# *Chhattisgarh Swami Vivekanand Technical University, Bhilai*

**Scheme of teaching and examination**

## B.E. VI Semester Information Technology

| S.No | Board of Study | Subject Code | Subject Name | Periods per week | | | Scheme of Exam | | | Total Marks | Credit L+ (T+P) / 2 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | L | T | P | Theory / Practical | | | | |
| | | | | | | | ESE | CT | TA | | |
| 1 | Information Technology | 333611(33) | Database Management System | 3 | 1 | - | 80 | 20 | 20 | 120 | 4 |
| 2 | Information Technology | 333612(33) | Information Theory & Coding | 3 | 1 | - | 80 | 20 | 20 | 120 | 4 |
| 3 | Information Technology | 333613(33) | Internet & Web Technologies | 3 | 1 | - | 80 | 20 | 20 | 120 | 4 |
| 4 | Information Technology | 333614(33) | Cellular & Mobile Computing | 3 | | - | 80 | 20 | 20 | 120 | 3 |
| 5 | Information Technology | 333615(33) | Computer Graphics | 3 | 1 | - | 80 | 20 | 20 | 120 | 4 |
| 6 | Refer Table –1 | | Professional Elective 1 | 3 | 1 | - | 80 | 20 | 20 | 120 | 4 |
| 7 | Information Technology | 333621(33) | Database Management System lab | - | - | 4 | 40 | - | 20 | 60 | 2 |
| 8 | Information Technology | 333622(33) | Visual Programming Lab | - | - | 3 | 40 | - | 20 | 60 | 2 |
| 9 | Information Technology | 333623(33) | Software Technology Lab -3 | - | - | 4 | 40 | - | 20 | 60 | 2 |
| 10 | Information Technology | 333624(33) | Computer Graphics lab | - | - | 3 | 40 | - | 20 | 60 | 2 |
| 11 | Management etc | 300625(36) | Managerial Skills | - | - | 2 | - | - | 40 | 40 | 1 |
| 12 | | | Library | - | - | 1 | - | - | - | - | - |
| **TOTAL** | | | | **18** | **5** | **17** | **640** | **120** | **240** | **1000** | **32** |

L-Lecture, T- Tutorial, P- Practical, ESE- End Semester Examination, CT- Class Test, TA- Teacher's Assessment

**Note :-** Industrial Training of twelve weeks is mandatory for B.E. students. It is to be completed in two equal parts. The first part must have been completed in summer after IV sem. The second part to be completed during summer after VI sem. after which students have to submit a training report which will be evaluated by college teachers during B.E. VII sem.

**Table -1**

| S.No. | Board of Study | Subject Code | Subject Name |
|---|---|---|---|
| 1 | Computer Science & Engg. | 322631(22) | Digital Signal Processing |
| 2 | Computer Science & Engg. | 322632 (22) | Advanced Microprocessors & Micro Controllers |
| 3 | Information Technology | 333633 (33) | Multimedia & Virtual Reality |
| 4 | Information Technology | 333635 (33) | Advanced Computer Networks |
| 5 | Computer Science & Engg. | 322636 (22) | Advanced Operating System |
| 6 | Computer Science & Engg. | 322637 (22) | Logical & Functional Programming |
| 7 | Computer Science & Engg. | 322638 (22) | Advanced Data Base Systems |

Note (1)- 1/4th of total strength of students subject to minimum of twenty students is required to offer an elective in the college in a particular academic session.

Note (2) - Choice of elective course once made for an examination cannot be changed in future examinations.

# CHHATTISGARH SWAMI VIVEKANAND TECHNICAL UNIVERSITY
# BHILAI (C.G.)

Semester: VI
Subject: Database Management System
Total Theory Periods: 40
Total Marks in End Semester Exam. : 80
Minimum number of class test to be conducted: 02

Branch: Information Technology
Code: 333611 (33)
Total Tutorial Periods: 12

**UNIT-I INTRODUCTION TO DATA BASE**

Advantages of DBMS, Type of Data Models, Scheme and instances, DBMS Architecture and Data Independence, Entity- Relationship Model, Attributes and Keys, Relationship Types, Weak Entity, Enhanced E–R Modeling, Specialization and Generalization, Record Storage and Primary File Organizations: Introduction, Secondary Storage Devices, Buffering of Blocks, Structure of Files: Types of Single Level ordered indexes, Multilevel indexes, Dynamics Multilevel indexes using B-trees and B+- Trees.

**UNIT-II THE RELATIONAL DATA MODEL**

Relational data model concepts, constraints, relational algebra, relational calculus, SQL: DDL, DML, DCL, View, Index, Cursors and Triggers

**UNIT-III DATABASE DESIGN**

Function Dependencies and Normalization for Relational Databases: Informal design guidelines for relation schemes, Functional dependencies, Normal forms based on primary keys, General definitions of second and third normal forms, Boyce-codd normal form, problem related with normal forms & solutions. Multivalued & Join Dependencies, 4th & 5th Nonmalization.

**UNIT-IV QUERY & TRANSACTION PROCESSING**

Query Processing: Query processing stages, Query interpretation, Query execution plan, Table scans, Fill factor, Multiple index access, Methods for join tables scans, Structure of a query optimizer. Transaction Processing: Types of failures, ACID property, schedules and recoverability, serialisability of schedules, Levels of transaction consistency, Deadlocks, Nested transaction, Transaction benchmarking.

**UNIT –V CRASH RECOVERY**

Failure classification, Different type of Recovery techniques & their comparative analysis, deferred update, immediate update, Shadow paging, Check points, On-line backup during database updates, Concurrency Control: Different type of concurrency control techniques & their comparative analysis, Locking techniques, Time-stamp ordering, Multi-version techniques, Optimistic techniques, Multiple granularity. Integrity, Security, Non-procedural and procedural integrity constraints, Integrity constraints specifications in SQL.

**Text Books**


1. Database system concept, Korth & Sudarshan, MH.
2. Introduction to Database Systems, C.J.Date, Pearson Education.


**Reference Books**


1. Principles of Database Systems", 2nd Edn., Ullman, J.O, Galgotia Publications.
2. Fundamentals of Database Systems, Elmasri & Navathe, Pearson Education.
3. Database Design Fundamentals, Rishe, PHI.

# CHHATTISGARH SWAMI VIVEKANAND TECHNICAL UNIVERSITY
# BHILAI (C.G.)

Semester**: VI** Branch: **Information Technology**
Subject: **Information Theory & Coding** Code: **333612(33)**
Total Marks in End Semester Exam. : **80** Total Tutorial Periods: **10**
Minimum number of class test to be conducted: **02** Total Theory Periods**: 40**

**UNIT-I:** Uncertainty, Information and Entropy Information Measures: Characteristics on information measure; Shannon's concept of information; Shannon's measure of information; Model for source coding theorem; Communication system; Source coding and line/channel coding; channel mutual information capacity (Bandwidth);

**UNIT-II:** Channel coding, Theorem for discrete memory less channel, Information capacity theorem: Error detecting and error correcting codes; Types of codes; Block codes; Tree codes; Hamming codes; Description of linear block codes by matrices; Description of linear tree code by matrices; Parity check codes; Parity check polynomials;

**UNIT-III:** Compression: Lossless and lossy; Huffman codes; Binary Image compression schemes; Run – length Encoding; CCITT group-3 1D compression; CCITT group-3 2D compression; CCITT group-4 2D compression;

**UNIT-IV:** Video Image Compression: Requirement of full motion video compression; CCITT H 261 video coding algorithm; MPEG compression methodology; MPEG-2 compression; Audio (Speech) compression;

**UNIT-V:** Cryptography: Encryption; Decryption; Cryptogram (cipher text); Concept of cipher; Cryptanalysis; Keys: Single key (Secret key); Cryptography; two-key (Public key) cryptography; Single key cryptography; Ciphers; Block Cipher code; Stream ciphers; Requirements for secrecy; The data Encryption Standard; Public Key Cryptography; Diffie-Hellmann public key distribution; The Rivest- Shamin Adelman(R-S-A) system for public key cryptography; Digital Signature;

## Text Books:


1.Digital Communication by Das, Mullick & Chatterjee, New Age Pub.
2.Digital Communication by Proakis, TMH
3.Digital Image Processing by Gonzales & Woods, Pearson ( for Unit – III & IV)
4.Local Area Network by G. Keiser, TMH (for Unit – V)

# CHHATTISGARH SWAMI VIVEKANAND TECHNICAL UNIVERSITY
# BHILAI (C.G.)

Semester: **VI** Branch: **Information Technology**

Subject: **Internet and Web Technologies** Code: **333613 (33)**
Total Marks in End Semester Exam. **: 80** Total Tutorial Periods: **10**
Minimum number of class test to be conducted**: 02** Total Theory Periods: **40**

**UNIT-I** **INTRODUCTION TO INTERNET**

Introduction, Evolution of Internet, Internet Applications,
Internet Protocol -TCP/IP, UDP, HTTP, Secure Http(Shttp)
Internet Addressing – Addressing Scheme – Ipv4 & IPv6, Network Byte Order, Domain Name Server
and IP Addresses, Mapping .
Internet Service Providers, Types Of Connectivity Such As Dial-Up Leaded Vsat Etc.
Web Technologies: Three Tier Web Based Architecture; Jsp, Asp, J2ee, .Net Systems

**UNIT-II** **HTML CSS AND SCRIPTING**

HTML - Introduction, Sgml, Dtd(Document Type Definition, Basic Html Elements, Tags and usages, HTML Standards , Issues in HTML Dhtml: Introduction
Cascading Style Sheets: Syntax ,Class Selector, Id Selector Dom (Document Object Model) & Dso (Data Source Object)
Approaches To Dynamic Pages: Cgi, Java Applets, Plug Ins, Active X,
Java Script – Java Script Object Model, Variables-Constant – Expressions, Conditions-Relational Operators- Data Types – Flow Control – Functions & Objects-events and event handlers – Data type Conversion & Equality – Accessing HTML form elements

**UNIT-III** **XML**

What is XML – Basic Standards, Schema Standards, Linking & Presentation Standards, Standards that build on XML, Generating XML data, Writing a simple XML File, Creating a Document type definition, Documents & Data ,Defining Attributes & Entities in the DTD ,Defining Parameter Entities & conditional Sections, Resolving a naming conflict, Using Namespaces, Designing an XML data structure, Normalizing Data, Normalizing DTDS

**UNIT-IV** **INTERNET SECURITY & FIREWALLS**

Security Threats From Mobile Codes, Types Of Viruses, Client Server Security Threats, Data & Message Security, Various electronic payment systems, Introduction to EDI, Challenges–Response System, Encrypted Documents And Emails , Firewalls: Hardened Firewall Hosts, Ip- Packet Screening, Proxy Application Gateways, Aaa (Authentication , Authorization And Accounting).

**UNIT-V** **WEBSITE PLANNING & HOSTING**

Introduction, Web Page Lay-Outing, Where To Host Site, Maintenance Of Site, Registration Of Site On Search Engines And Indexes, Introduction To File Transfer Protocol, Public Domain Software, Types Of Ftp Servers (Including Anonymous),Ftp Clients Common Command. Telnet Protocol, Server Domain, Telnet Client, Terminal Emulation. Usenet And Internet Relay Chat

**Text Books**


1. Internet & Intranet Engineering,- Daniel Minoli, TMH.
2 .Alexis Leon and Mathews Leon – Internet for Every One, Tech World.


**Reference Books**


1. Eric Ladd, Jim O'Donnel –"Using HTML 4, XML and JAVA"-Prentice Hall of India - 1999.
2. "Beginning Java Script "– Paul Wilton – SPD Publications –2001.
3. Frontiers of Electronics of Commerce, Ravi kalakota & Andrew B. Whinston Addison Wesley

# CHHATTISGARH SWAMI VIVEKANAND TECHNICAL UNIVERSITY BHILAI (C.G.)

Semester: **VI**
Branch: **Information Technology**
Subject: **Cellular & Mobile Computing**
Code: **333614 (33)**
Total Theory Period **–40**
Total Tutorial Periods: **Nil**
Total Marks in End Semester Exam. : **80**
Minimum number of class test to be conducted: **02**

**UNIT-I INTRODUCTION TO MOBILE & WIRELESS DEVICES**
Mobile and Wireless Devices, History, Applications, Simplified Reference Model; Wireless Transmission, Frequencies for Radio Transmission, Regulations, Signals, Antennas, Signal Propagation, Multiplexing, Modulation, Wireless LANs And Wireless WANs, Spread Spectrum, FHSS and DSSS Spread Spectrum Technology; Cellular Systems, The Radio Spectrum, Cell Size and Achievable Throughput; Medium Access Control, Specialized MAC; SDMA; FDMA; TDMA; CDMA.

**UNIT-II TELECOMMUNICATION & BROADCAST SYSTEMS**
GSM; Mobile Services, System Architecture, Radio Interface, Protocols, Localization and Calling, Handover, Security, New Data Services; DECT, TETRA, UMTS & IMT-2000; CDPD, Data Over Analog and Digital Cellular, Paging and Two-Way Paging; Satellite Systems, Applications, GEO, LEO, MEO, Routing, Localization, Handover; Broadcast Systems, Cyclic Repetition of Data, Digital Audio Broadcasting.

**UNIT-III WIRELESS NETWORKS**
Wireless LAN, Hidden Nodes in Wireless Networks, Ordered MAC Techniques and Wireless Networks, Deterministic MACs for Wireless Networks, Comparison Of MAC Techniques for Wireless Networks; Infrared V/S Radio Transmission; IEEE 802.11, Architecture, Layers, Management; HIPERLAN; Bluetooth; Wireless ATM, Services, Reference Model, Functions, RAL, Handover, Location Management, Addressing, QOS, APCP.

**UNIT-IV MOBILE NETWORK AND TRANSPORT LAYERS**
Mobile Network Layer; Mobile IP, DHCP, ADHOC Networks; Mobile Transport Layer; Traditional TCP, Indirect TCP, Snooping TCP, Mobile TCP; Fast Transmit/Fast Recovery, Transmission/Time Out Freezing, Selective Retransmission, Transaction Oriented TCP.

**UNIT – V MOBILE SYSETEM DEVELOPMENT & SUPPORT**
File Systems; World Wide Web, HTTP; HTML; System Architectures; WAP; Architecture, Wireless Datagram Protocol, Wireless Transport Layer Security, Wireless Transaction Protocol, Wireless Session Protocol, Wireless Application Environment; WML; WMLscript; Wireless Telephony Applications.

**Text Book**

1. Mobile Communications – Schiller, Jochen; 2nd Indian Reprint, Pearson Education Asia – Addison Wesley Longman PTE. Ltd.

**Reference Books:**

1. Mobile Data Wireless LAN Technologies – Dayem, Rifaat A.; Prentice Hall International.
2. The Essential Guide To Wireless Communication Applications – Dornan, A.; 1st Indian Reprint, Pearson Education Asia.

# CHHATTISGARH SWAMI VIVEKANAND TECHNICAL UNIVERSITY BHILAI (C.G.)

Semester: **VI** Branch: **Information Technology**
Subject: **Computer Graphics** Code: **333615 (33)**
Total Theory Periods: **40** Total Tutorial Periods: **12**
Marks in End Semester Exam. : **80**
Minimum number of class test to be conducted: **02**

**UNIT-I** **OVERVIEW OF GRAPHICS SYSTEM**

I/O devices, Raster scan & Random scan system, line-circle-ellipse generating algorithm, filled area primitives, 2-D & 3-D transformation, Clipping: 2-D Cyrus Beck clipping, 2-D & 3-D Sutherland cohen clipping, Polygon clipping, Hodgeman-Sutherland & Weiler-Atherton polygon clipping.

**UNIT-II** **CURVES & SURFACES**

Conics-Parametric forms for circle, ellipse, parabola, Bezier Curves-Need for cubic parametric curves c0, c1, c2 continuity, Generation though Bernstein polynomials, Condition for smooth joining of 2 segments, Convex Hull property, B-Spline Curves: Knot vectors-uniform and open uniform curves, Uniform, Periodic B-splines, Open, Uniform B-splines, Non-uniform, rational B-splines, Beta splines, Subdividing curves, Drawing curves using forward differences.

**UNIT-III** **PROJECTIONS & HIDDEN SURFACE REMOVAL**

3-D Transformation for right handed co-ordinate system (Z-axis towards viewer), Parallel projection on xy plane (including oblique view), Perspective projection-1, 2 and 3 Vanishing points, Handling points at infinity, Reconstruction of 3-D images. Hidden Surface Removal: Back face removal, Floating Horizon method for curved objects, Z-Buffer or depth buffer algorithm, Painters algorithm (Depth sorting method), Binary space partitioning trees, Scan-line algorithm, Warnock's algorithm.

**UNIT-IV** **SHADING & COLOR ISSUES**

Illumination model for diffused & specular reflection, Computing reflection vector, Gouraud and Phog tracing, Band Illusion, Lateral inhibition, Texture mapping & their characteristics, Parametric Texture mapping, 2D Texture mapping and Bump mapping, Handling shadows, Radiosity: Lambert's Law, Basic element, Recapitulation, Modeling transparency, Visualization of data sets, volume rendering, Color issues: Additive, Subtractive primaries, Wavelength spectrum, JCM color.

**UNIT-V** **FRACTALS & ANIMATION**

Fractals: self-similar fractals-fractal dimension, Generation of Terrain-random mid point displacement, Grammar based models, Self-squaring fractals. Soild Modelling: Generation through sweep techniques, Constructive sold geometry, B representations, Octrees, Ray Tracing & their Theory, Animation: In-betweening using rotation and translation, Procedural animation, Image Transformation- Translation and rotation, Morphing, Motion Control (Key framing, Spline Driven animation, Arc length parameterization, Velocity curves, Euler angles and use of quaternion.

**Text Books:** -


1. Computer graphics, Hearn and Baker, PHI
2. Computer Graphics, Foley, PE-LPE,


**Reference Books:-**


1. Procedural Elements of Computer graphics, Rogers, McGraw Hill
2. Computer graphics, Harringtons S., McGraw Hill.
3. Computer Graphics, Schoum Series.

# CHHATTISGARH SWAMI VIVEKANAND TECHNICAL UNIVERSITY
# BHILAI (C.G.)

Semester: VI
Subject: Digital Signal Processing
Total Marks in End Semester Exam: 80
Maximum number of Class Tests to be conducted: 02

Branch: Information Technology
Code: 322631 (22)
Total Tutorial Periods: Nil
Total Theory Periods: 40

**UNIT-I** **DISCRETE-TIME SIGNALS**

Signal classifications, frequency domain representation, time domain representation, representation of sequences by Fourier transform, properties of Fourier transform, discrete time random signals, energy and power theorems.

**UNIT-II** **SAMPLING OF TIME SIGNALS**

Sampling theorem, application, frequency domain representation of sampling, and reconstruction of band limited signal from its samples. Discrete time processing of continuous time signals, changing the sampling rate using discrete time processing.

**UNIT-III** **Z-TRANSFORM**

Introduction, properties of the region of convergence, properties of the Z-transform, inversion of the Z-transform, applications of Z-transform.

**UNIT-IV** **BASICS OF DIGITAL FILTERS**

Classification, properties, time invariant system, finite impulse Response (FIR) system, infinite impulse response (IIR) system.

Fundamentals of digital filtering, various types of digital filters, design techniques of digital filters: window technique for FIR, bi-linear transformation and backward difference methods for IIR filter design, analysis of finite word length effects in DSP, DSP algorithm implementation consideration. Applications of DSP.

**UNIT-V** **DISCRETE & FAST FOURIER TRANSFORM**

DFT and FFT: Discrete Fourier transforms properties of DFT, circular convolution, linear convolution using DFT, fast Fourier transform: Radix 2 FFT algorithm, decimation in time, decimation in frequency, bit reversal.

**TEXT BOOKS:**


1. Digital Signal Processing: Proakis and Manolakis; PHI
2. Digital Signal Processing: Salivahanan, Vallavaraj and Gnanapriya; TMH


**REFERENCE BOOKS:**


1. Digital Signal Processing: Alon V. Oppenhelm; PHI
2. Digital Signal processing (II-Edition): Mitra, TMH

# CHHATTISGARH SWAMI VIVEKANAND TECHNICAL UNIVERSITY
# BHILAI (C.G.)

Semester: **VI** Branch: **Information Technology**
Subject: **Advanced Microprocessor & Microcontrollers** Code: **322632(22)**
Total Theory Periods**: 40** Total Tutorial Periods**: Nil**
Total Marks in End Semester Exam**: 80**
Maximum number of Class Tests to be conducted**: 02**

**UNIT-I ARCHITECTURE & INSTRUCTION SET FOR 8086**

Architecture and pin configuration of 8086, Instruction Format; Addressing modes, Data Transfer Instruction; Arithmetic Instructions; Branching and Looping Instructions, NOP and Halt, Flag Manipulation Instructions; Logical, Shift and Rotate Instruction. Byte and String Manipulation: String Instructions; REP Prefix, Table Translation, Number Format conversions. Assembler Directives and Operators; Assembly Process; Translation of assembler Instructions. Programming of microprocessor 8086

**UNIT-II SYSTEM BUS STRUCTURE**

Basic 8086/8088 system bus architecture, Minimum mode Configuration, Maximum mode configuration; memory interfacing with 8086/8088 in minimum and maximum mode; System Bus Timings, Bus Standards. Interrupts of microprocessor 8086

**UNIT-III ADVANCED MICROPROCESSOR ARCHITECTURE**

CPU 80386 Architecture and functional pin diagram, Function of Bus interface unit, Execution unitontrol unit, Instruction Decoder Unit, Segmentation unit & page unit. General purpose Registers, lag Register, Test & Debug Register, and Pipelining. Addressing mode and Instruction set of micropr cessor 80386

**UNIT-IV TASK AND MODES OF OPERATION**

Real mode, Virtual Mode, Protected Mode, Page based Virtual Memory; Single level tasks: SegmentRegister. Segment descriptors, Local descriptor table, Global Descriptor Register, Interrupt Descriptor Register. Multilevel tasks: Gate Descriptor, Task state segment; Task switch; Task gate descriptors, Related Instructions, Page descriptors, Addressing technique. Address Calculation, Segment and Page Protection, Scaling; Bit Addressing, Programmer invisible register, Cache memory, virtual memory, Types of cache.

**UNIT-V MULTIPROCESSOR CONFIGURATION & INTERFACING**

Numeric data Processor 8087; I/O Processor 8089, Communication between CPU and I0P, Related Instructions; Interfacing and programming of programmable peripheral interface 8255 and programmable interrupt controller 8259 with microprocessor 8086.

**Text Books:**

1.Cro computer Systems: 8086/8088 Family - Architecture, Programming, and Design;Y. Liu and G.A.Gibson; Pearson Prentice Hall.
2. 80386 Microprocessor Handbook: C.H. Pappas and W.H. Murray: Osborne McGraw Hill.

**Reference books:**

1. The 8088 and 8086 microprocessors: programming, interfacing, software, hardware and applications; Tribel and Singh: PHI publication
2. Advanced microprocessors and peripherals: Ray and Burchandi; TMH publication

# CHHATTISGARH SWAMI VIVEKANAND TECHNICAL UNIVERSITY BHILAI (C.G.)

Semester: VI
Branch: Information Technology.
Subject: Multimedia and Virtual Reality
Code:333633 (33)
Total Marks in End Semester Exam: 80
Total Tutorial Periods: Nil
Maximum number of Class Tests to be conducted: 02
Total Theory Periods: 40

**UNIT-I INTRODUCTION**

Concept of Non-Temporal and Temporal Media. Basic Characteristics of Non-Temporal Media; Images, Graphics, Text. Basic Characteristics of Temporal Media: Video, Audio, and Animation. Hypertext and Hypermedia. Presentations: Synchronization, Events, Scripts and Interactivity, Introduction to Authoring Systems.

**UNIT-II COMPRESSION TECHNIQUES**

Basic concepts of Compression. Still Image Compression: JPEG Compression. Features of JPEG2000. Video Compression: MPEG- 1&2 Compression Schemes, MPEG-4 Natural Video Compression. Audio Compression: Introduction to speech and Audio Compression, MP3 Compression Scheme. Compression. Of synthetic. Graphical objects.

**UNIT-III MULTIMEDIA SYSTEMS ARCHITECTURE**

General Purpose Architecture for Multimedia Support: Introduction to Multimedia PC/Workstation Architecture, Characteristics of MMX instruction set, I/O systems: Overview of USB port and IEEE 1394 interface, Operating System Support for Multimedia Data: Resource Scheduling with real-time considerations, File System, I/O Device Management.

**UNIT-IV MULTIMEDIA INFORMATION MANAGEMENT**

Multimedia Database Design, Content Based Information Retrieval: Image Retrieval, Video Retrieval, Overview of MPEG-7, Design of video-on-Demand Systems.

U**NIT-V VIRTUAL REALITY**

Introduction to Virtual Reality and Virtual Reality Systems, Related Technologies: Tele-operation and Augmented Reality Systems Interface to the Virtual World-Input; Head and hand trackers, data globes, hap tic input devices. Interface to the Virtual World- Output, Stereo display, head-mounted display, auto-stereoscopic displays, holographic displays, hap tic and force feedback.

VRML Programming; Modeling objects and virtual environments Domain Dependent applications: Medical, Visualization, Entertainment, etc.

**Text Books:-**

1. Multimedia System Design, Andleigh and Thakarar , PHI
2. Multimedia Technology & Application, David Hillman, Galgotia Publications.

**Reference Books: -**

1 Multimedia Computing Communication and Application, Steinmetz, Pearson Edn.
2 Virtual Reality Systems , John Vince, Pearsn Education.
3 Fundamentals of Computer Graphics and Multimedia, D.P. Mukherjee, PHI

# CHHATTISGARH SWAMI VIVEKANAND TECHNICAL UNIVERSITY
# BHILAI (C.G.)

Semester- **VI** Branch: **Information Technology**
Subject: Advanced Computer Network Code: 333635 (33)
Total Marks in End Semester Exam. : **80** Total Tutorial Periods: Nil
Minimum number of class test to be conducted: **02** Total Theory Periods: **40**

**UNIT-I** **INTRODUCTION AND LAYERED NETWORK ARCHITECTURE**

Messages and Switching, Layering, The Physical Layer: Channels and Modems. Error Detection, ARQ: Retransmission Strategies, Framing, Initialization and Disconnect for ARQ Protocols, Point-to-Point Protocols at the Network Layer, The Transport Layer.

**UNIT-II** **DELAY MODELS IN DATA NETWORKS**

Queuing Models: Little's Theorem. The M / M / 1 Queuing System, The M / M / m, M / M / ∞ , M / M / m / m, and Other Markov Systems, The M / M / 1 System, Priority Queuing, An Upper Bound for the G / G / 1 System, The Klein rock Independence Approximation, Time Reversibility- Burke's Theorem, Networks of Queues-Jackson's Theorem, Extension of Jackson's Theorem.

**UNIT-III** **MULTI-ACCESS COMMUNICATION**

Introduction, Slotted Multi-access and the Aloha System, Splitting Algorithms: Tree Algorithms, First-Come First-Serve Splitting Algorithms, Carrier Sensing, Multi-access Reservations: Local Area Networks: Token Rings, High-Speed Local Area Networks, Packet Radio Networks.

**UNIT-IV** **ROUTING IN DATA NETWORKS**

Introduction, Main Issues in Routing, Interconnected Network Routing: An Overview, Network Algorithms and shortest Path Routing: The Bellman-Ford algorithm, Bellman's equation and shortest path construction, Dijkstra's algorithm, The Floyd-Warshall algorithm. Broadcasting Routing Information: Coping with Link Failures, Flow Models, Optimal Routing, and Topological Design, Characterization of Optimal Routing, Feasible Direction Methods for Optimal Routing.

**UNIT-V** **FLOW CONTROL**

Introduction, Window Flow Control: Node-by-Node Windows for virtual Circuits, Dynamic Window Size Adjustment. Rate Control Schemes, Rate Adjustment Algorithms, Max-Min Flow Control.

**Text Books: -**


1. "Data Networks", Second Edition, By Bertsekas & Gallager ,(PHI)
2. Data Communication, Computer Networks, Halsall, Pearson Education.


**Reference Books: -**


1. Data Networks, D.Bertsekas and R. Gailagher, PHI Second Ed.
2. Internetworking with TCP/IP, Vol. 1, D.E. Corner, and Prentice Hall India.
3. Computer Networking with IP, Stalling, Pearson Education.

# CHHATTISGARH SWAMI VIVEKANAND TECHNICAL UNIVERSITY
# BHILAI (C.G.)

Semester – VI
Subject: Advanced Operating System
Total Theory Periods: 40
Marks in End Semester Exam. : 80
Minimum number of class test to be conducted: 02

Branch: Information Technology
Code: 322636 (22)
Total Tutorial Periods: Nil

**UNIT-I INTRODUCTION TO DISTRIBUTED OPERATING SYSTEM**

What are distributed OS? Examples of distributed OS, Resource sharing, challenges in designing distributed OS. Distributed OS architectures, software layers, Architectural Model.The Operating System Layer, Protection, Processes and Threads, Communication and invocation, Operating System Architecture. Distributed File System: File Service Architecture, Sun Network File System, the Andrew File System, Recent Advances, Name Services: Name services and domain name systems, Directory and discovery services, The Global name service, X .500 directory service.

**UNIT-II SECURITY AND DISTRIBUTED ALGORITHM**

Overview of security techniques, Cryptographic algorithms, digital signatures, Cryptographic pragmatics. Distributed Algorithms: Distributed algorithm design principles and issues such as coordination, agreement. Examine source of difficulties such as timing, interaction models, and failures.

**UNIT – III STRUCTURE OF UNIX OPERATING SYSTEM**

Overview of UNIX, Internal architecture of UNIX, Classification of UNIX command Handling files, Handling directories, File – Memory – I/O – Process management in UNIX, Administration of UNIX system, Shell Programming environment.

**UNIT – IV STRUCTURE OF WINDOWS OPERATING SYSTEM**

Overview of WINDOWS OS, Internal architecture of WINDOWS OS, Classification of WINDOWS OS command, Handling files, Handling directories, File – Memory – I/O – Process management in WINDOWS OS, Administration of WINDOWS OS system, WINDOWS programming environment.

**UNIT – V CASE STUDY OF OPERATING SYSTEMS**

Case Study of Process Management, Memory Management, File Management, I/O Management, System calls for WINDOWS, UNIX, LINUX etc.

**Text Books: -**


1. Distributed OS, A.S Tanenbaum, PHI.
2. Distributed Operating System By P. K. Singha , IEEE Press
3. Understanding UNIX, K. Srirengan, PHI.


**Reference Books:-**


1. Handbook of WINDOWS OS, IEEE presses.
2. Operating System, Milan, TMH.
3. LINUX OS, BPB publication.

# CHHATTISGARH SWAMI VIVEKANAND TECHNICAL UNIVERSITY
# BHILAI (C.G.)

Semester: VI
Subject: Logical And Functional Programming
Total Theory Periods: **40**
Total Marks in End Semester Exam. : **80**
Minimum number of class test to be conducted: **02**

Branch: **Information Technology**
Code: 322637 (22)
Total Tutorial Periods: Nil

**UNIT I** **INTRODUCTION OF LOGIC PARADIGM**

Prepositional calculus & logic, natural deduction & axiomatic system, semantic tableaux & resolution,. FOPL: predicate calculus, Prenex normal forms & skolemization, Herbrand universe & H- interpretation.

**UNIT II** **LOGIC PROGRAMMING**

Logic formulas, Logical Inference, The least Herbrand Model, Unification, SLD – Resolution, Negation in logic programming, Cut & Arithmetic, Recursive data structure.

**UNIT III** **PROLOG PROGRAMMING**

Execution of query in prolog program; programming in PROLOG (overviev): predicates, Rules, Computations, Lists & data, Arithmetic operations, Grammar Rules, meta level & non deterministic programming, second order program in prolog, logic grammars, Recursion, cut & fail, Higher order Predicates
.

**Unit IV** **ADVANCED FEATURE OF LOGIC PROGRAMMING**

Object & Meta language, Context free grammar vs logical grammar, Compilation of DCGs into prolog, Searching in state space, Concurrent logic programming, Constraint logic Programming.

**UNIT V** **FUNCTIONAL PROGRAMMING**

Introduction to functional programming (FP), Higher order functions, Introduction to SMIL a functional language, Lazy evaluation & delay of unnecessary computation, Functional – Logic program (FLP), Explicit data values, Recursive list, The relational functional markup language, Horizon transformation.

**Text Books: -**


1. Logic & Prolog programming, Saroj Kaushik, New Age International.
2. Element of functional Programming, Reade Chris, AWL.


**Reference Books: -**


1. The essence of logic, K. John, PHI.
2. Programming in Prolog, Clocksin & Mellish, Narosa Publishing House.
3. Prolog programming, Bratko, Pearson Education.

# CHHATTISGARH SWAMI VIVEKANAND TECHNICAL UNIVERSITY
# BHILAI (C.G.)

Semester – VI
Subject:- Advanced DATA Base Systems
Total Theory Periods: 40
Total Marks in End Semester Exam. : 80
Minimum number of class test to be conducted: 02

Branch: Information Technology
Code: 322638 (22)

Total Tutorial Periods: Nil

**UNIT- I** **DISTRIBUTED DATABASE DESIGN**

Design strategies, Distribution design issues, Fragmentation, Allocation, and Oracle DDB design, Distributed database system architecture, Date's rule for DDBS.

**UNIT- II** **DATA REPLICATION & QUERY PROCESSING IN DDBS**

Classification of replica control strategies, Consistency & Request ordering, The Gossip Architecture, Process groups & ISIS, Replication in Oracle, Query optimization in Centralized system, Objective of query processing, Query decomposition, Distributed query optimization algorithms, Query optimization in Oracle.

**UNIT-III** **TRANASACTION PROCESSING & RECOVERY**

Centralized & client serer architecture, server systems architectures, parallel & distributed systems, distributed data storage, Transaction property, distributed transactions, commit protocols, concurrency control in distributed database, availability, heterogeneous distributed databases, Distributed deadlock management, recovery concepts, recovery techniques based on deferred update & on immediate update shadow paging, The ARIES Recovery Algo, Recovery in multidatabase systems, database backup and recovery from catastrophic failures, Reliability concept & measure, Site failure & network portioning, directory systems, Database recovery in Oracle.

**UNIT- IV** **SECURITY MANAGEMENT & PL/SQL**

Various aspect of database security, Basic model of database access control, TCSEC Policy identification, Security models, Identification-Authentication- Authorization, Statistical databases, Data encryption, Security in Oracle, JDBC, Purpose of PL/SQL, PL/SQL block, structure & type, PL/SQL syntax & programming.

**UNIT-V** **DIFERENT DATABASES**

Parallel databases: Introduction, I/O parallelism. Interquery- intraquery- intraoperation-interoperation parallelism design of parallel systems.
Client/Server DBS, Oracle DBMS, Distributed processing in Oracle, Oracle network protocols, Network administration in Oracle. Theory of OO databases, Multimedia databases, Real time databases.

**Text books:**


1. Database system concepts, 4th edition, Silberschatz-Korth-Sudarshan, MH
2. Fundamentals of database systems 3rd edition, Elmasri & Navathe, Pearson education


**Reference Books:-**


1. Database concepts & systems, 2nd edition, Ivan Bayross, SPD
2. Database Management System, Rajesh Narang, PHI.
3. An introduction to database systems, 7th edition, C.J. Date, Pearson education

# CHHATTISGARH SWAMI VIVEKANAND TECHNICAL UNIVERSITY BHILAI (C.G.)

Semester: VI
Subject: Database Management System Lab
Total Practical Periods:40
Total Marks in End Semester Exam. : 40

Branch: Information Technology
Code: 333 621 (33)

**Suggested List of Experiments (but should not be limited to):**

Schema for table creation
Employee (person name, street, city)
Works (person Name, company name, salary)
Company (company name, city)
Manages (person name. Manager Name)

1. Viewing data in tables
2. Filtering cable data.
3. Creating a table from another cable.
4. Inserting data into a table from another cable
5. Delet-after-updata-operations.
6. Renaming tables
7. Data constrains.
   Primary key, foreign key, unique, not null, check.
8. Grouping data.
9. Set operations
10. Sub queries.
11. Joins.
12. Cursor.
13. PL-SQL.

**Text Books:-**

1. SQL & PL/SQL, Ivan Bayross, SPD.
2. Database Design Fundamentals, Rishe, PHI.

**Reference Books**

1. Principles of Database Systems", 2nd Edn., Ullman, J.O, Galgotia Publications.
2. Introduction to Database Systems, C.J.Date, Pearson Education.
3. Fundamentals of Database Systems, Elmasri & Navathe, Pearson Education.

# CHHATTISGARH SWAMI VIVEKANAND TECHNICAL UNIVERSITY
# BHILAI (C.G.)

Semester – **VI** Branch: **Information Technology**
Subject: **Visual Programming Lab** Code: **333622 (33)**
Total Practical Periods: **40**
Total Marks in End Semester Exam. : **40**

**Suggested List of Experiments (but should not be limited to):**

**LIST OF CONSOLE PROGRAMMING**

1. Visual Basic AND Visula Basic.NET – An Introduction of Console and GUI Programming technique, Explain New Project window, property Explorer, Output window, Dynic help, Window management (Auto Hide, Dockalbe, Tabbed Documents, IDE navigation, favorites), win forms & webfroms
2. WAP to find the Average, Total Grade of student using if else statements (In Console).
3. WAP to input any number between (0—6) and print appropriate day week.
4. Print the pattern Using For loop.
5. WAP to input numbers in 1D array and print in ascending & descending order.
6. WAP to input number in 2D array and perform the following operation.
    1. Sum of all number
    2. Forward Diagonal & Backward diagonal
    3. Print Upper & Lower triangle matrices.
7. WAP to input number in 2D array and perform the following operation.
    1. Sum of to matrices.
    2. Multiplication of two matrices.
8. WAP to explain Class, Constructor & Inheritances.

**GUI PROGRAMMING**

9. Design simple calculation to implement Addition, Subtraction and Multiplication and Division.
10. Design the marks sheet of student. Which Display all details including the total marks of student and percentage.
11. Create a from using check box & option box to give the effect of fonts such as Bold, Italic, underline strike through respectively for the text entered in the Rich Text Box.
12. Demonstrate use of Data Environment; add tables and queries, place field on from, report etc.
13. Create simple Notepad application, Which cantina menus Rich Text Box, Common Dialogs Box formatted text, using toolbar and Replace text, window, status bar and scroll bar.
14. Develop a three-difference program, which uses different Data Access Component ODBC.

**OLE DB ADO**

15. Modify the Practical on 12 to all following Button FIND, ADD, DELETE, MODSIFY, and CONCEL. Give proper code to perform the activity described by the buttons.
    CASE STUDY (Design the and develop one of the following three case studies)
    A. Design a program for online Examination system, which include database and recorded facility.
    B. Develop a program for telephone bill generation, which include database and recoded facility
    C. Develop a program for super market includes the database. And recoded facility.

**List of Equipment/machine required: -**

1. P-3 or above Computer System.
2. Microsoft Visual studios. NET 2003
3. MSDN Library.
4. Database (Oracle/MS Access/ Sql. Server)

**Text Books**: -

1. Black Book (VB & VB. NET)
2. Complete Reference (VB & VB.NET)

# CHHATTISGARH SWAMI VIVEKANAND TECHNICAL UNIVERSITY
# BHILAI (C.G.)

Semester- VI
Subject : Software Technology Lab -3
Total Practical Periods: 50
Total Marks in End Semester Exam. : 40

Branch: Information Technology
Code : 333623 (33)

**Suggested List of Experiments (but should not be limited to):**

1. Write a program to print Hello World using Message Box.
2. Write a program to get two strings from the user with the help of Input Box & Concatenate them & print on form.
3. Write a program to get a number from the user with the help of Input Box & check whether the number is even or odd.
4. Write a program to calculate the factorial of any number.
5. Write a program to get a number from the user and check whether the number is prime or not.
6. Write a program to get a number from the user with the help of text box and check whether the number is prime or not.
7. Write a program to generate Fibonacci series.
8. Write a program to get the marks of 5 subjects from the user & calculate the percentage & division.
9. Write a program to get two numbers from the user swap them & print them using your own subroutines.
10. Write a program to get two numbers from the user & return the greatest using your own function.
11. Write a program to find the sum of the series
    $1 + 2^3 + 4^3 + 6^3 + 8^3 + \ldots$
12. Write a program to find the sum of the series
    $1 + 1^3/1! + 2^3/2! + 3^3/3! + \ldots$
13. Write a program to calculate addition, subtraction, multiplication & division of two numbers using Select Case.
14. Write a program to validate Text entered into a textbox.
15. Write a program to validate Numbers entered into a textbox.
16. Write a program to validate all the controls used in forms & send the data from form to database using ASP.

**Reference Books :**


1. Java Script manual
2. JavaScript Interactive Course - Techmedia

# CHHATTISGARH SWAMI VIVEKANAND TECHNICAL UNIVERSITY
# BHILAI (C.G.)

Semester: **VI** Branch: **Information Technology**
Subject: **Computer Graphics Lab** Code: **333624 (33)**
Total Practical Periods:**40**
Total Marks in End Semester Exam. : **40**

**Suggested List of Experiments (but should not be limited to):**

1. Write a program to draw the line using DDA algorithm.
2. Write a program to draw the line using Bresenham's algorithm.
3. Write a program to draw circle using Brmesenham's algorithm.
4. Write a program to draw circle using mid-point algorithm.
5. Write a program to demonstrate draw ellipse using midpoint algorithm.
6. Write a program Rotation of Triangle.
7. Write a program Rotation of Line.
8. Write a program Rotation of Triangle.
9. Write a program Translation of Line.
10. Write a program Translation of Triangle.
11. Write a program Translation of Rectangle.
12. Write a program to perform scaling of line.
13. Write a program shearing of Line.
14. Write a program shearing of Triangle.
15. Write a program shearing of Rectangle.

**Book Reference:-**


1. Computer Graphics & Multimedia- G. S. Baluja -Dhanpat Rai & CO.
2. Computer Graphics Donald Hearn & M Pauline Baker-Pearson Pvt. Ltd.

# Chhattisgarh Swami Vivekanand Technical University, Bhilai (C.G.)

Semester: VI
Subject: Managerial Skills
Total Practical Periods: 28
Total Marks in End Semester Exam: 40
Minimum number of class test to be conducted: 2

Branch: Common to all Branches
Code: 300625 (36)
Total Tut Periods: NIL

**Unit-I**

Managerial Communication Skills: Importance of Business Writing: writing business letters, memorandum, minutes, and reports- informal and formal, legal aspects of business communication, oral communication- presentation, conversation skills, negotiations, and listening skills, how to structure speech and presentation, body language.

**Unit-II**

Managerial skills: Leadership: Characteristics of leader, how to develop leadership; ethics and values of leadership, leaders who make difference, conduct of meetings, small group communications and Brain storming, Decision making, How to make right decision, Conflicts and cooperation, Dissatisfaction: Making them productive.

**Unit-III**

Proactive Manager: How to become the real you: The journey of self-discovery, the path of self-discovery, Assertiveness: A skill to develop, Hero or developer, Difference between manager and leader, Managerial skill check list, team development, How to teach and train, time management, Stress management, Self assessment.

**Unit-IV**

Attitudinal Change: Meaning of attitude through example, benefits of positive attitude, how to develop habit of positive thinking, what is fear? How to win it? How to win over failure? How to overcome criticism? How to become real you? How to Motivate?

**Unit-V**

Creativity – a managerial skill, Trying to get a grip on creativity.
Overview of Management Concepts: Function of Management: Planning, organizing, staffing, controlling.

**Text & Reference Books:**


1. Basic Managerial skills for all by E.H. McGrawth, Prentice Hall India Pvt Ltd,2006
2. How to develop a pleasing personality by Atul John Rego, Better yourself bools, Mumbai, 2006
3. The powerful Personality by Dr. Ujjawal Patni & Dr. Pratap Deshmukh, Fusion Books, 2006
4. How to Success by Brian Adams, Better Yourself books, Mumbai, 1969