15AVP501   AMRITA VALUES PROGRAMME   1 0 0 1

Amrita University's Amrita Values Programme (AVP) is a new initiative to give exposure to students about richness and beauty of Indian way of life. India is a country where history, culture, art, aesthetics, cuisine and nature exhibit more diversity than nearly anywhere else in the world.

Amrita Values Programmes emphasize on making students familiar with the rich tapestry of Indian life, culture, arts, science and heritage which has historically drawn people from all over the world.

Post-graduate students shall have to register for any one of the following courses, in the second semester, which may be offered by the respective school.

Courses offered under the framework of Amrita Values Programme:

Art of Living through Amma
Amma's messages can be put to action in our life through pragmatism and attuning of our thought process in a positive and creative manner. Every single word Amma speaks and the guidance received in on matters which we consider as trivial are rich in content and touches the very inner being of our personality. Life gets enriched by Amma's guidance and She teaches us the art of exemplary life skills where we become witness to all the happenings around us still keeping the balance of the mind.

Insights from the Ramayana
Historical significance of Ramayana, the first Epic in the world – Influence of Ramayana on Indian values and culture – Storyline of Ramayana – Study of leading characters in Ramayana – Influence of Ramayana outside India – Misinterpretation of Ramayana by Colonial powers and its impact on Indian life - Relevance of Ramayana for modern times.

Insights from the Mahabharata
Historical significance of Mahabharata, the largest Epic in the world – Influence of Mahabharata on Indian values and culture – Storyline of Mahabharata – Study of leading characters in Mahabharata – Kurukshetra War and its significance – Importance of Dharma in society – Message of the Bhagavad Gita - Relevance of Mahabharata for modern times.

Insights from the Upanishads
Introduction: Sruti versus Smrti - Overview of the four Vedas and the ten Principal Upanishads - The central problems of the Upanishads – Ultimate reality – the nature of Atman - the different modes of consciousness - Sanatana Dharma and its uniqueness - The Upanishads and Indian Culture – Relevance of Upanishads for modern times – A few Upanishad Personalities: Nachiketas, Satyakama Jabala, Aruni, Shvetaketu.

Insights from Bhagavad Gita
Introduction to Bhagavad Gita – Brief storyline of Mahabharata - Context of Kurukshetra War – The anguish of Arjuna – Counsel by Sri. Krishna – Key teachings of the Bhagavad Gita – Karma Yoga, Jnana Yoga and Bhakti Yoga - Theory of Karma and Reincarnation – Concept of Dharma – Idea of the Self and Realisation of the Self – Qualities of a Realised person - Concept of Avatar - Relevance of Mahabharata for modern times.

Swami Vivekananda and his Message
Brief Sketch of Swami Vivekananda's Life – Meeting with Guru – Disciplining of Narendra - Travel across India - Inspiring Life incidents – Address at the Parliament of Religions – Travel in United States and Europe – Return and reception India – Message to Indians about our duties to the nation.

Great Spiritual Teachers of India
Sri Rama, Sri Krishna, Sri Buddha, Adi Shankaracharya, Sri Ramanujacharya, Sri Madhvacharya, Sri Ramakrishna Paramahamsa, Swami Vivekananda, Sri Ramana Maharshi, Mata Amritanandamayi Devi

Indian Arts and Literature:
The aim of this course is to present the rich literature and culture of Ancient India and help students appreciate their deep influence on Indian Life - Vedic culture, primary source of Indian Culture – Brief introduction and appreciation of a few of the art forms of India - Arts, Music, Dance, Theatre, Paintings, Sculpture and architecture – the wonder language, Sanskrit and ancient Indian Literature

Importance of Yoga and Meditation in Life:
The objective of the course is to provide practical training in YOGA ASANAS with a sound theoretical base and theory classes on selected verses of Patanjali's Yoga Sutra and Ashtanga Yoga. The coverage also includes the effect of yoga on integrated personality development.

Appreciation of Kerala's Mural Art Forms:
A mural is any piece of artwork painted or applied directly on a wall, ceiling or other large permanent surface. In the contemporary scenario Mural painting is not restricted to the permanent structures and are being done even on canvas. A distinguishing characteristic of mural painting is that the architectural elements of the given space are harmoniously incorporated into the picture. Kerala mural paintings are the frescos depicting mythology and legends, which are drawn on the walls of temples and churches in South India, principally in Kerala. Ancient temples, churches and places in Kerala, South India, display an abounding tradition of mural paintings mostly dating back between the 9th to 12th centuries CE when this form of art enjoyed Royal patronage. Learning Mural painting through the theory and practice workshop is the objective of this course.

Practicing Organic Farming

Life and nature are closely linked through the healthy practices of society for maintaining sustainability. When modern technological knowhow on microorganisms is applied in farming using the traditional practices we can avoid damage to the environment. The course will train the youth on modern practices of organic farming. Amma says "we have to return this land to the coming generations without allowing even the slightest damage to happen to it". Putting this philosophy to practice will bring about an awakening and enthusiasm in all to strive for good health and to restore the harmony in nature"

Ancient Indian Science and Technology

Science and technology in ancient and medieval India covered all the major branches of human knowledge and activities, including mathematics, astronomy, physics, chemistry, medical science and surgery, fine arts, mechanical, civil engineering, architecture, shipbuilding and navigation. Ancient India was a land of sages, saints and seers as well as a land of scholars and scientists. The course gives an awareness on India's contribution to science and technology.

15CSN501   BASIC NETWORKING TECHNOLOGIES   4 0 0 4

Objectives: The main objective of this course is to provide students with a basic understanding of computer network technologies and concepts. It gives an overview of different network types, topologies, identification of different network components of IP addressing, network utilities, maintenance tools and network security.

Unit 1 Introducing Computer Networks

Overview - Types - Topology - Networks Defined by Resource Location - Client-Server Networks - Peer-to-Peer Networks - Dissecting the OSI Model - The TCP/IP Stack Layers of the TCP/IP Stack - Common Application Protocols in the TCP/IP Stack.

Unit 2 Identifying Network Components:

Network Media - Cable Distribution - Wireless Technologies - Network Infrastructure Devices - Specialized Network Devices - VPN Concentrators - Firewalls - DNS Server - DHCP Servers - Proxy Servers, Understanding Ethernet: Principles - Origins - Features - Virtual LANs - Trunks - MAC Address – VoIP.

Unit 3 Working with IP Addresses

IPv4 Addressing - IPv4 Address Structure - Classes - Types of Addresses - Unicast - Broadcast - Multicast - Assigning IPv4 Addresses - IP Addressing Components - Static configuration - Dynamic Configuration - BOOTP - DHCP - Private IP - Subnetting - Purpose - Subnet Mask Notation - IPV6.

Unit 4 Using Command-Line Utilities

Different Types of Server OS-Windows Commands - UNIX Commands - Managing a

Network: Maintenance Tools - Bit-Error Rate Tester - Cable Certifier - Cable Tester - Connectivity Software - Crimper - Electrostatic Discharge Wrist Strap - Environmental Monitor - Loopback Plug - Multimeter - Protocol Analyzer - Punch-Down Tool - Throughput Tester - concept of virtualisation, Introduction to cloud computing.

Unit 5 Securing a Network

Fundamentals - Goals - Categories of Network Attacks - Defending Against Attacks - User Training - Patching - Security Policies - Firewalls - Troubleshooting Network Issues - Physical Layer Troubleshooting.

TEXTBOOKS/ REFERENCE BOOKS:

1. *Mark Dye, Rick McDonald, Antoon Rufi "Network Fundamentals: CCNA Exploration Companion Guide", Cisco Networking Academy, 2008*
2. *Kaveh Pahlavan, Prashant Krishnamurthy, "Networking Fundamentals: Wide, Local and Personal Area Communications", Paperback, 2014*
3. *Curt M. White, "Fundamentals of Networking and Data Communications" (English), 7th Edition Cengage Learning*

15CSN502   FUNDAMENTALS OF OPERATING SYSTEM   3 0 0 3

Objectives: This course will give students a closer look at various functions of a computer operating system, implementation of an operating system and various fundamental components of the Linux and Windows operating system.

Unit 1

Introduction to Operating Systems – Definition – Functions – Process Management – Memory management - File Management. Process in Linux, User and Kernel Threads, Interprocess communication, Hardware support for locking.

Unit 2

Basic System Administration – System Time and Date – Scheduling Tasks – Configuration Directories & Files – Managing Users – Managing Groups – Controlling Access to Directories and Files. Process Management - Running Commands in the Background - commands like ps, ptree etc.

Scheduling jobs – cron, crontab. UNIX Shell – Introduction, shell scripting.

Unit 3

Software Management – Red Hat Package Manager – Installing Software from Compressed Archives – File System Hierarchy Standard – Configuring Directories and Files – File System Administration – Mounting File Systems – Devices and Modules.

Unit 4

Introducing Windows OS – Installing Windows – Using the Desktop and Getting

Help – Installing, Removing and Running Programs – Managing Files, Folders and Disks – Setting File Management Options – Adjusting Screen Appearance – Customizing System Settings – Printers and Printing – Sharing Information between Applications - Working with registry - Optimizing and dual booting windows.

Unit 5

Virtual machines and visualization – Security – The security environment - Protection mechanism – Authentication - Communications and the Internet – Networking Windows OS Security.

TEXTBOOKS/ REFERENCE BOOKS:

1. *H. M Deital – "An Introduction To Operating Systems" – Addison Wesley; Second edition (2002), 2nd Edition*
2. *William Stanek, "Windows 7 Administrator's Pocket Consultant", ISBN: 8120339606 - Edition: Paperback - Publisher: Phi Learning Pvt. Ltd - New Delhi*
3. *Smith, "Linux System Administration (English)" 1st Edition – Stanfield, BPB.*
4. *Achyut S. Godbole "Operating Systems (English)" 2nd Edition (Paperback) – Tata McGraw Hill, 1996.*

15CSN503   HARDWARE AND TROUBLE SHOOTING   3 0 0 3

Objectives: *The course aims to give a general understanding of how a computer works. Students will be able to understand the basics of hardware and troubleshooting mechanisms.*

Unit 1

Hardware Basics - Basic Terms, Concepts, and Functions of System Modules, Popular CPU Chips and their Characteristics.

Unit 2

Motherboards: Components and Architecture, RAM Terminology - CMOS Basic Parameters - Ports, Cables and Connectors.

Unit 3

Printer Operations and Components - System Resources used by Devices.

Unit 4

Installing and Configuring Hardware: Internal Devices - Installing and Configuring Peripheral Devices Portable Devices.

Unit 5

Maintenance and Troubleshooting: Preventive Maintenance and Safety Procedures - Managing Replaceable Components - Maintaining Printers - Troubleshooting Procedures and Guidelines.

TEXTBOOK/ REFERENCE BOOK:

James K L "Computer Hardware: Installation, Interfacing Troubleshooting and maintenance", PHI Learning Press (Eastern Economy Edition, 2013)

15CSN504   PC SOFTWARE ESSENTIALS   3 0 0 3

Objectives: *This course will help the students to install and configure different types of operating systems, applications and services. It will also enable them to troubleshoot the errors from the software.*

Unit 1

Operating System Basics: Operating System Functions - Command Prompt Procedures - Major System Files and their Purpose.

Unit 2

Managing Files and Directories - Managing Disks.

Unit 3

Installing and Configuring Operating Systems: Installing and Upgrading Windows - Boot Sequences and Methods.

Unit 4

Loading and Configuring Device Drivers - Working with Applications.

Unit 5

Troubleshooting Operating Systems: Managing Error Codes and Start-up Messages - Managing Common Problems.

TEXTBOOK/ REFERENCE BOOK:

Peter Norton, "Introduction to Computers" – McGraw Hill Education India (7th Edition)

15CSN511   BASICS OF LINUX OPERATING SYSTEM   1 1 3 3

Objectives: *The objective of this course is to provide basic knowledge about Linux operating system, its environment and commands.*

Unit 1

Introduction to Linux Operating System – Characteristics – Features – Linux distribution – Principles – Linux Elements – Linux directory structure – Linux Kernel – Memory Management – Linux File System.

Unit 2

Process Management - Perform common file maintenance tasks – Understand and maintain file access permission – Creating and Managing Users Group – Open,

edit and Save text documents using the vi editor - Use regular expression pattern matching – Filter and Process text - Use Printing Commands and Utilities - Understand and Use Email and related applications.

Unit 3

Connect processes and files using standard I/O and Pipes, Mounting file system, Understanding configuration files. Use Network Applications and Utilities – Communicate and Transfer files securely.

Unit 4

System Tools for the User – Compressing and Uncompressing files – Archives – String Processing – Maintaining Systems Logs – Automating System Tasks - Installing and administering – RPM - apt-get-yum packages.

Unit 5

Launch applications from the command line and GNOME Interface – Use and customize the X Window System and GNOME desktop environment – Perform common tasks using GNOME GUI applications.

TEXTBOOKS:

1. *Red Hat Linux – System Administration*
2. *Red Hat Linux Bible by Christopher Negus – Wiley*

**15CSN512   ENTERPRISE NETWORK DESIGN AND   3 0 3 4
IMPLEMENTATION**

(Prerequisite: 15CSN501 Basic Network Technologies)

Objectives: *The main objective of this course is to provide students with a basic understanding of computer network technologies and concepts. It gives an overview of router concepts and router configuration. It gives an idea about WAN technologies and different types of routing, and to set up and configure routing.*

Unit 1

Introduction to Routers: LAN Setup – LAN-Same Network Communication - LAN-Different Network Communication – Router Concepts - Type of Routers - Functions of a Router – IP routing and forwarding - Hierarchical Design Model – External Components of a Router - Boot Sequence - IOS Password Management.

Unit 2

Internal Components and Initial Configuration: Console Connectivity – CLI to set router configuration - Configure and verify operation status of a device interface – Verify router configuration and network connectivity - Routing with static routing tables - Emulation Software.

Unit 3

Wan Interface configuration - Types Of WAN Technologies - WAN Connectivity - Device Classification – Setup - WAN Encapsulation – Routing - Conditions for Routing - Types of Routing - Introduction to routing and routing protocols,

Unit 4

Static routing – Disadvantages – Dynamic Routing - Advantages of Dynamic Routing - Types of Dynamic Routing - introduction to Routing Information Protocol – RIP Configuration - RIP Timers - Disadvantages of RIP - Routing Loops - Routing Loop Avoidance - Split Horizon - Route poisoning and Poison Reverse - Comparison between RIP v1 and RIP v2.

Unit 5

Routing in Autonomous System – Inter-domain Routing protocols – IGP and EGP - Enhanced Interior Gateway Routing Protocol - EIGRP Tables - EIGRP Terminology - Configuration – Taking Router configuration Backup.

ENTERPRISE NETWORK DESIGN AND IMPLEMENTATION LAB.

1. *Introduction to Packet Tracer*
2. *Introduction to Routers - External Components*
3. *Internal Components and Initial Configuration*
4. *Wan Interface configuration - Introduction to routing*
5. *Static Routing - introduction to RIP*
6. *EIGRP Configurations*

TEXTBOOKS/ REFERENCE BOOKS:

1. *Chris Lewis, "Network Routing Basics: Understanding IP Routing in Cisco® Systems Cisco TCP/IP Professional Reference" (McGraw-Hill Technical Expert) Paperback – Import, 2000*
2. *Stephen A. Thomas, "IP Switching and Routing Essentials: Understanding RIP, OSPF, BGP, MPLS, CR-LDP, and RSVP-TE", 2002*
3. *James Macfarlane, "Network Routing Basics: Understanding IP Routing in Cisco® Systems", 2006 - Wiley*

**15CSN513   INFORMATION TECHNOLOGIES ENABLED   3 0 0 3
SERVICES**

Objectives: *The course provides an idea about the services provided by ITES that is a wide range of career options that include opportunities in call Centre, medical transcription, medical billing and coding, back office operations, revenue claims processing, legal databases, content development, payrolls, logistics management, GIS (Geographical Information System), HR services, web services etc.*

Unit 1

Introduction to the ITES concepts – Outsourcing - Process - Reason - Forms and

Types – BPO, KPO, RPO, STO, LPO - Outsourcing Tips - Success Stories – Advantage – Disadvantage - Back office operations - Global outsourcing market on a growth path – The Indian IT enabled services Market - Different forms of Outsourcing - Advantages and Disadvantages of outsourcing - Indian Contract Services Market; Project Work; Networking, Data Communication & Computer Networks Infrastructure; Software Technologies & Frameworks.

Unit 2

The Indian Contract Services Market – The Medical Transcription Market - Data centre management - Organisational Behaviour - Organisation Management.

Unit 3

Engineering and design services – online training - Introduction – Growth – Technology – Services – Goals of e-learning – E-Learning Software platforms – Online Tutoring – Procedures – Requirements – Services – Negative criticisms.

Unit 4

Business models deriving IT enabled services – India's challenge in the IT Enabled Services space – Role.

Unit 5

HR and Quality issues in IT enabled services – Challenges facing the Indian IT enabled outsourcing Market, Information Assurance - Information Security - Risk-Risk Management Process, Case Study.

TEXTBOOKS/ REFERENCE BOOKS:

1. NASSCOM's "Hand book on IT Enabled Services"

2. "Information Technology Enabled Global Customer Service Hardcover", 2002 Tapio Reponen

15CSN514   WINDOWS SERVER ADMINISTRATION   3 0 3 4
[Prerequisite: 15CSN502 Fundamentals of Operating Systems]

Objectives: *The main objective of this course is to give an idea of implementing, managing, maintaining and provisioning services and infrastructure in a Windows Server 2012 environment. This course primarily covers the administration tasks necessary to maintain a Windows Server 2012 infrastructure such as configuring and troubleshooting name resolution, user and group management with Active Directory Domain Services (ADDS) and Group Policy, configuration of DHCP and DNS.*

Unit 1

Installing Windows Server 2012: Introduction – Windows Server 2012, Disk Management - MBR, GPT, VHD, Basic Disk, Dynamic Disk, Storage Pool, Disk Pool. Installing Windows Server 2012. Configuration of virtual machines, IPv4 and IPv6.

Unit 2

DHCP – DORA process, APIPA, Trouble shooting command, Server requirements, Internet Information Services (Web Server) DNS - Forward and Reverse lookup zone, primary/secondary/stub zone, dynamic DNS, File Transfer Protocol (FTP).

Unit 3

Active Directory Domain Controller - Active Directory user, Group, OU Management, Create and Manage Group Policy Objects, Configure security policies - Antivirus installation and Management.

Unit 4

Active Directory Backup and restoration, Active Directory Task Delegation, Active Directory object and container level recovery, Advanced Group policy object configuration and Management.

Unit 5

Configuring Windows firewall; Configure Hyper-V (For Virtualization-windows), network and remote access, File and storage services; Recovery; Security; Desktop Management.

WINDOWS SERVER ADMINISTRATION LAB.

1. Deploying and Managing Windows Server 2012

2. Install & Implement DHCP

3. Install & Implementing IIS (Web Server)

4. Install & Implementing DNS

5. Installing & Implementing Domain Controllers

6. Implementing IPv4

7. Installing Active Directory Domain Services Objects

8. Managing AD DS Administration by Using Windows PowerShell

9. Configuring and Troubleshooting DNS

10. Maintaining AD DS

11. Managing User and Service Accounts

12. Implementing a Group Policy Infrastructure

13. Managing User Desktops with Group Policy

14. Installing and Configuring a Network Policy Server

15. Deploying an Advanced Direct Access Solution

16. Configuring Quotas and File Screening Using File Server Resource Manager

17. Back up and Recovery

18. Antivirus installation management

TEXTBOOKS/ REFERENCE BOOKS:

1. Todd Lammle, "CCNA Routing and Switching Review Guide", Wiley-Sybex, 2014

2. William Panek, "Mcsa - Windows Server 2012: Complete Study Guide", Wiley India Pvt. Ltd. – New Delhi.

3. *Robert Butler, Mark Minasi, "Mastering Windows Server 2012" R2 (English) 1st Edition, - Wiley India Pvt. Ltd.*

4. *Rand Morimoto, Michael Noel," Windows Server 2012 Unleashed", Sams*

15CSN581   NETWORKING TECHNOLOGIES LAB.   1 0 3 2

1. Introducing Network devices
2. Basics of different types of cabling
3. Introductions to network installation tools
4. Basics of structured cabling
5. IP configurations and subnetting
6. Introductions to basic network commands (Windows and Linux)
7. Network trouble shooting
8. Traffic Analyser - Wireshark
9. Making VoIP calls

15CSN582   OPERATING SYSTEMS LAB.   1 0 3 2

1. Practice Linux Basic Commands
2. Practice Linux Directories and file manipulation
3. Practice Linux Process Management Commands
4. Practice Basic Linux tools
5. Practice Filters and Pipes
6. User Creation, Configuration and Applying security attributes
7. Linux Kernel configuration, compilation and rebooting from the newly compiled kernel.
   Requirements:
   a. Get a Linux kernel source code from www.kernel.org
   b. Menu based configuration of Linux kernel using menuconfig/xconfig/gconfig
   c. Creating a monolithic compressed image of a kernel
   d. Compilation of kernel modules
   e. Installation of kernel modules
   f. Finalize installation
8. Practice Pattern Matching commands in Linux.
9. Explore system admin tools.
10. Exploring Windows Installer.
11. Add/Remove Hardware wizard
12. Use Various System maintenance tools(viz. Defragmentation, Scheduled Tasks, Disk Cleanup, Scandisk)
13. Exploring Control Panel

15CSN583 PC HARDWARE AND SOFTWARE ESSENTIALS LAB. 1 0 3 2

1. Introduction to PC Hardware Components
• Mother Board Components

• Ports, slots, connectors, add on cards,
• Selection and installation of appropriate motherboard
• Selection and installation of appropriate CPU
• Selection and installation of appropriate memory
• Installation of adapter cards hardware
• Configuration and optimization of adapter cards
• Power Supply and cabling
• Jumper configuration

2. PC Assembling
• Assemble a PC by fixing motherboard, processor and cooling fan.
• Fixing of Hard drive and DVD and connect the Data, power cables.
• Connect the power cables with SMPS
• BIOS set-up and configuration
• dual booting

3. System installations and configurations
• Drive Preparations
• Installation of OS (Linux and Windows)
• Installation driver software for adapter cards
• Add, remove and configure systems

4. Troubleshooting techniques for personal computer components
• Identify and apply diagnostic procedures and troubleshooting techniques,
• Identify the steps used to troubleshoot components
• Recognize names, purposes, characteristics and appropriate application of tools,

5. Preventive maintenance of personal computer components
• Identify and apply common preventive maintenance techniques, for example:
• Thermally sensitive devices (e.g. motherboards, CPU's, adapter cards, memory)
• Cleaning
• Air flow (e.g. slot covers, cable routing)
• Adapter cards (e.g. driver/firmware updates)

6. Install, configure, optimize and upgrade printers and scanners
• Identify the steps used in the installation and configuration processes for printers and scanners, for example:
• Power and connect the device using network or local port
• Install and update the device driver
• Calibrate the device
• Configure options and default settings
• Print test page
• Install and configure printer/ scanner upgrades including memory and firmware
• Identify tools, diagnostic methods and troubleshooting procedures for printers and scanners
• preventive maintenance of printer and scanner problems

7. Security
• Control Access
• Installation of Hardware Security
• Anti virus

15CSN601   DESIGN AND IMPLEMENTATION OF SERVER   4 0 0 4
INFRASTRUCTURE

[Prerequisite: 15CSN514 Windows Server Administration]

Objectives: *This course provides you with the skills and knowledge needed to plan, design, and deploy a physical and logical Windows Server Active Directory Domain Services (ADDS) infrastructure. The course also provides an idea about DHCP protocol.*

Unit 1
Configure advanced File Services, Configuring Windows server backup tool, Advanced DHCP, Advanced DNS, Active Directory Forest Trust Relationship.

Unit 2
Design an automated Server Installation Strategy, Plan and Implement a Server deployment infrastructure, Plan and implement server upgrade and migration.

Unit 3
Design and maintain a Dynamic Host Configuration Protocol solution, Design a name resolution solution strategy.

Unit 4
Design a forest and domain infrastructure, designing a group policy strategy, Design and active.

Unit 5
Planning and implementation: Highly available server roles, Virtualization Networking and virtualization storage - Software License management - Back up domain.

TEXTBOOKS/ REFERENCE BOOKS:

1. *William R Stanek ,"Windows Server 2012 R2 Inside Out: Services, Security & Infrastructure", Microsoft Press US*
2. *Samara Lynn, "Windows Server 2012: Up and Running" - (English) 1st Edition, O'Reilly Media*
3. *Mitch Tulloch, "Windows Server 2012 R2 Configuration, Storage & Essentials Inside Out", English-Paperback, Microsoft Press US*

15CSN602   NETWORK SECURITY AND SERVICES   4 0 0 4
(Prerequisite: 15CSN512 Enterprise Network Design and Implementation)

Objectives: *The purpose of this course is to provide an understanding of the main issues related to security in modern networked computer systems. This covers underlying concepts*

and foundations of computer security, basic knowledge about security - relevant decisions in designing IT infrastructures, techniques to secure complex systems.

Unit 1
Configuring RIP - Open Shortest Path First Protocol - Router ID - OSPF Tables - Wild Card Mask - OSPF Configuration - DR and BDR – Configuring OSPF Configuring ACL - Standard and Extended ACLS - inter routing using BGP.

Unit 2
Access Control List – Network Diagram – Router ACL - Wild Card Mask - Working of Access List - Types of Access List – Standard Access List – Working - Extended ACL Network Diagram – Working.

Unit 3
Introduction to switching - Ethernet switching – Switching Devices – VLAN - Trunking Protocol - Inter-VLAN Routing - VTP - Port Security - Violation Models.

Unit 4
Understanding Cisco Discovery Protocol – Merits and Demerits - Configuring CDP – characteristics – Disabling and enabling CDP - STP - NAT - Password recovery - Firewalls, VPNs, IDSs, malware scanners – PAT.

Unit 5
Frame Relay – standards – Devices – Virtual circuits – Frame relay local management interface – Network implementation – Frame formats – configuring frame relay - IPV6 - WLAN – Wireless LAN Management – SSID – WLAN Security – Configuration – Operation – Troubleshoot and alerts.

TEXTBOOKS/ REFERENCE BOOKS:

1. *James Macfarlane, "Network Routing Basics: Understanding IP Routing in Cisco® Systems", Wiley, 2006*
2. *Peter T. Davis, "Securing and Controlling Cisco Routers 2002"*
3. *Toby Velte, Anthony Velte, "Cisco A Beginner's Guide", 5th Edition Paperback*
4. *Robert A. Breyer, Sean Riley, "Introduction to Fast Ethernet and Ethernet Switching", Paperback - 2010, Pearson Education Ltd.*
5. *William Stallings ,"ISDN and Broadband ISDN with Frame Relay and ATM (English)", 4th Edition, Prentice Hall*
6. *Todd Lammle, "CCNA Routing and Switching Review Guide", Wiley-Sybex, 2014.*

15CSN611   ADMINISTRATION OF WIRELESS NETWORKS   2 0 3 3

Objectives: *This course provides an introduction to various current and next generation wireless networking technologies, and undertakes a detailed exploration of fundamental architectural and design principles used at all layers. Related protocols and their performance are studied using formal analytical tools and realistic simulations.*

Unit 1

Mobile vs. Wireless, Issues and Trends: History – Hype Cycle of the Year – Market Scenarios – Latest Technologies - Wireless Physical Layer: Electro Magnetic Spectrum – Time and Frequency Domain – Decibels – Coding Terminology – Phase Shift Keying (PSK) – QAM – Antenna – Reflections – Diffractions - Scattering – Multipath Propagations – Doppler Shift – Channel Capacity – Shannon's Theorem – Error Corrections.

Unit 2

CDMA – Spread Spectrum – Wireless Radio Channel Model – Path loss – d-4 Power law – Small Scale fading – Large Scale Fading – Shadowing – Path loss – Noise – Interference Limited Systems - Fresnel Zones – Link Budget – Multipath Power Delay Profile – Tapped Delay Line Model – Doppler Spread – Empirical Channel Model – Multi-Antenna Systems.

Unit 3

OFDM Wireless Local Area Networks: WiFi - IEEE 802.11 Features – IEEE 802.11 Physical Layers – IEEE 802.11 MAC – IEEE 802.11 Priorities – Time Critical Services – Synchronization – Power Management – Roaming – Various 802.11 Standards and Significance.

Unit 4

Ad-hoc Networks: Characteristics – Applications - Issues – Media Access Controls – Classifications of Routing Protocols – Dynamic Source Routing – Ad-hoc on Demand Distance Vector.

Unit 5

Wireless Personal Area Networks: IEEE 802.15 Standards – Bluetooth – Operational States – Packet Format – Piconet - Protocol Stack – Profile. Ultra Wide Band. Introduction to Sensor Networks and Mesh – ZigBee – RFID and NFC.

ADMINISTRATION OF WIRELESS NETWORKS LAB.

Installation of Wireless Adapter Card in PC
Configuring wireless access point
Setting up passwords in wireless router
Setting up a Wireless LAN
Adhoc and Infrastructure Network Configuration
Simulation using NCTuns/packet tracer

TEXT BOOKS/ REFERENCE BOOKS:

1. Jochen Schiller, "Mobile Communications", 2nd Edition, Person Education, 2008
2. Dr.Sunil Kumar, et.al "Wireless and Mobile Networks: Concepts and Protocols", Wiley India, 2010
3. Vijay.K.Garg, "Wireless Communications and Networking", Morgan Kaufmann, 2010

4. Matthew S.Gast, "802.11 Wireless Networks: The Definitive Guide", O'Reilly; 2nd Edition 2005
5. Ivan Stojmenovic, "Handbook of Wireless Networks and Mobile Computing", Wiley, 2007

15CSN612   LINUX SERVER ADMINISTRATION   3 0 3 4
(Prerequisite: 15CSN511 Basics of Linux Operating System)

Objectives: *This course provides you with the basic idea of Linux Server Administration, Design and Implementation of Server Infrastructure. It gives an idea about Linux File systems, setting file permissions, creation, mounting and un-mounting of file systems, firewall configuration, Managing DNS for Servers, configuring the shell environment in Linux.*

Unit 1

Linux distributions, Configure the date and time, and configure a printer, Local and remote logins, File system navigation, Users and groups, File permissions, SELinux permissions, Providing block-based storage. Providing file-based storage

Unit 2

Process management, Updating software packages, Creating and mounting file systems, Service management and boot troubleshooting, Network configuration, System logging and ntp, Logical volume management.

Unit 3

Scheduled processes, Mounting network file systems, Firewall configuration, Virtualization and kickstart, Managing IPv6 networking, Configuring link aggregation and bridging, Controlling network port security.

Unit 4

OpenSSH, FTP, SAMBA, Managing DNS for Servers (BIND), Configuring Email Delivery, Configuring MariaDB databases, Providing Apache HTTPD Web Service, Writing Bash scripts, Bash conditionals and control structures, Configuring the shell environment.

Unit 5

Kerberos, OpenLDAP and directory services, IP Tables (packet filtering).

TEXTBOOKS/ REFERENCE BOOKS:

1, Collings T, "Red Hat Linux Networking & System Administration", 2nd Edition, English-Paperback, Wiley India Pvt. Ltd
2, Jang," Rhcsa/Rhce Practice Exam (Ex200 and Ex300) (English)" - 1st Edition, Paperback, McGraw Hill Education (India) Pvt Ltd
3, Et Al, "Red Hat Linux System Admn. Unleashed (English)", 1st Edition - Paperback, Techmedia

15CSN632   DATABASE SERVER ADMINISTRATION   2 0 3 3

Objectives: The main objective of his course is to provide students with a basic understanding of database administration such as designing, implementing and maintaining the database server.

Unit 1

Introduction to SQL Server 2012 – Architecture – Features – Automating - Planning and Installing SQL Server 2012 – Upgrading SQL Server.

Unit 2

SQL Server instances - SQL Server instances.SQL Server 2012 Components - additional SQL Server components Manage - configure databases

Unit 3

Migrating - Importing and Exporting data - SQL Server Logins – Roles - and Users-Securing SQL Server 2012: database security and permissions - Mirroring and Replication.

Unit 4

Troubleshooting SQL Server 2012 - Optimizing Performance - Performance Monitor - SQL Server Profiler - Backup and Restore SQL Server Databases.

Unit 5

Indexing: Table and Index Partitioning - Data Compression - CPU and Memory Consideration - Resource Governor.

DATABASE ADMINISTRATION LAB.

1. Installing SQL Server and Related Services
2. Configure SQL Server instances
3. Manage SQL Server instances
4. Configure additional SQL Server components
5. Manage and configure databases
6. Manage logins and server roles
7. Manage users and database roles
8. Troubleshooting

TEXTBOOKS/ REFERENCE BOOKS:

1. Orin Thomas, Peter Ward, Bob Taylor, "Exam 70-462: Administering Microsoft SQL Server 2012 Databases (MCSA)", Microsoft Press, 2012

2. Steven Wort, Adam Jorgensen, Brian Knight, Ross LoForte, "Professional Microsoft SQL Server 2012 Administration", Wiley, 2012

15CSN633   ENTERPRISE COMMUNICATION SERVERS   2 0 3 3

Objectives: To understand the basic concepts and to implement Email Exchange Server technologies which lead to gain the skills required to simplify administration, communications and to meet user demands for greater business mobility.

Unit 1

Introduction to exchange server, Microsoft outlook express different versions and features comparison.

Unit 2

Installing and Configuring Exchange Servers, Exchange roles, adding and modifying roles, server roles to existing Exchange 2003 or 2007 organizations, Exchange Server roles after an initial installation, Create and configure databases, public folder databases, mount and dismount databases.

Unit 3

Configure mailboxes, mailbox quota, deleted mailbox, message size; warning thresholds; move from and to previous Exchange versions; online and offline moves; intra-orgs and cross-orgs; create proxy addresses; create mailboxes; configure client access protocols Create and configure address lists.

Unit 4

Configuring client access, POP and IMAP; manage certificates, Configure Outlook Web App (OWA),configuring message transport, Configure message routing.

Unit 5

Monitoring and reporting, Monitor databases, Monitor mail flow, Monitor connectivity, backup and restore of data, Configure public folders for high availability, Configure records management.

ENTERPRISE COMMUNICATION SERVERS LAB.

Install Exchange prerequisites: Install MMC 3.0 - Windows PowerShell 2.0 - Microsoft .NET 3.5- WinRM 2.0, IIS, Windows roles and features, use ServerManagerCMD, use Exchange prerequisite scripts

Install Exchange roles

Create and configure databases: Configure POP - IMAP - Microsoft ActiveSync

Configure Outlook Web App (OWA) - Email exchange using outlook - Monitor mail flow - Perform message tracking - DNS - manage message queues – view – retry - delete

TEXTBOOKS/ REFERENCE BOOKS:

1. Nathan Winters, "Microsoft Exchange Server 2013: Design, Deploy and Deliver an Enterprise Messaging Solution", Wiley, 2013

2. David Elfassy, "Mastering Microsoft Exchange Server 2013",Wiley, 2013

**15CSN634   ETHICAL HACKING, CYBER CRIMES AND   3 0 0 3
                         CYBER FORENSICS**

Objectives: The objective of this course is to provide basic knowledge on ethical hacking, fraud detections and to know the international standards and policies of cyber security and cyber forensics.

Unit 1

Hacking windows – Network hacking – Web hacking – Password hacking. A study on various attacks – Input validation attacks – SQL injection attacks – Buffer overflow attacks - Privacy attacks.

Unit 2

TCP / IP – Checksums – IP Spoofing port scanning, DNS Spoofing. Dos attacks – SYN attacks, Smurf attacks, UDP flooding, DDOS – Models. Firewalls – Packet filter firewalls, Packet Inspection firewalls – Application Proxy Firewalls. Batch File Programming.

Unit 3

Computer Fraud – Threat concepts – Framework for predicting inside attacks – Managing the threat – Strategic Planning Process. Architecture strategies for computer fraud prevention – Protection of Web sites – Intrusion detection system – NIDS, HIDS – Penetrating testing process – Web Services – Reducing transaction risks.

Unit 4

Key Fraud Indicator selection process customized taxonomies – Key fraud signature selection process – Accounting Forensics – Computer Forensics – Journaling and it requirements – Standardized logging criteria – Journal risk and control matrix – Neural networks – Misuse detection and Novelty detection.

Unit 5

Crime incident Handling: Hacking, cyber activism, tracking hackers, clues to cyber crime, privacy act, search warrants, Setting up a Cyber Crime Investigation Cell. Cyber Forensics: Basic Forensic Principles, Forensic Imaging & Verification, Data Recovery and Analysis, Blended attacks. Sample Policy Documents: Antivirus Guidelines Policy - Internal Lab Security Policy - Server Security Policy – Wireless Communications Policy. Information Security Certifications, CISSP and SSCP, CISA and CISM, SCP, GIAC, certification weaknesses, Role of these certified professionals, Windows Server 2003 Security Fundamentals.

TEXTBOOKS/ REFERENCE BOOKS:

1. Kenneth C. Brancik "Insider Computer Fraud" Auerbach Publications Taylor & Francis Group, 2008.

2. Ankit Fadia "Ethical Hacking" 2nd Edition Macmillan India Ltd, 2006

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3. Earnest A. Kallman, J.P Grillo, "Ethical Decision making and IT: An Introduction with Cases", McGraw Hill Publication, 2008

4. John W. Rittinghouse, William M. Hancock, "Cyber security Operations Handbook", Elsevier Pub, 2003

15CSN635   MOBILE TECHNOLOGIES   2 0 3 3

Objectives: The objective of this course is to provide students with a basic understanding of mobile technologies and concepts.

Unit 1

Android Introduction: Development Tools – Installation – Execution - SDK and Development Framework – Lifecycle - Android Architecture - Android Basics: User Interface Design – Elements – Layout - Common Application Programming Interfaces - Graphics and sounds.

Unit 2

Data Storage - Retrieval and Sharing - Saving Data - Saving and Loading Files - Databases in Android - working with databases - Introducing Content Providers - User Experiences.

Unit 3

Location based Services - Setting up Emulator - Location Provider - Using Geocoder - Proximity alerts - Creating Map Based Services - Introducing Services - Background worker Threads - Notification and Alarms - Application Widgets - OpenGL 3D Graphics.

Unit 4

Hardware access (sensors), Debugging and Monitoring (DDMS), Test automation and black box testing: Robotium and MonkeyTalk.

Unit 5

Basics of Wireless transmission: frequencies, antennas, signal propagation, multiplexing, modulation, spread spectrum, Cellular systems architecture, Evolution of mobile technologies: Introduction to 1G(AMPS) - 2G(GSM) - 2.5G(GPRS, EDGE) - 3G - 4G - Principles of WCDMA - UMTS Network architecture.

MOBILE TECHNOLOGIES LAB.

Setting up the mobile app development environment along with an emulator - a case study on Mobile app development.

App user interface designing – mobile UI resources (Layout, UI elements, Draw-able, Menu), Sending Notifications, Broadcast receivers and SMS.

Native Data Handling: SQLite, Data access via Internet/Intranet.

Graphics and animation, Hardware access (sensors)

Debugging and Monitoring (DDMS)

Test automation and black box testing: MonkeyTalk
White box and black box Testing: Robotium

TEXTBOOKS/ REFERENCE BOOKS:

1. *Hello Android - Introducing Google's mobile development platform, Ed Burnette, Edition 3*
2. *Mobile Communications, Jochen Schiller, Edition 2*
3. *Teach Yourself Android Application Development In 24 Hours, SAMS Publication, Edition I*
4. *3G Networks, Sumit Kasera, Nishit Narang, Edition 1*
5. *Introduction to 3G mobile commnications, Juha Korhonen, Edition 2*

15CSN636   COMPUTER SYSTEMS SECURITY   3 0 0 3

Objectives: *The main objective of this course is to provide students with an overall understanding of the main concepts of information systems, and to highlight the importance of information systems security in modern organizations and societies.*

Unit 1
Introduction to Computer Security – Basic Concepts – Threat Models – Common Security Goals – Introduction to Cryptography.

Unit 2
Program security: Secure program – Non malicious program errors – Malicious Code – Program Controls.

Unit 3
Operating system security: Memory protection - Access Control – File protection mechanisms – User Authentication – Trusted Operating system.

Unit 4
Database security: security requirements – reliability and integrity - sensitive data – inference – multilevel security – Network security: Threats in networks – security controls – firewalls – Intrusion detection systems.

Unit 5
 Administering security: Security planning – Risk Analysis – Organizational security policies – Physical security.

TEXTBOOKS/ REFERENCE BOOKS:

1. *Charles P. Pfleeger and Shari Lawrence Pfleeger, "Security in Computing", 4th Edition, Prentice Hall, 2007.*
2. *Ross J.Anderson and Ross Anderson, "Security Engineering: A Guide to Building dependable distributed systems", Wiley India Pvt. Ltd, 2001*
3. *C.K. Shyamala, N. Harini and T.R.Padmanabhan, "Cryptography and Security", 1st Edition, Wiley India Pvt Ltd, 2011.*

4. *Matthew Bishop, "Computer Security: Art and Science", Addison-Wesley, 2003.*
5. *William Stallings, "Cryptography and Network Security: Principles and practice", 5th Edition, Pearson Education, 2011*

15CSN637   WEB DESIGN AND ADMINISTRATION   2 0 3 3

Objectives: *The objective of the course is to provide knowledge about web server administration in an enterprise environment over intranet, extranet, and internet.*

Unit 1
Introducing Internet Information Services 7.0, Installing the Web Server Role in Windows Server 2008, Configuring Application Development, Health, and HTTP Features, Configuring Performance, Security, and Server Component Features.

Unit 2
Introducing Web Sites and Application Pools, Creating a Web Site, Creating an Application Pool, Maintaining an Application Pool.

Unit 3
Configuring Application Settings, Configuring ASP.NET Security, Configuring Native Modules, Configuring Managed Modules, Configuring Secure Web Sites and Servers, Configure Other Aspects of Web Server Security, Configuring Logging for IIS 7.0 - Apache, TomCat, LAMP, WAMP.

Unit 4
Configuring Remote Administration, Configuring Delegated Administration, Configuring Feature Delegation, Tools for Running Administrative Tasks in IIS, Executing Scripts for Administrative Tasks - Web Hosting.

Unit 5
Managing IIS Tasks, Implementing Best Practices for Improving IIS Performance, Configuring Options to Improve IIS Performance, Managing Application Pools to Improve IIS Performance.

Backing Up and Restoring Web Sites, Working with Shared Configurations, Configuring Network Load Balancing for IIS.

WEB DESIGN AND ADMINISTRATION LAB.

1. *Installing IIS using Unattend Setup*
2. *Installing IIS on Server Core from Command Line*
3. *Configuring IIS and Validate Functionality*
4. *Creating a Web Site and Web Application*
5. *Creating an Application Pool*
6. *Configuring an Existing Application Pool*

7. *Configuring ASP.NET Application Development Settings*
8. *Configuring a Web Server to Host Multiple Web Applications with Separate Application Pools*
9. *Configuring ASP.NET Security*
10. *Configuring and Edit Managed Modules*
11. *Configuring a Secure Web Server*
12. *Configuring Authorization, Authentication, and Access*
13. *Configuring Logging*
14. *Configuring Remote Administration*
15. *Configuring Delegated Administration*
16. *Configuring Feature Delegation*
17. *Managing IIS Web Sites with PowerShell*
18. *Executing a Script using WAP*
19. *Automating IIS Administration using Scripts*
20. *Navigating IIS tasks using WMI and Appcmd*
21. *Configuring IIS Performance Options*
22. *Managing Application Pools to Improve Performance*
23. *Deploying Applications*
24. *Backing Up an IIS Web Site*
25. *Restoring an IIS Web site*
26. *Enabling Shared Configurations*
27. *Configuring Network Load Balancing*
28. *Troubleshooting Authentication*
29. *Troubleshooting Authorization Types*
30. *Troubleshooting Communication*
31. *Troubleshooting Configuration*

TEXTBOOKS/ REFERENCE BOOKS:

1. *Michael Palmer, "Hands-On Microsoft Windows Server 2008 Administration Test Preparation Series", Cengage Learning, 2008*
2. *"6427AK-En Configuring Troubleshooting IIS Windows Server 2008 Trainer Handbook" Alexandrecpaulo*
3. *Mike Volordarsky, Olga M. Londer, Brett Hill, Bernard Cheah, "Internet Information Services (IIS) 7.0 Resource Kit", Microsoft Press*

15CSN681   DESIGN AND IMPLEMENTATION OF SERVER   0 0 3 1
                 INFRASTRUCTURE LAB.

1. Implementing Advanced Network Services
2. Implementing Advanced File Services
3. Implementing Distributed AD DS Deployments
4. Implementing Active Directory Rights Management Services
5. Planning a Server Upgrade and Migration
6. Planning and Implementing a Server Deployment Infrastructure
7. Designing and Maintaining an IP Configuration and IP Address Management Solution

8. Designing and Implementing Name Resolution
9. Designing and Implementing an Active Directory Domain Services Forest Infrastructure
10. Designing and Implementing an Active Directory OU Infrastructure and Delegation Model
11. Designing and Implementing Remote Access Services
12. Considerations for Implementing an Enterprise Data Center
13. Planning and Implementing Networks and Storage for Virtualization
14. Implementing DAC and Access Denied Assistance

15CSN682   NETWORK SECURITY AND SERVICES LAB.   0 0 3 1

1. ACL - Introduction to switching - VLAN
2. Trunking – Inter VLAN Routing - VTP - Port Security - CDP
3. STP - NAT - Password recovery
4. Frame-Relay - IPV6 – WLAN
5. RIP - Configuration - OSPF – Configuration

15CSN685   LINUX SERVER ADMINISTRATION LAB.   0 0 3 1

1. Review methods for accessing the system and engaging Red Hat Support
2. Copy, move, create, delete, link, and organize files while working from the Bash shell prompt
3. Manage Linux users and groups and administer local password policies
4. Control access to files and directories using permissions and access control lists (ACLs)
5. Manage the SELinux behaviour of a system to keep it secure in case of a network service compromise
6. Evaluate and control processes running on a Red Hat Enterprise Linux system
7. Download, install, update, and manage software packages from Red Hat and yum package repositories
8. Create and manage disks, partitions, and file systems from the command line
9. Control and monitor system daemons and troubleshoot the Red Hat Enterprise Linux boot process
10. Configure basic IPv4 networking on Red Hat Enterprise Linux systems
11. Locate and accurately interpret relevant system log files for troubleshooting purposes
12. Create and manage logical volumes from the command line
13. Schedule tasks to automatically execute in the future
14. Use autofs and the command line to mount and unmount network storage with NFS and SMB
15. Configure a basic firewall
16. Automate the installation of Red Hat Enterprise Linux on virtual machines with kernel-based virtual machine (KVM) and libvirt

17. Configure and troubleshoot basic IPv6 networking on Red Hat Enterprise Linux systems
18. Configure and troubleshoot advanced network interface functionality including bonding, teaming, and local software bridges
19. Permit and reject access to network services using advanced SELinux and firewall filtering techniques
20. Set and verify correct DNS records for systems and configure secure-caching DNS
21. Relay all email sent by the system to a SMTP gateway for central delivery
22. Provide and use networked iSCSI block devices as remote disks
23. Provide NFS exports and SMB file shares to specific systems and users
24. Provide a MariaDB SQL database for use by programs and database administrators
25. Configure Apache HTTPD to provide Transport Layer Security (TLS)-enabled websites and virtual hosts
26. Write simple shell scripts using Bash.
27. Use Bash conditionals and other control structures to write more sophisticated shell commands and scripts
28. Customize Bash Start up and use environment variables, Bash aliases, and Bash functions

15CSN690   **LIVE-IN-LAB.**   **2 cr**

This initiative is to provide opportunities for students to get involved in coming up with solutions for societal problems. The students shall visit villages or rural sites during the vacations (after second semester) and if they identify a worthwhile project, they shall register for a 2-credit Live-in-Lab project, in the third semester. The objectives and projected outcome of the project should be reviewed and approved by the Dept. Chairperson and a faculty assigned as the project guide. On completion of the project, the student shall submit a detailed project report. The report shall be evaluated and the students shall appear for a viva-voce test on the project.

15CSN698   **MINI PROJECT**   **4 cr**

To expose the student to the industry standard administration practices under time and deliverable constraints applying the knowledge acquired through various courses done in the programme.

15CSN699   **PROJECT**   **8 cr**

To provide pervasive, leading-edge technology infrastructure and services to support the vision and mission of the organization and maximize organization's competitive advantage in a digital economy.

15CUL501   **CULTURAL EDUCATION**   **2 0 0 P/F**

Objective: Love is the substratum of life and spirituality. If love is absent life becomes meaningless. In the present world if love is used as the string to connect the beads of values, life becomes precious, rare and beautiful like a fragrant blossom. Values are not to be learned alone. They have to be imbibed into the inner sprit and put into practice. This should happen at the right time when you have vitality and strength, when your hearts are open.

The present course in value education is a humble experience based effort to lead and metamorphosis the students through the process of transformation of their inner self towards achieving the best. Amma's nectarous words of wisdom and acts of love are our guiding principles. Amma's philosophy provides an insight into the vision of our optimistic future.

1. Invocation, Satsang and Question - Answers
2. Values - What are they? Definition, Guiding Principles with examples Sharing own experiences
3. Values - Key to meaningful life. Values in different contexts
4. Personality - Mind, Soul and Consciousness - Q and A. Body-Mind-Intellect and the Inner psyche Experience sharing
5. Psychological Significance of samskara (with eg. From Epics)
6. Indian Heritage and Contribution and Q and A; Indian Ethos and Culture
7. Self Discipline (Evolution and Practice) – Q and A
8. Human Development and Spiritual Growth - Q and A
9. Purpose of Life plus Q and A
10. Cultivating self Development
11. Self effort and Divine Grace - their roles – Q and A; - Vedanta and Creation - Understanding a spiritual Master
12. Dimensions of Spiritual Education; Need for change Lecture – 1; Need for Perfection Lecture - 2
13. How to help others who have achieved less - Man and Nature Q and A, Sharing of experiences

REFERENCES:

1. *Swami Amritaswaroopananda Puri   -   Awaken Children (Volume VII and VIII)*
2. *Swami Amritaswaroopananda Puri   -   Amma's Heart*
3. *Swami Ramakrishnanda Puri   -   Rising Along the Razor's Edge*
4. *Deepak Chopra - Book 1: Quantum Healing; Book 2: Alpha and Omega of God; Book 3: Seven Spiritual Rules for Success*
5. *Dr. A. P. J. Abdul Kalam   -   1. Ignited Minds 2. Talks (CD)*
6. *Swami Ramakrishnanda Puri   -   Ultimate Success*
7. *Swami Jnanamritananda Puri   -   Upadesamritham (Trans: Malayalam)*
8. *Vedanta Kesari Publication   -   Values - Key to a meaningful life*
9. *Swami Ranganathananda   -   Eternal values for a changing society*
10. *David Megginson and Vivien Whitaker   -   Cultivating Self Development*

11. Elizabeth B. Hurlock   - *Personality Development, Tata McGraw Hill*
12. Swami Jagatatmananda   - *Learn to Live (Vol.1 and 2), RK Ashram,*
                                    Mylapore

15OEL631 – 6xx   OPEN ELECTIVES   2 0 0 2

Open electives syllabi – see at the end of the booklet.

15SSK511   LIFE SKILLS   1 0 2 2

Soft skills and its importance: Pleasure and pains of transition from an academic environment to work-environment. Need for change. Fears, stress and competition in the professional world. Importance of positive attitude, self motivation and continuous knowledge upgradation.

Attitude, Values, Motivation, Emotion Management, Steps to like yourself, Positive Mental Attitude, Assertiveness.

Resume writing Group discussion. Concepts. Mock GDs.. Interviews.

Presentation skills – Guidelines.

Vocabulary: Synonyms; Antonyms; Analogy; one word substitutes; idioms; phrasal verbs;

Grammar: Article and preposition; SV agreement; tenses; voices; modifiers; parallelism.

Reading and comprehension; parajumble.

Problem Solving: Problems on numbers; Percentages; Ratio, proportions and variations; Time and distance; Time, men and work.

Data interpretation: Numerical Data Tables; Line Graphs; Bar Charts and Pie Charts; Caselet Forms; Mix Diagrams; Geometrical Diagrams and other forms of Data Representation.

Logical Reasoning: Family Tree; Linear Arrangements; Circular and Complex Arrangement; Conditionalities and Grouping; Sequencing and Scheduling; Selections; Networks; Codes; Cubes; Venn Diagram in Logical Reasoning.

TEXTBOOKS:
1. *A Communicative Grammar of English: Geoffrey Leech and Jan Svartvik. Longman, London.*
2. *Adair. J., (1986), "Effective Team Building: How to make a winning team", London, U.K: Pan Books.*
3. *Gulati.S., (2006) "Corporate Soft Skills", New Delhi, India: Rupa & Co.*

4. *The Hard Truth about Soft Skills, by Amazone Publication.*
REFERENCES:
1. *Quantitative Aptitude, by R S Aggarwal, S Chand Publ.*
2. *Verbal and Non-verbal Reasoning, R S Aggarwal, S Chand Publ.*
3. *Data Interpretation, R S Aggarwal, S Chand Publ.*
4. *Nova GRE, KAPAL GRE, Barrons GRE books.*
5. *Quantitative Aptitude, The Institute of Chartered Accountants of India.*
6. *More Games Teams Play, by Leslie Bendaly, McGraw-Hill Ryerson.*
7. *The BBC and British Council online resources*
8. *Owl Purdue University online teaching resources.*
9. *www.the grammarbook.com online teaching resources*
10. *www.englishpage.com online teaching resources and other useful websites.*

16CA425   CLOUD COMPUTING   3 0 0 3

Objectives: *The objective of this course is to provide students with the comprehensive and in-depth knowledge of Cloud Computing concepts, technologies, architecture and application.*

Unit 1
Cloud Computing Overview: Cloud and grid and web 2.0 and other Computing – cloud computing environments - platforms.

Unit 2
Parallel and Distributed Computing - Virtualization: Characteristics – Taxonomy - Pros and Cons – Xen –Vmware - Hyper V.

Unit 3
Cloud Computing Architecture - Service Models - Deployment Models - Infrastructure as a Service – Resource Virtualization – Server – Storage – Network - Platform as a Service.

Unit 4
Cloud platform and Management - Software as a Service - Case Study on Eucalyptus.

Unit 5
Service Management in Cloud Computing - Service Level Agreement - Billing and Accounting - Managing Data. Cloud Security: Infrastructure, Storage Management.

TEXTBOOKS/ REFERENCE BOOKS:
1. *Rajkumar Buyya, Christian Vecchiola and S Thamaraselvi, "Mastering Cloud Computing: Foundation and Application Programming".1st Edition, McGraw Hill Education, 2013.*
2. *Barrie Sosinsky, "Cloud Computing Bible", 1st Edition, Willey-India, 2010.*
3. *Nikos Antonopoulos, Le Gillam, "Cloud Computing: Principles, Systems and Applications", 1st Edition, Stringer, 2012.*