

॥ सा विद्या या विमुक्तये ॥



स्वामी रामानंद तीर्थ मराठवाडा विद्यापीठ, नांदेड

“ज्ञानतीर्थ” परिसर, विष्णुपुरी, नांदेड - ४३१६०६ (महाराष्ट्र)

SWAMI RAMANAND TEERTH MARATHWADA UNIVERSITY NANDED

“Dnyanteerth”, Vishnupuri, Nanded - 431606 Maharashtra State (INDIA)

Established on 17th September 1994 – Recognized by the UGC U/s 2(f) and 12(B), NAAC Re-accredited with 'A' Grade

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संलग्नित महाविद्यालयांतील विज्ञान व तंत्रज्ञान विद्याशाखेतील पदवी स्तरावरील तृतीय वर्षाचे CBCS Pattern नुसारचे अभ्यासक्रम शैक्षणिक वर्ष २०२१-२२ पासून लागू करण्याबाबत.

परिपत्रक

या परिपत्रकान्वये सर्व संबंधितांना कळविण्यात येते की, मा. विद्याशाखेने दिनांक ३१ मे २०२१ रोजीच्या बैठकीतील केलेल्या शिफारशीप्रमाणे व दिनांक १२ जून २०२१ रोजी संपन्न झालेल्या ५१ व्या मा. विद्या परिषद बैठकीतील विषय क्र. २६/५१-२०२१च्या ठरावानुसार प्रस्तुत विद्यापीठाच्या संलग्नित महाविद्यालयांतील विज्ञान व तंत्रज्ञान विद्याशाखेतील पदवी स्तरावरील तृतीय वर्षाचे खालील विषयांचे C.B.C.S. (Choice Based Credit System) Pattern नुसारचे अभ्यासक्रम शैक्षणिक वर्ष २०२१-२२ पासून लागू करण्यात येत आहेत.

1. B.Sc.-III Year-Biophysics
2. B.Sc.-III Year-Bioinformatics
3. B.Sc.-III Year-Biotechnology
4. B.Sc.-III Year-Biotechnology (Vocational)
5. B.Sc.-III Year-Botany
6. B.Sc.-III Year-Horticulture
7. B.Sc.-III Year-Agro Chemical Fertilizers
8. B.Sc.-III Year-Analytical Chemistry
9. B.Sc.-III Year-Biochemistry
10. B.Sc.-III Year-Chemistry
11. B.Sc.-III Year-Dyes & Drugs Chemistry
12. B.Sc.-III Year-Industrial Chemistry
13. B.C.A. (Bachelor of Computer Application)-III Year
14. B.I.T. (Bachelor of Information Technology)-III Year
15. B.Sc.-III Year-Computer Science
16. B.Sc.-III Year-Network Technology
17. B.Sc.-III Year-Computer Application (Optional)
18. B.Sc.-III Year-Computer Science (Optional)
19. B.Sc.-III Year-Information Technology (Optional)
20. B.Sc.-III Year-Software Engineering
21. B.Sc.-III Year-Dairy Science
22. B.Sc.-III Year-Electronics
23. B.Sc.-III Year-Environmental Science
24. B.Sc.-III Year-Fishery Science
25. B.Sc.-III Year-Geology
26. B. A./B.Sc.-III Year-Mathematics
27. B.Sc.-III Year-Microbiology
28. B.Sc.-III year Agricultural Microbiology
29. B.Sc.-III Year-Physics
30. B. A./B.Sc.-III Year Statistics
31. B.Sc.-III Year-Zoology

सदरील परिपत्रक व अभ्यासक्रम प्रस्तुत विद्यापीठाच्या www.srtmun.ac.in या संकेतस्थळावर उपलब्ध आहेत. तरी सदरील बाब ही सर्व संबंधितांच्या निदर्शनास आणून द्यावी, ही विनंती.

‘ज्ञानतीर्थ’ परिसर,

विष्णुपुरी, नांदेड - ४३१ ६०६.

जा.क्र.: शैक्षणिक-१/परिपत्रक/पदवी-सीबीसीएस अभ्यासक्रम/
२०२१-२२/७५

दिनांक : १२.०७.२०२१.

प्रत माहिती व पुढील कार्यवाहीस्तव :

- १) मा. कुलसचिव यांचे कार्यालय, प्रस्तुत विद्यापीठ.
- २) मा. संचालक, परीक्षा व मूल्यमापन मंडळ यांचे कार्यालय, प्रस्तुत विद्यापीठ.
- ३) प्राचार्य, सर्व संबंधित संलग्नित महाविद्यालये, प्रस्तुत विद्यापीठ.
- ४) साहाय्यक कुलसचिव, पदव्युत्तर विभाग, प्रस्तुत विद्यापीठ.
- ५) उपकुलसचिव, पात्रता विभाग, प्रस्तुत विद्यापीठ.
- ६) सिस्टम एक्सपर्ट, शैक्षणिक विभाग, प्रस्तुत विद्यापीठ.
- ७) अधीक्षक, परीक्षा विभाग विज्ञान व तंत्रज्ञान विद्याशाखा प्रस्तुत विद्यापीठ.

स्वाक्षरित

सहा.कुलसचिव

शैक्षणिक (१-अभ्यासमंडळ) विभाग

**Swami RamanandTeerthMarathwada
University, Nanded
(NAAC Re-accredited with 'A' Grade)**



**Syllabus of
Third Year B.Sc. Network Technology
(Revised CBCS pattern)
Introduced from Academic Year 2021-2022**

B.Sc. Network Technology

B.Sc. Network Technology(3years) program / degree is a specialized program in computer network. It builds the student on studies in applied use of networks and to become competent in the current race and development of new networking era. The duration of the study is of six semesters, which is normally completed in three years.

CBCS pattern

The B.Sc. Network Technology program as per CBCS (Choice based credit system) pattern, in which choices are given to the students under open electives and subject electives. The students can choose open electives from the wide range of options to them.

Eligibility and Fees

The eligibility of a candidate to take admission to **B.Sc. Network Technology** program is as per the eligibility criteria fixed by the University. More details on admission procedure and fee structure can be seen from the prospectus of the college / institution as well as on website of the University.

Credit Pattern

Every course has corresponding grades marked in the syllabus structure. There are 24 credits per semester. A total of 144 credits are essential to complete this program successfully. The Grading pattern to evaluate the performance of a student is as per the University rules.

Every semester has a combination of Theory (core or elective) courses and Lab courses. Each theory course has 04 credits which are split as 03 external credits and 01 internal credit. The university shall conduct the end semester examination for 03 external credits. For theory internal credit, student has to appear for 01 class test (15 marks) and 01 assignment (10 marks). Every lab course has 02 credits which are split as 01 external credit and 01 internal credit. For lab internal credit, the student has to submit Laboratory Book (05 marks) and remaining 20 marks are for the Lab activities carried out by the student throughout the semester. For lab external credit, 20 marks are reserved for the examinational experiment and 05 marks are for the oral / viva examinations.

The open elective has 04 credits which are purely internal. If students are opting for MOOCs as open elective, then, there must be a Faculty designed as MOOCs course coordinator who shall supervise learning through MOOCs. This is intentionally needed as the MOOCs course coordinator shall verify the MOOC details including its duration, starting date, ending date, syllabus contents, mode of conduction, infrastructure feasibility, and financial feasibility during start of each semester. This is precautionary as the offering of the MOOCs through online platforms are time specific and there must be proper synchronization of semester duration with the MOOCs duration. Students must opt for either institutional / college level open elective or a course from University recognized MOOCs platforms as open electives.

The number of hours needed for completion of theory and practical courses as well as the passing rules, grading patterns, question paper pattern, number of students in practical batches, etc shall be as per the recommendations, norms, guidelines and policies of the UGC, State Government and the SRTM University currently operational. The course structure is supplemented with split up in units and minimum numbers of hours needed for completion of the course, wherever possible.

Under the CBCS pattern, students would graduate **B.Sc. Network Technology** with a minimum number of required credits which includes compulsory credits from core courses, open electives and program specific elective course. All students have to undergo lab / practical activities leading to specific credits and project development activity as a part of professional UG program.

1. **B.Sc. Network Technology Degree** / program would be of 144 Credits. Total credits per semester=24
2. Each semester shall consist of three core courses, one elective course, one open elective course and two practical courses. Four theory courses (core+elective) = 16 Credits
3. Two practical / Lab courses= 4 Credits in total (02 credits each) , One Open elective= 4credit
4. One Credit = 25 marks , Two Credits = 50 Marks, Four Credits = 100Marks

PEO, PO and CO Mappings

1. **Program Name** : B.Sc.(NT)
2. **Program Educational Objectives**: After completion of this program, the graduates / students would

PEO I :Technical Expertise	Implement fundamental domain knowledge of core courses for developing effective computing solutions by incorporating creativity and logical reasoning.
PEO II : Successful Career	Deliver professional services with updated technologies in Computer Networking based career.
PEO III :Hands on Technology and Professionalexperience	Develop leadership skills and incorporate ethics, team work with effective communication & time management in the profession.
PEO IV :Interdisciplinary and Life Long Learning	Undergo higher studies, certifications and research programs as per market needs.

3. **Program Outcome(s):** Students / graduates will be able to

- PO1:** Apply knowledge of mathematics, science and algorithm in solving Computer problems.
- PO2:** Generate solutions for various connectivity issues using LAN-MAN-WAN, etc
- PO3:** Design component, or processes to meet the needs within realistic constraints.
- PO4:** Identify, formulate, and solve problems using computational temperaments.
- PO5:** Comprehend professional and ethical responsibility in computing profession.
- PO6:** Express effective communication skills.
- PO7:** Recognize the need for interdisciplinary, and an ability to engage in life-long learning.
- PO8:** Actual hands on technology to understand it's working.
- PO9:** Knowledge of contemporary issues and emerging developments in computing profession.
- PO10:** Utilize the techniques, skills and modern tools, for actual development process
- PO11:** Function effectively as an individual and as a member or leader in diverse teams and in multidisciplinary settings in actual development work
- PO12:** Research insights and conduct research in computing environment.

4. **Course Outcome(s):** Every individual course under this program has course objectives and course outcomes (CO). The course objectives rationally match with program educational objectives. The mapping of PEO, PO and CO is as illustrated below

5. **Mapping of PEO & PO and CO**

Program Educational Objectives	Thrust Area	Program Outcome	Course Outcome
PEO I	Technical Expertise	PO1,PO2,PO3,PO6	All core courses
PEO II	Successful Career	PO4,PO5,PO11,	All discipline specific electives courses
PEO III	Hands on Technology and Professional experience	PO8,PO10	All Lab courses
PEO IV	Interdisciplinary and Life Long Learning	PO7,PO9,PO12	All open electives and discipline specific electives

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CBCS Revised Syllabus w.e.f TY: 2021-22

Program: B.Sc. (Network Technology) – Affiliated Colleges

Year	Semester	Course category	Course Code	Course Title	Credits * *(split up will be given separately)		
Third	Fifth	Core Course	BNT-501	Windows Server 2012 ADC Part – II	04		
		Core Course	BNT-502	Exchange Server 2010 Part – I	04		
		Core Course	BNT-503	Network Security	04		
		Chose any one from the below Elective courses					
		Elective Subject	BNT-504 A	Network Infrastructure		04	
			BNT-504 B	CCNA Security			
		Chose any one Open Elective courses					
		Open Elective	BNT-505 A	University recognized MOOC (NPTEL / SWAYAM / others) OR Intra / Inter Departmental courses OR		04	
			BNT-505 B	Introduction to Business Applications			
		Lab / Practical	BNT-506	Exchange Server 2010 Part – I		02	
			BNT-507	Windows Server 2012 ADC Part – II			
Total					24		
Third	Sixth	Core Course	BNT-601	Windows Operating System	04		
		Core Course	BNT-602	Exchange Server 2010 Part – II	04		
		Core Course	BNT-603	Project Development Activity and Seminar	04		
		Chose any one from the below Elective courses					
		Elective Subject	BNT-604A	Next Generation Networks		04	
			BNT-604B	Cloud Computing			
		Chose any one Open Elective courses					
		Open Elective	BNT-605A	University recognized MOOC (NPTEL / SWAYAM / others) OR Intra / Inter Departmental courses OR		04	
			BNT-605B	VM Ware			
		Lab / Practical	BNT-606	Windows Operating System		02	
			BNT-606	Exchange Server 2010 Part – II			
Total					24		

BNT-501	B.Sc.(NT) TY V Semester	Windows Server 2012 ADC Part – II	Credits:04
Course Objectives:			
<ul style="list-style-type: none"> ● Configure and Troubleshoot Domain Name System ● Maintain Active Directory Domain Services ● Install, Configure and Troubleshoot Network Policy Server ● Configure and Troubleshoot Remote Access 			
Course Outcomes:			
<ul style="list-style-type: none"> ● Client and Server architecture that provide request and response ● New Server Manager: Create, Manage Server Groups ● Expanded PowerShell Capabilities 			
Unit I	Monitoring Servers		
Introducing the Microsoft Management Console (MMC), Using Event Viewer, Using Reliability Monitor, Managing Performance, Monitoring the Network			
Unit II	Configuring File Services and Disk Encryption		
Securing Files, Encrypting Files with EFS, Managing EFS Certificates Encrypting Files with BitLocker, Managing BitLocker Certificates Configuring the Network Unlock Feature			
Unit III	Configuring DNS Zones		
Understanding DNS, Configuring and Managing DNS Zones Using the DNS CMD Command to Manage Zones, Configuring DNS Record Types Using the DNS CMD Command to Manage Resource Records, Troubleshooting DNS Problems			
Unit IV	Configuring a Network Policy Server		
Configuring a Network Policy Server Infrastructure, Installing and Configuring Network Policy Server, Managing NPS Policies, Configuring Connection Request Policies Configuring Network Policies, Managing NPS Templates			
Unit V	Configuring Server Authentication		
Configuring Server Authentication, Managing Service Accounts, Understanding Domain Controllers, Installing and Configuring an RODC, Cloning a Domain Controller			
Unit VI	Maintaining Active Directory		
Automating User Account Management, Backing Up and Restoring Active Directory Optimizing an Active Directory Database, Cleaning Up Metadata			

References:

Sr. No	Name of Book	Writer	Publication
1	Exam Ref 70-411). Administering Windows Server 2012	Patrick Regan	Microsoft Official academic course

BNT-502	B.Sc.(NT) TY V Semester	Exchange Server Part I	Credits:04
Course Objectives:			
<ul style="list-style-type: none"> ● Install and deploy Exchange Server 2010 ● Configure the Public folder database in Exchange Server 2010 ● Manage Exchange mailbox in Exchange Server 2010 ● Configure the secure flow of messages between the Exchange Server organization and the Internet 			
Course Outcomes:			
<ul style="list-style-type: none"> ● Deploying Exchange Server 2010 ● Best practice to Configure Mailbox server roles ● Best practice to Manage mailboxes in Exchange Server 2010 ● Best practice to configure the Distribution Groups. 			
Unit I	Installing Exchange Server 2010		
Configure the Environment for Exchange Server 2010, Configure the Server to Host, Exchange Server 2010, Hardware and Software Requirements, Preparing a Host for the Installation of Exchange Server 2010, Configuring Server Roles and Features for Exchange and Deploy Exchange Server 2010 Roles, Installing Exchange Server 2010			
Unit II	Exchange Databases		
Deploying Exchange Databases, Configuring Exchange Databases, Managing Mailbox Databases and Managing Public Folder Databases			
Unit III	Address Lists		
Address List Configuration, Creating and Configuring an Address List, Working with Offline Address Books.			
Unit IV	Exchange Mailboxes		
Mailbox Configuration, Creating Mailboxes, Linked Mailboxes, Configuring Mailbox Properties, Moving Mailboxes, Disabling, Removing, and Reconnecting, Mailboxes, Import and Export Mailboxes, Archive Mailboxes, Resources and Shared Mailboxes, Creating and Configuring Resource Mailboxes, Shared Mailboxes, Converting Mailboxes			
Unit V	Distribution Groups		
Managing Recipients and Distribution Groups, Mail Contacts, Mail-Enabled Users, Distribution Groups, Types of Distribution Groups, Configure Distribution Groups			
Unit VI	Public Folders		
Public Folders, Setting Up Public Folders, Creating Public Folders Configuring Public Folder Permissions, Mail-Enable Public Folder, Configuring Public Folder Limits			

References:

Sr. No	Name of Book	Writer	Publication
1	MCTS Self-Paced Training Kit (Exam 70-662):	Patrick Regan	Microsoft Publication

BNT-503	B.Sc.(NT) TY V Semester	Network Security	Credits:04
Course Objectives:			
<ul style="list-style-type: none"> ● To understand the fundamentals of Cryptography ● To acquire knowledge on standard algorithms used to provide confidentiality, integrity and authenticity ● To understand the various key distribution and management schemes ● To understand how to deploy encryption techniques to secure data in transit across data networks ● To design security applications in the field of Information technology 			
Course Outcomes:			
<ul style="list-style-type: none"> ● Identify the security issues in the network and resolve it. ● To be able to secure a message over insecure channel by various means. ● Provide security of the data over the network. ● Protect any network from the threats in the world 			
Unit I	Introduction		
Introduction, The Need for Security, Principles of Security, Types of Attacks, OSI Security Architecture, A Model for network security.			
Unit II	Cryptography: Concepts and Techniques		
Plain text and Cipher Text, Substitution Techniques, Transportation Techniques, Encryption and Decryption, Symmetric and Asymmetric Key Cryptography, Steganography			
Unit III	Cyber Crimes & Domain Name Disputes		
Concept of Domain Names, Cybersquatting, Reverse, hijacking, Meta tags, tampering with Computer Source Documents, Hacking with Computer System, Digital Signature.			
Unit IV	Introduction of Ethical Hacking		
Information gathering, Foot printing - Active / Passive, Scanning, Sniffers, Hacking by stealth, Virus, Trojans, Binders, Key loggers			
Unit V	Firewall & Network Security		
Introduction of Firewall, Types of Firewall, Configuring of Firewall, Open source Firewall, Importance of Firewall, Modem/Router Configuration, WI-FI Configuration, V-LAN Configuration, Proxy Server Configuration.			
Unit VI	The Cyber Crimes		
Tampering with Computer Source Documents, Hacking with Computer System, Publishing of Information, Which is Obscene in Electronic Form, Offences: Breach of Confidentiality & Privacy, Offences: Related to Digital Signature Certificate			

References:

Sr. No	Name of Book	Writer	Publication
1	Ethical Hacking	Ankit Fadia	

Elective BNT-504 A	B.Sc.(NT) TY V Semester	Network Infrastructure	Credits:04
Course Objectives:			
<ul style="list-style-type: none"> ● Deploy DHCP server. ● Configure the DNS role in windows Server 2008. ● Manage windows update services. ● Configure Windows Firewall 			
Course Outcomes:			
<ul style="list-style-type: none"> ● Deploying Windows Server 2008 Services. ● Best practice to Configure DNS server ● Best practice to Configure DHCP server ● Best practice to Configure Windows Firewall 			
Unit I	Introduction IP		
Understanding and configuring network connections, Understanding IP version 4 Addressing, Understanding IP version 6 (IPv6) Addressing			
Unit II	Introduction DNS		
Understanding name resolution in windows server 2008 networks, Deploying a DNS server, Configuring DNS client settings, Net BIOS.			
Unit III	Configure Network Services		
Configuring network address translation, Configuring Wireless Networks, Connecting to remote networks, Configuring Windows Firewall, Configuring Network access protection.			
Unit IV	Managing Software updates		
Understanding windows server update services, Using windows server update services, Monitoring Event Logs, Monitoring Performance and reliability, Using Network Monitor.			
Unit V	Managing Files & DHCP		
Managing File security, Sharing Folders, Shadow Copies, Managing Printers			
Unit VI	DHCP		
Installing a DHCP server, configuring a DHCP server, Configuring IPsec			

References:

Sr. No	Name of Book	Writer	Publication
1	MCTS Self-Paced Training Kit (Exam 70-642):	- By Tony Northrup , JC Mackin	Microsoft

Elective BNT-504 B	B.Sc.(NT) TY V Semester	CCNA Security	Credits:04
Course Objectives:			
<ul style="list-style-type: none"> • Production N/W Device & Port Security against Malicious attacks • Understand the working of VPN Tunnels use in Industry • Describe WAN technology concepts • Describe the various troubleshooting methodologies and troubleshooting tools 			
Course Outcomes:			
<ul style="list-style-type: none"> • Practical hands-on will help to interconnect the N/W components & design industrial N/w • Best practice to Configure BGP Protocol. • Best practice to Configure port security, IPsec, VPN. 			
Unit I	INTERGRATED IS-IS		
IS-IS metric, IS-IS PDU, LSP & SNP, IS-IS Addressing configuration			
Unit II	BGP Protocol		
Introduction to BGP, BGP FSM, eBGPneighbor ship, BGP protocol configuration			
Unit III	IPv6		
Advantages of IPv6,Dhcp&NDP, Types of ipv6 address and some protocol, RIPng the ipv6, EIGRP for Ipv6,BGP4 +ipv6			
Unit IV	Branch design and WAN		
Basic terminology, Connection with IPsec, Connection with DSL, Connection with VPN, Multicast Mac & IP address, Multicast solution, version of IGMP, Implementing multicast, Multicast routing protocol.			
Unit V	Security		
Port security, DHCP snooping, Dynamic ARP inspection, VLAN hopping.802.1x and AAA &Switch ACL			
Unit VI	Point to Point WAN		
PPP Concepts, PPP Configuration, Troubleshooting Serial Links, Frame Relay Overview, Frame Relay Addressing, Network Layer Concerns with Frame Relay, Controlling Speed and Discards in the Frame Relay Cloud			

References:

Sr. No	Name of Book	Writer	Publication
1	Cisco CCENT CCNA icnd1	Wendell Odam	

Open Elective BNT-505 B	B.Sc.(NT) TY VI Semester	Introduction to Business Applications	Credits:04
Course Objectives: <ol style="list-style-type: none"> 1. To describe the role of information technology and decision support systems in business and record the current issues with those of the firm to solve business problems. 2. To introduce the fundamental principles of computer-based information systems analysis and design and develop an understanding of the principles and techniques used. 3. To enable students understand the various knowledge representation methods and different expert system structures as strategic weapons to counter the threats to business and make business more competitive. 			
Course Outcomes: <ol style="list-style-type: none"> 1.Relate the basic concepts and technologies used in the field of management information systems; 2. Compare the processes of developing and implementing information systems 3. Translate the role of information systems in organizations, the strategic management processes, with the implications for the management. 			
Unit I	Introduction to Business		
Concept of business meaning and definition, Characteristics / features of business, Importance of business, Business objectives, Role of profit in business, Classification of business activity			
Unit II	Information technology and business		
Concept of data, Information and computer based information system, Impact of information technology on business (business data processing, intra – organizational and inter – organizational communication by using network technology, business process and knowledge process outsourcing). Types of information system – Transaction Processing System			
Unit III	Management Information System and Decision Support System		
Management Information System - Introduction, Meaning, Nature , Objectives, characteristics of Scope of MIS, Decision Support System - Introduction, Types of Decisions, Attributes, characteristics , Benefits and components of DSS, Types of DSS, Their implementation at managerial level(operational, tactical, strategic)			
Unit IV	Enterprise Resource Planning and Customer Relationship Management		
Enterprise Resource Planning- Introduction, Features, Scope of ERP, Advantages and Disadvantages Supply Chain Management - Introduction,Features,Scope Advantages of SCM., Customers Relationship Management- Introduction, Meaning, Scope, Advantages and Disadvantages of CRM			
Unit V	knowledge Management System and Content Management System		
Knowledge Management System- Introduction, Meaning, Sources of knowledge, Purpose, activities in knowledge management, Levels of knowledge management, Content Management System- Introduction, Functions, Advantages of CMS.			

Unit VI	Executive Supports System and Business Intelligent System
Executive support system- Introduction, Features, Advantages and Disadvantages of ESS, Business Intelligent System - Introduction, characteristics, Benefits of BIS, Approaches of BIS, Capabilities of BIS	

References:

Sr. No	Name of Book	Writer	Publication
1	Management Information System	Laudon and Ludon	9/e, Pearson Education, New Delhi
2	Management Information System	Jawadekar, W.S	Tata McGraw Hill Private Limited,
3	Management Information System	Alex Leon and Mathew Leon	VikasPublishing House,New Delhi.

LAB BNT-506	B.Sc.(NT) TY V Semester	Exchange Server Part I	Credits:02
Practical List: <ol style="list-style-type: none">1. Installation of Exchange Server.2. Deploying & configuring Exchange Databases.3. Creating and Configuring an Address List4. Creating public folder.5. Creating Distribution Groups6. Creating Mailboxes7. Creating Link mailbox8. Creating Resource mailbox.			

LAB BNT-507	B.Sc.(NT) TY V Semester	Windows 2012 ADC II	Credits:02
Practical List: <ol style="list-style-type: none">1. Managing DNS zones.2. Troubleshooting DNS Problems.3. Managing Network policy.4. Backup & Restore Active Directory.5. Creating MMC.6. Managing Event viewer7. Creating RODC8. Cloning DC			

BNT-601	B.Sc.(NT) TY VI Semester	Windows Operating Systems	Credits:04
Course Objectives:			
<ul style="list-style-type: none"> • Configure and manage the Windows 7 desktop • Windows 7 remote capabilities and utilities • How to use Windows Firewall with advanced features and network profiles • Evolution of the Windows Desktop Operating System • Configure and use the User account control in various network profiles 			
Course Outcomes:			
<ul style="list-style-type: none"> • Monitor and troubleshoot Windows 7 computers for problems with the operating system, hardware, network security, and applications • Best practice to Configure Bit-locker. • You can configure application software policy. 			
Unit I	Introduction		
Windows Operating system, History of Windows OS, Advantages of Windows 7 & Windows 8, Hardware Requirement, Installation Steps for Windows 7, Installation Steps for Windows 8.			
Unit II	Configuring and Deploying System Images		
Capturing System Images, Managing Virtual Hard Disk Files, Managing a System Image Before Deployment, Deploying Images.			
Unit III	Managing Devices		
Managing Device Drivers and Devices, Managing Disks, Application Compatibility, Managing App Locker and Software, Configuring IPv4, Configuring IPv6, Network Configuration.			
Unit IV	Windows Services		
Managing Windows Firewall, Sharing Resources, Folder and File Access, Managing BitLocker, Managing User Account Control, Windows 7 Authentication and Authorization.			
Unit V	Windows Tools		
Managing DirectAccess, Remote Connections, Windows 7 Mobility, Updating Windows 7, Configuring Internet Explorer			
Unit VI	Monitoring & Backup		
Windows 7 Mobility, Updating Windows 7, Configuring Internet Explorer, Monitoring Systems, Configuring Performance Settings. Backup, System Recover, Recovering Files and Folders.			

References:

Sr. No	Name of Book	Writer	Publication
1	MCTS 70-680 Configuring- Windows-7	Tony Northrup	Microsoft

BNT-602	B.Sc.(NT) TY VI Semester	Exchange Server Part II	Credits:04
Course Objectives: <ul style="list-style-type: none"> • Deploy Exchange Transport Server role. • Configure the Client Access server role in Exchange Server 2010 • Manage message transport in Exchange Server 2010 • Configure the secure flow of messages between the Exchange Server organization and the Internet 			
Course Outcomes: <ul style="list-style-type: none"> •Deploying Exchange Server 2010 • Best practice to Configure DAG Group. • Best practice to Manage mailboxes in Exchange Server 2010 • Best practice to configure the Client Access server role 			
Unit I	Configuring Client Access		
Configuring Client Access IMAP, POP, and Microsoft ActiveSync, Client Access Server Certificates, Configure POP and IMAP, Auto discover, ActiveSync			
Unit II	OWA		
Outlook Anywhere and RPC Clients, Outlook Anywhere, Configure RPC Client Access, Configure Client Access Array, Client Throttling Policies, OWA, OWA Virtual Directory Properties, Exchange Control Pan			
Unit III	Configuring Transport Servers		
Hub Transport Servers, Accepted Domains, Remote Domains, Email Address Policies, Transport Settings and Transport, Edge Transport Servers, Edge Transport Role, Edge Sync, Clone Edge Transport Server, Address Rewriting			
Unit IV	Monitoring Exchange Server 2010		
Monitoring Exchange Database, Monitoring Mail Flow, Configuring Message Tracking, Monitoring Transport Queues, Suspending, Resuming, and Retrying Queues, Managing Messages, Monitoring Exchange Connectivity, Debugging Network Connectivity			
Unit V	Managing Records		
Managing Database Availability Groups, DAGs, Create DAGs, Add and Remove Servers from DAGs, Mailbox Database Copies, Highly Available Public Folders, Public Folder Replicas, Replication Schedules, Public Folder Backup and Restore			
Unit VI	Exchange Disaster Recovery		
Backup and Recover Exchange Data, Using Windows Server Backup, Creating an Exchange Server Disaster Recovery Plan, Database Portability, Recovering a Mailbox within the Deleted, Mailbox			

Retention Period, Recovering Single Items.

References:

Sr. No	Name of Book	Writer	Publication
1	MCTS Self-Paced Training Kit	JC Mackin	Microsoft Publication)

Elective BNT-604 A	B.Sc.(NT) TY VI Semester	Next Generation Networks	Credits:04
Course Objectives:			
<ul style="list-style-type: none"> • Study of GSM/UMTS • Study of CDMA systems and OFDMA systems. • Manage wireless network. • Configure Wireless network 			
Course Outcomes:			
<ul style="list-style-type: none"> • Deploying WLAN & Wi-Fi • To understand the GSM & GPRS. 			
Unit I	Converged Services for Next Generation Networks		
GSM/UMTS Network protocols: SS7 and 14 standard basics, Supplementary Services: UMTS procedures. Intelligent Network: IN principles, CAMEL, Services: what are the challenges? , Integration, deployment issues.			
Unit II	Introduction to Next Generation Networks		
IMS: the convergence. NGN architecture, NGN control architectures and protocols, Multi-access to the services: 3G, WiFi, DSL, Cable. TISPAN, SIP, Service architectures, Transition of networks (PSTN, IP-based) to NGN			
Unit III	Wireless Access and Transport Technologies		
RAN architecture : Radio Access Network Architecture for GSM, GPRS and UMTS, network devices, interfaces and protocols , QoS definition and management in GPRS and UMTS, Access methods and radio resource management in mobile networks, mainly for: TDMA systems			
Unit IV	CDMA systems and OFDMA systems		
Scheduling issues for GPRS, UMTS and WiMAX: downlink, uplink Physical to logical channel mapping: for GSM, for UMTS Procedure and protocol used for resource allocation ,PDP Context and TBF allocation			
Unit V	WPAN, WLAN, WMAN and Broadcast technologies		
WLAN, WPAN, WMAN, WiFi: WiMAX, DVB-H: Usage and standard, Security :Basics, architectures, algorithms, Bluetooth: Standard, performance, usage and applications , Zigbee			
Unit VI	Security		
UWB: Standards and usage, Service discovery in wireless Networks (jxta, UPnP, Security in Wireless Networks: PANs, LANs and cellular Wireless Networks Simulation (tools and methods)			

References:

Sr. No	Name of Book	Writer	Publication
1	Next Generation Network Services: Technologies & Strategies	Neill Wilkinson	

Elective BNT-604 B	B.Sc.(NT) TY VI Semester	Cloud Computing	Credits:04
Course Objectives:			
<ul style="list-style-type: none"> To Study basics of cloud computing, and comprehend the terminology, tools and technologies associated with today's top cloud platforms. To provide the programmer's perspective of working of Cloud Computing. Implement Simple Cloud programs to solve simple problems 			
Course Outcomes:			
<ul style="list-style-type: none"> Awareness of existing demanding trends for Clouds and Virtualizations in the IT industry in order to get placement as well as in research 			
Unit I	Introduction		
Introduction, Mainframe architecture, Client-server architecture, 3-tier architectures with TP monitors, Internet technology and web-enabled applications, Web application servers, Internet of services			
Unit II	Software as a service and cloud computing		
Emergence of software as a service, Successful SaaS architectures, Dev 2.0 platforms, Cloud computing, Dev 2.0 in the cloud for enterprises, Infrastructure as a service: Amazon EC2, Platform as a service: Google App Engine, Microsoft Azure			
Unit III	Data in the cloud		
Relational databases, Cloud file systems: GFS and HDFS, Big Table, HBase and Dynamo, Cloud data stores: Data store and Simple DB			
Unit IV	Dev 2.0 platforms		
Salesforce.com's Force.com platform, TCS Instant Apps on Amazon cloud, More Dev 2.0 platforms and related efforts, Advantages, applicability and limits of Dev 2.0			
Unit V	Web services, AJAX and mashups:		
Web services: SOAP and REST, SOAP versus REST, AJAX: asynchronous 'rich' interfaces, Mashups: user interface services			
Unit VI	MapReduce and extensions:		
Parallel computing, The MapReduce model, Parallel efficiency of MapReduce, Relational operations using MapReduce, Enterprise batch processing using MapReduce			

References:

Sr. No	Name of Book	Writer	Publication
1	Enterprise Cloud Computing: Technology, Architecture, Application	Gautam Shroff	

Open Elective BNT-605 A	B.Sc.(NT) TY VI Semester	University recognized MOOC (NPTEL / SWAYAM / others) OR Intra / Inter Departmental courses	Credits:04
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Open Elective BNT-605 B	B.Sc.(NT) TY VI Semester	VM Ware	Credits:04
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Course Objectives:

- Describe the software defined data center
- Deploy an ESXi host and create virtual
- Describe vCenter Server architecture
- Configure virtual networks with vSphere standard switches

Course Outcomes:

- Install and configure virtualization technology such as VMware.
- Install and configure virtual server components such as vCenter
- Configure and manage virtual network and storage such as vCenter server or ESXi.

Unit I	Introduction to Virtualization Technologies
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VMware workstation, VMware player, Virtual box, Introduce Virtualization Introduce Virtual machines, Introduce vSphere components

Unit II	VMware ESX and ESXi (ESX/ESXi 4.1)
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Introduce the architecture of ESX and ESXi, Manually configure ESX/ESXi

Unit III	Virtual Machines
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Deploy virtual machines using the Create New Virtual Machine wizard, templates, cloning, and VMware vCenter Converter Modify and manage virtual machines Perform Storage vMotion migrations

Unit IV	Access Control AND Resource Monitoring
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Control user access through roles and permissions, Control virtual machine access to CPU, memory, and I/O resources, Introduce VMkernel methods for optimizing CPU and memory usage, Monitor resource usage using vCenter Server performance graphs and alarms

Unit V	Networking
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Create, configure, and manage vNetwork standard switches, Create, configure, and manage network connections, Create, configure, and manage port groups, Back up and recover virtual machines using VMware Data Recovery

Unit VI	Data Protection
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Back up and recover virtual machines using VMware Data Recovery

References:

Sr. No	Name of Book	Writer	Publication
1	Virtualization For Dummies Paperback	Bernard Golden	

LAB BNT-606	B.Sc.(NT) TY VI Semester	Windows Operating Systems	Credits:02
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Practical List:

9. Installation of Windows 7 OS.
10. Installation of Windows 8 OS.
11. Study of Managing Device Drivers and Devices
12. Study of managing disk.
13. Study of app locker.
14. Study of windows firewall.
15. Study of Bit locker in win7.
16. Study of windows defenders.

LAB BNT-607	B.Sc.(NT) TY VI Semester	Exchange Server Part II	Credits:02
Practical List: <ol style="list-style-type: none">1. Study of OWA.2. Configuring IMAP & POP3 configuration.3. Creating & configure accepted domain.4. Configure E-mail Address policy.5. Create DAG.6. Study of Hub transport role.7. Study of Edge transport role.8. Study of sent connector.			

