SWAMI VIVEKANAND UNIVERSITY, SIRONJA, SAGAR (M.P.)

SYLLABUS

For

Diploma in Information Technology
Semester -VI

Swami Vivekanand University, Sironja Sagar
2014-2015

Swami Vivekanand Vishwavidyalaya, Sagar

CREDIT BASED GRADING SYSTEM

Program Name**:** Three Year Diploma

Scheme for Diploma in Information Technology

Name of Scheme: CGPA w.e.f. Session-July-2013

Scheme of Studies and Examination for SIXTH SEMESTER

COURSE CODE	COURSE TITLE	THEORY BLOCK								PRACTICAL BLOCK								
		Lectures	Continuous Evaluations			End of Term / Semester Evaluations			Theory Credit	Practical	Continuous Evaluations	End of Term / Semester Evaluations			Practical Credit	Total Credit	Grand Total of Marks
		Hrs per Week	Term Work, Quiz, Assignment	Mid Term Test(Two)		Theory Paper				Hrs per Week	Lab Work, Quiz, Assignment	Practical/ Oral Examination (VIVA-VOCE)					
				I	II	No.	Marks	Durations				No.	Marks	Durations			
DCIT-601	Hardware Maintenance & Microprocessor	04	10	10	10	01	70	03	04	02	20	01	30	03	02	06	150
DCIT-602*	Elective –II (Refer table below)	04	10	10	10	01	70	03	04	02	20	01	30	03	02	06	150
DCIT-603*	Elective –III (Refer table below)	04	10	10	10	01	70	03	04	02	20	01	30	03	02	06	150
DCIT-604	Project	-	-	-	-	-	-	-	-	04	150	01	100	03	04	04	250
	TOTAL	12	30	30	30	3	210	09	12	10	210	03	190	09	10	22	700

Theory Credit	: 20	Theory Marks	: 210
Practical Credit	: 10	Practical Marks	: 190
		Quiz, MST, Lab Work	: 300
TotalCredit	: 30	TotalMarks	: 700

Minimum Pass Grade in Theory and Practical : "D"

Elective – II

6021	Linux Server Administration
6022	Network Management & Administration

Elective – III

6031	Data mining & warehousing
6032	Artificial Intelligence & Expert System
6033	Computer Graphics, Multimedia & Animation

DCIT-601

Hardware Maintenance &Microprocessor

UNIT – 1

HARDWARE FUNDAMENTALS

Comparison between Hardware and Software, Motherboard, Central Processing Unit, Memory, BIOS, USB, Chipset, Video system, sound system, Drive system, MODEM, USB, Printers.

UNIT – 2

MOTHERBOARD

Motherboard Controllers & System Resources, Memory Mapping, Interrupts Request Line (IRQ) - Purpose, Standard Assignments, Conflicts, Sharing & ISA, PCI, PnP Configuration of IRQ, System Buses - Industry Standard Organization, Micro Channel Architecture, Enhanced Industry Standard Architecture, UESA Local Bus, Peripheral Component Interconnect, Accelerated Graphics Ports, PCI-X. Chipsets - Northbridge & South Bridge, Function of Chipset, Motherboard form factor & Power supplies - AT, ATX, LPX & NLX, Voltage & Signal Lines, Power Supply Quality & Specifications, Form, Factors, Ribbon Cable and Adopter Card Installation, Batteries - charging, rating, CMOS backup Batteries, Backup Battery Replacement.

UNIT – 3

CENTRAL PROCESSING UNIT (CPU)

Processor Specification - Clock Speed, FSB, L1, L2 & L3 cache, Processor over clocking. CPU - RISC & CISC Microprocessor. CPU Packaging - DIP, PGA, SPGA, MCM, LCC, PLCC & Tape Carrier Package. Intel CPU Family - Fifth generation & Sixth Generation P6, Xeon, Celeron Processor, Intel Core i3,i5,i7 Series. AMD CPU Family - Fifth, Sixth, & Seventh Generation K Series, Athlon, Thunder bid & Duron Processor. Handling & Replacement of CPU, CPU Configuration FSB, Core Speed, Core Voltage Configuration.

UNIT – 4

MEMORY

Logical Organization of Memory - Real Mode, Protected Mode, BIOS Data Area, Upper Memory, High Memory Area, Frame Buffer, Shadow & Cache. Memory Packaging - DTPP, STPP, SIMM, DIMM,RIMM. RAM Types - EDO, SDRAM, VRAM, SGRM, RDRAM, DDRAM, PPRAM, DDR 1, DDR 2, DDR 3. Memory Performance - Speed, Interleaving & Caching. Interfaces - IDE, ATA 1 to 6, Master - Slave Configuration, SCSI, SATA, PATA. SCSI Interface -BUS ID, Logical Unit Number, Termination, Signaling Types, SCSI Standards, Comparison between IDE & SCSI Optical Storage Devices - CD, DVD, and Blu-ray Disc.

BIOS

BIOS Functions, Cold & Warm Booting, BIOS Error Codes, BIOS Interrupts, Identification of Different BIOS (AMI & AWARD BIOS), BIOS Memory Assignments, BIOS Advance setup.

UNIT – 5

MAINTENANCE OF COMPUTER

Error Codes- Beep Codes, Post Codes, Windows System Tools – Back Up, Disk Clean Up, Disk Defragmenter, Files and Settings Transfer Wizard, Scheduled, Tasks, Security Center, System Information, System Restore, Antivirus, Firewalls and Security Tools

TextBooks:

1. Stephen J. Bigelow, Troubleshooting, Maintaining and Repairing PCs, Fifth edition TMH.

ReferenceBooks:

1. Subhadeep Choudhary, The A-Z of PC Hardware & Maintenance part I and II.
2. Govindrajalu, IBM PC and Clones.
3. Balasubramanyam, Computer Installation and Servicing.
4. Computer System Architecture (Third Edition), Morris Mono – Prentice Hall of India Pvt. Ltd., Eastern Economy Edition, Sept. 2002.
5. Peter Norton: Assembly Language for the PC, PHI.

Listofexperiments

1. Assembling a PC.
2. Installation and troubleshooting the Motherboard.
3. Installation and troubleshooting the CPU.
4. Installation and troubleshooting the heat sink and cooling fan.
5. Installation and troubleshooting RAM.
6. Installation and troubleshooting SMPS to different devices.
7. Installation and troubleshooting the hard-drive and its cables.
8. Installation and troubleshooting optical drives.
9. Installation and troubleshooting the video card, sound cards and other cards.
10. Installation and troubleshooting PCI.
11. Installation and troubleshooting Expansion cards.
12. Operating System Installation i.e. Windows and Open Source OS (Linux,SUN)
13. Disassembling a PC.
14. Device Driver Installation.
15. Introduction to Microprocessor kit, instruction manual.

DCIT-602* Elective – II

(DCIT – 6021 Linux Server Administration)

UNIT – 1

Installing Linux as a Server

Hardware Requirements, Methods of installation, Installing Fedora, Installing Ubuntu, Software Package Management & installation of GNU software,

Booting of Kernel

Boot Loader-GRUB, LILO, Kernel and source code of the kernel, Bootstrapping, Kernel configuration, the init Process, Enabling and Disable services.

UNIT – 2

System administration

Role of system administrator, Manage the users and groups, Monitoring the System, Managing drives and media, Creating and Editing Disk partition, Backup and restore files, Disk Usage Analyzer, Setting up and managing computer Network.

UNIT – 3

Network Configuration

Modules and Network Interfaces, Network Device Configuration utilities, IP aliasing, Setting Up NIC at Boot Time, Managing Routes, Simple Usage, Displaying Routes, Static and Dynamic Routing.

Domain Name System (DNS) and File Transfer Protocol

Working principal of DNS, Domain and Host Naming Convention. Installation of DNS Server, DNS Toolbox :-host, dig, nslookup, whois, nsupdate, configuring the clients, FTP:vsftpd, starting and testing FTP server.

UNIT – 4

Apache server

HTTP protocol. Starting apache at boot time. Testing the installation. Configuring apache server.

UNIT – 5

Internet Services

Mail Server: SMPT, POP and IMAP basics and settings. Secure Shell: Public key cryptography, OpenSSH and OpenBSD, Network File Systems (NFS), Network Information Services(NIS), SAMBA server. LDAP, Printing, DHCP, Virtualization.

ReferenceBooks:

1. Linux Administration: A Beginner's Guide Fifth Edition, Wale Soyinka, McGraHill.
2. Linux Administration: A Beginner's Guide, 3rd Edition, By Steven Graham, Steve Shah, Wiley-India.

ListofExperiments

1. Create the Hard Disk partitions.
2. Installing Linux Server and Manage the GNU software.
3. Configure the Linux Kernel and enable or disable the required services.
4. Create the User accounts and group.
5. Create the backup of the files and restore them.
6. Configure Linux Server for accessing its services form the host computer.
7. Configure the Domain Name Server.
8. Configure the Apache Server.
9. Configure the Mail Server.
10. Configure the SAMBA Server.
11. Set the File Transfer Protocol.
12. Set the Dynamic Host Configuration Protocol.
13. Configure the Network Information Services.

DCIT-602* Elective – II

(DCIT – 6022 Network Management & Administration)

UNIT – 1

Network management–definition, need and advantages. Windows NT Networking Architecture, Windows NT Operating System Design and Basics, Open Systems and Industry Standards, Client/Server Computing, Interoperating with Other Networks, Remote Access Service-Point to point protocol, Network Security and Domain Planning-Security Model Architecture, Controlling Access- User Accounts, User Rights.

UNIT – 2

Windows NT Browser Service-Specifying Browser Computers. Browser System Roles-Non-browsers, Potential browsers, Backup browsers, Master browsers, Domain master browsers. Browser Announcements- Non-browser Announcements, Potential -browser Announcements Backup-browser Announcements. Browser Requests.

UNIT – 3

Network Services: Enterprise Level- Installing and Configuring TCP/IP, Configuring TCP/IP Clients, Dynamic IP Addressing Configuring DHCP, Accessing the DHCP Manager, Managing DHCP Scopes, Reserving IP addresses, Installing and Configuring WINS Installing DNS Service, SNMP for Network Management- Overview of SNMP, SNMP Registry, Management Information Base, Object Identifiers, SNMP Installation, Starting and Stopping the SNMP Service, Troubleshooting SNMP.

UNIT – 4

Troubleshooting Tools and Strategies- Overview of TCP/IP Troubleshooting Tools, Identify the TCP/IP Configuration by Using IPConfig ,Test Connection to the TCP/IP Network by Using Ping, Understanding Address and Name Resolution Test IP-address-to-MAC-address Resolution by Using ARP ,Understanding IP Routing for Windows NT - The Route Table, Display Current TCP/IP Connections and Statistics by Using Netstat, Using Performance Monitor, Troubleshooting Other Connection Problems - Error 53, Cannot Connect to a Specific Server, Troubleshooting Telnet.

UNIT – 5

Remoteboot- Understanding the Remoteboot Service, The Remoteboot Process, Setting Up and Starting the Remoteboot Service ,Starting and Stopping the Remoteboot Service, Starting Remoteboot Manager, Checking the Remoteboot Installation, Managing Remoteboot Clients, Enabling Remoteboot on a Client's Hard Disk, Adding a New Client, Deleting a Client.

ReferenceBooks:

1. Network Management: A Practical Perspective by Allan Leinwand and Karen Fang.
2. Forouzan, TCP/IP Protocol Suite 4th edition, TMH.
3. J.Richard Burkey, Network Management Concept and Practice, PHI.

ListofExperiment:

1. Make the file in a sharable mode, then assign it to the different user in different access control (e.g. Read, Write and execute).
2. Viewing all the network resources available using browsing service.
3. Configuring the Browser Announcement Time so that in a particular time an announcement can be made.
4. Design a Small enterprise Network and Configure TCP/IP and TCP/IP Clients.
5. Configure DHCP (Dynamic Host Configuration Protocol).
6. Configure DNS (Domain Name System).
7. Installing and Configuring WINS (Windows Internet Name Service)
8. Install SNMP and Start and Stop the SNMP Service.
9. Identify the TCP/IP Configuration by Using IPConfig and test Connection to the TCP/IP Network by Using Ping.
10. Setting Up and Starting the Remoteboot Service

DCIT-603* Elective – III
(DCIT-6031 Data mining & Warehousing)

UNIT – 1

FUNDAMENALS OF DATA MINING

Data mining, the history of the data mining, Data Mining strategies, Popular data mining techniques, Data mining applications, Challenges of data mining, The future of data mining.

DATA PROCESSING AND DATA WAREHOUSING

Data, information and knowledge, Types of data, Data warehouses. Data cleaning, Data de-normalization, Data transformation, Data quality measure, OLAP(Online Analytical Processing), Data Sampling.

UNIT – 2

WEKA AN ATTRACTIVE DATA MINING TOOL

Introduction, Installing Weka, Weka data file format, Starting Weka, Data Visualization, Data filtering, Selecting Attributes, Data Mining with Weka.

UNIT – 3

ASSOCTIATION RULE MINING

Transaction data, Concepts of association rules, Relevance of association rule mining, Functions of association rule mining, Improvement and share, The problem of large datasets, Apriority algorithm, Strengthens and weakness of Association Rule Mining, Application of Association Rule Mining.

THE CLUSTERING TASK

Introduction, Distance Measure, Types of clustering, Clustering through Weka: K-Means algorithms, Clustering Validation, Strengthens and weakness of Clustering algorithms, Applications of Clustering algorithms.

UNIT – 4

THE ESTIMATION TASK

Introduction, Scatter plots and correlation, Linear regression Models, Logistic regression, Regression analysis, Strengthens and weakness of estimation, Application of estimation.

UNIT – 5

MINING OF TIME SERIES

Introduction, Fundamental of times series analysis, Time Series models, Regression Model, Periodic Model, Strengthens and weakness of times series analysis, Application of times series analysis.

ReferenceBooks:

1. Data Mining and Data Warehousing by Bharat Bhushan Agarwal

ListofExperiments:

1. Write a program for storing the transaction data (like item no. , price, date, quantity etc.) of shopping mall duration of one month and find out
   a. The total amount
   b. The day in which maximum transaction occur.
   c. The item that are purchased maximum times.
   d. The item that are purchased minimum times.
2. Use of WEKA tool.
3. Apply the association mining rule on problem no. 1
4. Apply the clustering technique on problem no. 1

DCIT-603* Elective – III

(DCIT-6032 Artificial Intelligence & Expert System)

UNIT – 1

INTRODUCTION TO AI

Meaning and definition of Artificial Intelligence, Characteristics of AI Problems, Scope and Future Expectation of AI, Application of AI.

PROBLEM SOLVING AND CONTROL STRATEGIES

State Space Representation, Problem Characteristics, Production System and its type, Characteristics of Production System, Breadth First Search and Depth First Search, Forward and Backward Chaining, Control Strategies and its Type.

UNIT – 2

HEURISTIC SEARCH TECHNIQUES

Hill Climbing, Branch and Bound Technique, Best First Search Technique and algorithm, A* Algorithm and AO* Algorithm, Constraints Satisfaction and related numeric problems.

GAME PLAYING

Introduction to Game Playing, Mini max Search Procedure, Alpha-Beta Cut offs.

UNIT – 3

KNOWLEDGE REPRESENTATION

Representation and Mapping, Approaches to Knowledge Representation, Issues in Knowledge Representation, Knowledge Representation using Predicate Logic and Prepositional Logic, Resolution and Refutation, Deduction, Theorem Proving, Procedural Knowledge and Declarative Knowledge, Introduction to Reasoning, Various types of Reasoning methods like Forward, Backward, monotonic, non-monotonic, probabilistic Reasoning, Baye's Theorem, Bayesian Network, Semantic Networks, Frames, Conceptual Dependency, Scripts.

UNIT – 4

LEARNING AND NATURAL LANGUAGE PROCESSING

Introduction to Learning, Types of Learning, Learning in neural network, Learning Processes :- Error Correction Learning, Memory based Learning, Hebbian Learning, Competitive Learning, Learning with teacher, Learning without teacher, Introduction to NLP and its different Phases Parsing Techniques, Context Free Grammar, Recursive Transition nets (RTN), Augmented Transition nets (ATN), CSE and Logic Grammars, Semantic Analysis.

UNIT – 5

EXPERT SYSTEM

Definition and Characteristics of Expert System, Rule Based System Architecture, Non-Production System Architecture, Knowledge Acquisition and Validation, Expert System Life Cycle and Expert System Tools, MYCIN and DENDRAL examples of Expert System.

TextBooks:

1. Artificial Intelligence by Elaine Rich and Kerin Knight, Tata McGraw Hill Edition

ReferenceBooks:

1. Introduction to AI & ES by DAN W. Patterson, PHI learning
2. Introduction to Artificial Intelligence by Eugene Charniak and Drew McDermott, Addison Wesley.
3. Principles of Artificial Intelligence by Nils J. Nilson.

Listofexperiments

1. Study about Cut and Fail situation in Artificial Intelligence
2. Develop system in Prolog to demonstrate the use if domain, predicate and clause.
3. Develop system in prolog to demonstrate the use of reading and write.
4. Develop system in prolog to demonstrate the use of facts and rules.
5. Develop system in prolog to demonstrate the use of controls.
6. Develop system in prolog to implement the water jug problem.
7. Develop system in prolog for medical diagnosis model/chemical syntheses.
8. Implementation of Min-Max search procedure for Game Playing.

DCIT-603* Elective – III

(DCIT-6033 Computer Graphics, Multimedia & Animation)

UNIT – 1

Introduction to Computer Graphics

Definition of Computer Graphics, Application of Computer Graphics, Graphics Hardware, Input and Output Devices, Display Devices, Refreshing Display Devices, Raster-Scan, Random-Scan.Graphics Primitives: - Points and Lines, Line-drawing Algorithms, DDA Algorithm, Bresenham's line Algorithm, Circle-generating Algorithm, Midpoint Circle of Algorithm, Polygon Filling Algorithm: Scan-Line.

UNIT – 2

Transformation, 2-D Viewing and Clipping

Basic Transformations (2D and 3D): Translation, Rotation, Scaling, Shear, Reflection. Composite Transformations: Rotations about a point, Reflection about a line, Homogeneous Coordinate Systems. Clipping: Point Clipping, Line Clipping -Cohen-Sutherland Clipping algorithm, Polygon Clipping: Sutherland Hodgeman Algorithm, Windowing Transformation.

UNIT – 3

Projection

Parallel Projection: Orthographic, Axonometric, Oblique Perspective Projection: Standard Perspective Projection General Perspective Projection, Vanishing Points. Shading, Colour model and Illumination:- Chromaticity diagram-RGB, CMY, HSV, HLS, CIE models- Realism in rendering, Image manipulation: Illumination models, shading models for polygons, Gouraud and Phong shading, shadows, Transparency, Image Filtering, image processing, geometric Transformation of images.

UNIT – 4

Basics of Multimedia Technology

Concepts of Multimedia: Types, Data Streams, Hardware and Software Requirements and Applications, Multimedia Authoring. Digital Audio: Audio Sampling, Recording Digital Audio, Audio Standards for Multimedia Applications, MIDI File Formats, MIDI Hardware and Software. Image Compression Standards: Types. Video Compression and Standards: Compression Standards, MPEG Compression Basics, MPEG-1, MPEG-2, and MPEG-4, Hypertext and Hypermedia. Graphics Image File Formats:- Raster Format, Bitmap (BMP) Format, Graphics Interchange Format (GIF), Joint Photographic Experts Group (JPEG), Tagged Image File Format (TIFF), Portable Network Graphics (PNG) and their differences.

UNIT – 5

Computer Animation

Development of Animations: Non Computer and Computer Based Animations, Different Types of Animations. Flash Basics: Flash Work Flow, Animation Using Flash. The Flash Work Environment: The Stage and the Time Line, Symbols and Instances, Symbols and Interactive Movies, Using the Tool Box, Using Panels, Using Context Menus, Moving the Play Head, Working the Frames using time line. Drawing Overview: Flash Drawing and Painting Tools, Working With Color, Using Imported Art Work, Adding Sound, Representation of Animation.Using Layers: Adding and Deleting Layers, Viewing Layers. Creating Text Boxes for User input. Creating Animations: Creating Key Frames, Layers in Animations, Frame Rates, Frame Rates, and Steps for creating animations. Frame by Frame Animations. Publishing and Exporting.

ReferenceBooks:

1. Computer Graphics, Multimedia and Animations by Malay K. Pakhira, PHI Learning.
2. Computer Graphics by Donald Hearn and M.Pauline Baker, PHI.
3. Computer Graphics Principles and Practices second edition by James D. Foley, Andeies van Dam, Stevan K. Feiner and Johb F. Hughes, 2000, Addition Wesley.
4. Introduction to Computer Graphics By N. Krishnamurthy T.M.H
5. Graphics, GUI, Games & Multimedia Projects in C by Pilania & Mahendra, Standard Pub.
6. Newman W.M. and Sproull R.F., "Principles of Interactive Computer Graphics", Second Edition, Tata McGraw Hill Publishing Company Limited, New Delhi,
7. Multimedia on the PC, Sinclair,BPB
8. Multimedia in Practice by Jeff coate Judith, 1, PHI.
9. Multimedia Systems by Koegel, AWL
10. Multimedia Making it Work by Vaughar, etl
11. Principles of Multimedia by Ranjan Parekh, Tata McGraw Hill Education Private Limited, New Delhi.

Listofexperiments

1. Write a program for 2D line drawing as Raster Graphics Display.
2. Write a program for circle drawing as Raster Graphics Display.
3. Write a program for polygon filling as Raster Graphics Display.
4. Write a program for line clipping.
5. Write a program for polygon clipping.
6. Write a program for displaying 3D objects as display using perspective transformation.
7. Devise a routine to produce the animation effect of a square transforming to a triangle and then to a circle.
8. Write a program to show a bitmap image on your computer screen.
9. Write a program to play "wave" or "midi" format sound files.
10. Create animations using Adobe FLASH. Flash Drawing and Painting Tools. Flash Drawing Modes. Pencil Tools Importing artwork into Flash (Working with Photoshop PSD files) (PSD file import preferences)