters, NIC, Hub, Switches, Routers, Bridges, transmission media STP, UTP, networking cabling, color coding and crimping.

UNIT III : Development of Internet, network architecture, How internet works, browsers, servers, ISP concept, Network Addressing scheme MAC, IP address.

UNIT IV : Computer Communication and Networking concepts, Forms of data transmission; Analog and Digital Communication channels, Bandwidth; Narrow, voice & broad band, Data transmission Media - Wire, Fiber optics, Cable, Satellite, Microwave, Telephone network, Different Networking Topology. Study of OSI Networking Model, Data Travels through the OSI Layers

List of Practical's :

1. Installation of Network card and drivers.
2. Network cable color coding.
3. Crimping of network Cable.
4. Creation of different network w.r.t. topologies.
5. Assigning and study of address scheme in devices.
6. Study Application, presentation, session layers.
7. Study of Transport and network layer.
8. Study of Data Link and physical layers.
9. Study of MAC address.
10. Implementation of IP address in LAN.

Reference Books:

1. Understanding Computers - Dineshkumar
2. Computer Fundamentals – P. K. Sinha
3. Computer Networks – Andrew S. Tanenbaum - (Prentice Hall of India).
4. Basics of Networking - Prentice Hall of India & NIIT.

Bachelor of Vocation (B.Voc.)

Skill Development Component

Hardware Technology and Networking (Faculty of Science & Technology)

(Semester II)

Paper I

Operating Systems

UNIT I : Types of operating systems - Simple Batch Systems, Multiprogramming, Time Sharing systems, Personal computer systems, Parallel systems, Distributed Systems, Real - Time System, Multiprocessing, online & offline processing. Command Line Operating Systems, GUI Operating Systems, Selecting an OS.

UNIT II : Disk Operating System, Booting Process, Warm and Cold Booting, DOS disk structure, DOS booting sequence, Systems files, Autoexec and Config files. Internal & External DOS commands. Directory commands: DIR, MD, RD} TREE, PATH, SUBST. file management Commands: COPY, DEL, ERASE, REN, ATTRIB, XCOPY, BACKUP and RESTORE, Format, FDISK, General commands: TYPE DATE, TIME, PROMT Other commands.- Chkdsk, Defrag, Diskcomp, Doskey, Edit, Label, Mem, Mode, More, Move, Scandisk, Tree, Undelete, Xcopy, Attrib, Deltree, Format, Sys, FDisk, DiskCopy.

UNIT III : Windows OS Booting Process, Dual Booting, Alternative Windows Startup Modes, Displaying the Startup Menu, Making a Windows Startup Disk, Windows Recovery Console. Windows Tools and Utilities, Installing and Removing Applications, Adding and Removing Windows Components, Using a Command Prompt, Installing New Devices, Plug and Play Devices, Non-Plug and Play Devices, Removing Devices, Resolving Resource Conflicts, Precautions to Avoid Viruses, Detecting and Removing Viruses, Correcting Windows Problems, Working without a Mouse.

UNIT IV : Linux overview, File systems and structure of directories and file, File Oriented Commands - Cat, cp, In mv, rm .File Permissions, Directory Oriented commands - Is, mkdir, rmdir, cd, pwd ., Inter user connection commands - write, mail, used, at, wall ., Common commands - kill, date, wc, sleep, who, ps.

List of Practical's :

1. Execution of internal DOS commands.
2. Execution of external DOS commands.
3. Managing the Boot manager.
4. Installation of Windows OS.
5. Working with Windows Tools and utilities.
6. Installing and Un-installation of Windows components.
7. Installation of devices.
8. Installation and un-installation of different applications.
9. Study of File systems of Linux.
10. Execution of different linux commands.

Reference Books:

1. Modern Operating Systems 2nd Edition – Tanunbaum (PHI)
2 Teach Yourself Windows 95 – Gini Courier
3. Using Linux – Tackett, Burnett (PHI).
4. Operating System Concepts - Sillberschatz
5. IT Today – S. Jaiswal.

Bachelor of Vocation (B.Voc.)

Skill Development Component

Hardware Technology and Networking (Faculty of Science & Technology)

(Semester II)

Paper II

Computer & Network Organization – II

UNIT I : Designing and implementing LAN in a peer-peer network with data sharing and security.

UNIT II : Install Windows 2003 Server, Configure a Server Client, Set Up a Windows 7 Client. Administering Server- Administer User Accounts, Add, Modify Delete or Disable a User Account,

UNIT III : Windows 2003 Security Groups, Create Groups, Maintain Group Membership, Create and Administer Shares, Share Security, Map Drives.

UNIT IV : Installing Linux in a Server Configuration - Install Red Hat Linux, Linux Systems Administration - Use Linuxconf, Manage Users, Add Users, Remove or Edit Users, Change Root's Password, Configure Common Network Settings, Change Your Host Name, The / /hosts File.

List of Practical's :

1. Creation of a LAN with IP address.
2. Data sharing in a LAN.
3. Data security in a LAN.
4. Installation of windows 2003 server.
5. Installation of AD in server.
6. Creating users.
7. Creating user groups.
8. Modify / delete users.
9. Installation of linux server.
10. Creating, managing users.

Reference Books:

1. Computer Networks – Andrew S. Tanenbaum - (Prentice Hall of India).
2 Working with Windows 2000 Server - Prentice Hall of India & NIIT.
3. Basics of Networking - Prentice Hall of India & NIIT.
4. Networking – A beginner's Guide – Bruce A. Hallberg (TMH)
5. Introduction to Operating System - (Prentice Hall of India) & NIIT).
6. Troubleshooting your PC by M. David Stone & Alfred Poor
7. The complete PC upgrade & maintenance guide by Mark Minasi

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Skill Development Component

Hardware Technology and Networking (Faculty of Science & Technology)

(Semester III)

Paper I

Computer Hardware & Network Administration

UNIT I : An Overview of System and Components. CPU Cabinet: Power supply, SMPS, Motherboard, CPU, Cables and connectors, Main and auxiliary memory, Front and rear panel study. Input devices: wired /wireless Keyboard, Mouse, Joystick, Scanner, Digitizers, Light pen, Touch screen,Barcode Scanner Camcorder. Output devices: Monitor (CRT, LCD/ LED Panel,) Printer: Dot Matrix, Inkjet, LASER, Thermal Plotter, Barcode Printers, Sound devices (Speaker, Headphone, Bluetooth, dongle)

UNIT II : CPU: Microprocessor as CPU, General block diagram of CPU, CPU bus system, Packing, Cooling, Sockets and slots, Comparative study of Microprocessor's features with evolutions, Microprocessor Operations:- Instruction Cycle, Data f h, Address Decoding, Classification of Interrupts, Input Output Techniques, Device Controllers (DMA controller , Disk drive controller)

UNIT III : Computer Memory and Memory Management Techniques: Types and characteristics, Classification, Semiconductor, Magnetic, Optical ROM and its types. RAM and its types: SDRAM, EDORAM, DDR Series, Flash RAM. Memory modules, SIMM and DIMMs. Secondary Memory: Hard Disc Drive, Floppy Disc, CDROM, CD R/W, DVD, Pen Drive, flash memories:Mini/micri SD Card. Formatting and Utility Tools for drivers.

UNIT IV Installation of dual OS and managing the boot manager,

List of Practical's :

1. Study of components of Mother Board.
2. Study of SMPS.
3. Managing and repair of boot manager.
4. Study of front and rear panel.
5. Study of RAM.
6. Installation of different utilities in Windows.
7. Study of Microprocessor.
8. Memory management study.
9. Installation of Windows 7.
10. Installation of Windows 8 with dual boot.

Book references:

1. Fundamentals of Computers – Rajaraman (Prentice Hall of India).
2. Fundamentals of Computer Nertworks – Kundu (Prentice Hall of India)
3. Comp TIA A+ Certification Guide – Tata MacGraw Hill.
4. Basics of Computer Hardware – BPB

Bachelor of Vocation (B.Voc.)

Skill Development Component

Hardware Technology and Networking (Faculty of Science & Technology)

(Semester III)

Paper II

Network Programming

UNIT I : Introduction to Network Programming: OSI model, Unix standards, TCP and UDP & TCP connection establishment and Format, Buffer sizes and limitation, standard internet services, Protocol usage by common internet application. Sockets : Address structures, value – result arguments, Byte ordering and manipulation function and related functions Elementary TCP sockets – Socket, connect, bind, listen, accept, fork and exec function, concurrent servers. Close function and related function.

UNIT II : TCP client server : Introduction, TCP Echo server functions, Normal startup, terminate and signal handling server process termination, Crashing and Rebooting of server host shutdown of server host. I/O Multiplexing and socket options: I/O Models, select function, Batch input, shutdown function, poll function, TCP Echo server, getsockopt and setsockopt functions. Socket states, Generic socket option IPV6 socket option ICMPV6 socket option IPV6 socket option and TCP socket options.

UNIT III : Elementary UDP sockets: Introduction UDP Echo server function, lost datagram, summary of UDP example, Lack of flow control with UDP, determining outgoing interface with UDP. Elementary name and Address conversions: DNS, gethost by Name function, Resolver option, Function and IPV6 support, uname function, other networking information.

UNIT IV : IPC : Introduction, File and record locking, Pipes, FIFOs streams and messages, Name spaces, system IPC, Message queues, Semaphores. Remote Login: Terminal line disciplines, Pseudo-Terminals, Terminal modes, Control Terminals, rlogin Overview, RPC Transparency Issues.

List of Practical's :

1. Study of socket.
2. Study of Socket programming.
3. Study of OSI model Application, presentation, session layer.
4. Study of transport and Network layer.
5. Study Data Link and physical layers.
6. Study of ICMP.
7. Study of DNS.
8. IPV6 study and implementation.
9. Study of Terminals in Network.
10. Study of pipes.

Book references:

1. UNIX Network Programming, Vol. I, Sockets API, 2nd Edition. - W.Richard Stevens, Pearson Edn. Asia.
2. UNIX Network Programming, 1st Edition, - W.Richard Stevens. PHI.
3. UNIX Systems Programming using C++ T CHAN, PHI.
4. UNIX for Programmers and Users, 3rd Edition Graham GLASS, King abls, Pearson Education.
5. Advanced UNIX Programming 2nd Edition M. J. ROCHKIND, Pearson Education

Bachelor of Vocation (B.Voc.)

Skill Development Component

Hardware Technology and Networking (Faculty of Science & Technology)

(Semester IV)

Paper I

Mobile Computing

UNIT I : Mobile Communications: An Overview: Mobile Communication, Mobile Computing, Mobile Computing Architecture, Mobile Devices, Mobile System Networks, Data Dissemination, Mobility Management, Security Mobile Devices and Systems: Mobile Phones, Digital Music Players, Handheld Pocket Computers, Handheld Devices:

UNIT II : Operating Systems, Smart Systems, Limitations of Mobile Devices, Automotive Systems GSM and Similar Architectures: GSM-Services and System, Architecture, Radio Interfaces, Protocols, Localization, Calling Handover, Security, New Data Services, General Packet Radio Service, High-speed Circuit Switched Data, DECT

UNIT III : Wireless Medium Access Control and CDMA based Communication: Medium Access Control, Introduction to CDMA-based Systems, Spread Spectrum in CDMA Systems, Coding Methods in CDMA, IS-95 cdma One System, IMT- 20 0 0, i - m o d e , O F D M , Mobile IP Network Layer:

UNIT IV : IP and Mobile IP Network Layers, Packet Delivery and Handover Management, Location Management, Registration, Tunnelling and Encapsulation Route Optimization, Dynamic Host Configuration Protocol, Mobile Transport Layer, Conventional TCP/IP Transport, Layer Protocols, Indirect TCP, Snooping TCP, Mobile TCP, Other Methods of TCP-layer Transmission for Mobile Networks, TCP Over 2.5G/3G Mobile Networks

List of Practical's :

1. Study of Mobile management.
2. Study of Packet switching.
3. Study of Tunneling and encapsulation.
4. Study .Generation of networks.
5. Study of operating systems.
6. Study of security in mobile.
7. Study of services in mobile technology.
8. Study of wireless networks.
9. Study of Access controls.
10. Study of location management.

Book references:

1. Mobile Computing, Raj Kamal, Oxford University Press
2. Mobile Communications Jochen Schiller, Addison-Wesley.
3. Handbook of Wireless Networks and Mobile Computing, Stojmenovic and Cacute, Wiley,
4. Mobile Computing Principles: Designing and Developing Mobile
5. Applications with UML and XML, Reza Behravanfar, Cambridge University Press

Bachelor of Vocation (B.Voc.)

Skill Development Component

Hardware Technology and Networking (Faculty of Science & Technology)

(Semester IV)

Paper II

Internet Routing Design

UNIT I : Networking and Network Routing: An Introduction Addressing and Internet Service: An Overview, Network Routing, IP Address subnetting, Service Architecture, Protocol Stack Architecture, Router Architecture, static, dynamic routing,

UNIT II : Routing Algorithms and types, states. Implementation of RIP v1,2 and its configuration. Implementation of EIGRP and its configuration. Routing Protocols: Framework and Principles Routing Protocol, Routing Algorithm, and Routing Table, Routing Information Representation and Protocol Messages, Distance Vector Routing Protocol, Link State Routing Protocol, Path Vector Routing, Protocol, Link Cost

UNIT III : OSPF and Integrated IS-IS : OSPF: Protocol Features, OSPF Packet Format, Integrated IS-IS,

UNIT IV : Managable switch, switching concept, states & modes of switches, looping in switch, Spanning tree protocol, V-LAN, implementation of VLAN.

List of Practical's :

1. Configuration of RIP and RIPv2.
2. Configuration of EIGRP.
3. EIGRP configuration with multiple routers.
4. Implementing different EIGRP commands.
5. Configuration of OSPF.
6. OSPF configuration with multiple routers.
7. Implementing different OSPF commands.
8. Designing of RIP, EIGRP and OSPF network.
9. Implementation of switch.
10. Implementation of VLAN network

Book references:

1. Network Routing: Algorithms, Protocols, and Architectures Deepankar Medhi and Karthikeyan Ramasamy (Morgan Kaufmann Series in Networking)
2. Network Algorithmic: An Interdisciplinary Approach to Designing Fast Networked Devices George Varghese (Morgan Kaufmann Series in Networking)

Bachelor of Vocation (B.Voc.)

Skill Development Component

Hardware Technology and Networking (Faculty of Science & Technology)

(Semester V)

Paper I

Information & Network Security

UNIT I : Introduction Management of malicious intent, threat scenarios, critical infrastructures, security targets and policies, security mechanisms, examples of applications and their different security requirements, multi-lateral security, privacy and data protection, computer misuse legislation, Operating system and network security. Cyber laws.

UNIT II : Network Layer Security Routing algorithm vulnerabilities: route and sequence number spoofing, instability and resonance effects. Information hiding: DMZ networks, route aggregation and segregation ICMP redirect hazard: denial of service. ARP hazard: phantom sources, ARP explosions and slow links.

UNIT III : Firewalls Network partitioning, firewall platforms, partitioning models and methods, Secure SNMP, Secure routing interoperability: virtual networks (DARTnet/CAIRN). Transparent and opaque network services. Source masking and hidden channels.

UNIT IV : Security in Wireless Networks: How it is different, Methods and procedures, MIN/ESN, shared secret data authentication, Token based, public key based.

List of Practical's :

1. Study of Cyber laws I.
2. Study of Cyber Laws II.
3. Implementation of firewalls.
4. Configuration of firewalls.
5. Creation of Standard ACL.
6. Implementation of Standard ACL.
7. Creation of Extended ACL.
8. Implementation of Extended ACL.
9. Creation and Implementation of Named ACL.
10. Implementing wireless security using SSID.

Book references:

1. Stallings, W., "Cryptography and Network Security: Theory and Practice", Second Edition, John Wiley
2. Schneier, B., "Applied Cryptography - Protocols, Algorithms, and Source Code in C", Second Edition. John Wiley and Sons, 1995
3. Stein L., "Web Security: A Step-by-Step Reference Guide", Addison Wesley Longman, Inc., 1998
4. Anderson R., "Security Engineering: A Guide to Building Dependable Distributed Systems", Wiley
5. Cheswick W., Bellovin S. , "Firewalls and Internet Security: Repelling the Wily Hacker", 2nd ed., Addison-Wesley

Bachelor of Vocation (B.Voc.)

Skill Development Component

Hardware Technology and Networking (Faculty of Science & Technology)

(Semester V)

Paper II

Linux OS Server

UNIT I : Linux introduction - Basic Features, Different flavors of Linux. Advantages, Installing requirement, Basic Architecture of Unix/Linux system, Kernel, Shell. Linux File system-Boot block, super block, Inode table, data blocks, How Linux access files, storage files, Linux standard directories.

UNIT II : Installation of Linux system- Partitioning the Hard drive for Linux, Installing the Linux system, System startup and shut-down process, init and run levels. Essential Linux commands Understanding shells, Commands for files and directories cd, ls, cp, md, rm, mkdir, rmdir, pwd, file, more, less, creating and viewing files using cat, file comparisons – cmp & comm, View files, disk related commands, checking disk free spaces.

UNIT III : Processes in Linux-process fundamentals, connecting processes with pipes, tee, Redirecting input output, manual help, Background processing, managing multiple processes, changing process priority with nice, scheduling of processes at command, cron, batch commands, kill, ps, who, sleep, Printing commands, find, sort, touch, file, file related commands-ws, sat, cut, dd, .

UNIT IV : Backup and restore files, reconfiguration hardware with kudzu, installaing and removing packages in Linux. Configure X-windows starting & using X desktop. KDE & Gnome graphical interfaces, changing X windows settings. Setting up and using telnet server and clients. Installation and simple configuration of Proxy Server - Squid, Mail server – Sendmail, Web server - Apache, File server and Samba server in linux VNC server and client setting

List of Practical's :

1. Study of File systems of linux.
2. Study of Partitions of Linux.
3. Booting in Linux.
4. Standard Linux installation.
5. Server Linux installation.
6. Installation of packages.
7. Printer installation.
8. Setting up Mail server.
9. Setting up Web server.
10. Setting up Apache server.

Book References :

1. UNIX – Concepts & Applications (Third Ed.) – Sumitabha Das, Tata McGraw Hill Publications.
2. Unix for programmers and users (Third Ed.) – Graham Glass & King Ables, Pearson Education India. (Low Prices Edition). Fedora Core 6 Bible

Bachelor of Vocation (B.Voc.)

Skill Development Component

Hardware Technology and Networking (Faculty of Science & Technology)

(Semester VI)

IT Intergrated Industry Based Project
❖ Project Work
❖ Project Seminar