Chhattisgarh Swami Vivekanand Technical University, Bhilai

Scheme of teaching and examination

B.E. VI Semester Computer Science & Engineering

S.No	Board of Study	Subject Code	Subject Name	Periods per week			Scheme of exam			Total Marks	Credit L+(T+P)/ 2
							Theory/ Practical				
				L	T	P	ESE	CT	TA		
1	Computer Science & Engg	322611(22)	Computer Networks	3	1	-	80	20	20	120	4
2	Computer Science & Engg	322612(22)	Compiler Design	3	1	-	80	20	20	120	4
3	Computer Science & Engg	322613(22)	UNIX and SHELL Programming	3	1	-	80	20	20	120	4
4	Computer Science & Engg	322614(22)	Software Engineering	3	1	-	80	20	20	120	4
5	Computer Science & Engg	322615(22)	Computer Graphics	3	1	-	80	20	20	120	4
6	Refer Table -1		Professional Elective -1	3	-	-	80	20	20	120	3
7	Computer Science & Engg	322621(22)	Computer Networks Lab	-	-	3	40	-	20	60	2
8	Computer Science & Engg	322622(22)	Computer Graphics Lab	-	-	3	40	-	20	60	2
9	Computer Science & Engg	322623(22)	Software Technology Lab - 3	-	-	4	40	-	20	60	2
10	Computer Science & Engg	322624(22)	UNIX and SHELL Programming Lab	-	-	4	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.

Professional Elective - I

Table -1

S.No.	Board of Studies	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	**322633(33)**	**Multimedia & Virtual Reality**
4	Computer Science & Engg	**322634(22)**	**Management Information Systems**
5	Computer Science & Engg	**322635(22)**	**Inter Networking with TCP/IP**
6	Computer Science & Engg	**322636(22)**	**Advanced Operating System**
7	Computer Science & Engg	**322637(22)**	**Logical & Functional Programming**
8	Computer Science & Engg	**322638(22)**	**Advanced Data Base Systems.**

Note (1)- 1/4th of total strength of students subject to Minimum Strength 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 for future examinations.

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

Semester – VI
Subject: **Computer Networks**
Total theory periods-**40**
Total marks in end semester exam – **80**
Minimum number of class tests to be conducted – **02**

Branch-**Computer Science & Engineering.**
Code –**322611 (22)**
Total Tutorial Periods: **12**

UNIT-I INTRODUCTION TO COMPUTER NETWORK: -

Uses of Computer Network, Network hardware, Layered Architecture, function of the layers, Network standardization, OSI & TCP/IP Reference model, Physical layer services & hardware protocols.

UNIT- II DATA LINK CONTROL: -

Framing, Flow Control : Stop and wait Protocols, Sliding Window Protocols. Error Detection & Error Control, High Level Data Link Control (HDLC),Other Data Link Control Protocols : Pure ALOHA & Slotted ALOHA , Markov chain model for S-ALOHA and delay in S-ALOHA , IEEE LAN Protocols, Ethernet, Ad Hoc network.

UNIT-III NETWORK LAYER & TRANSPORT LAYER:-

Network Layer Protocols: Design issues : Virtual Circuits and datagram's, Routing Algorithms: Optimality principle, Shortest path routing- Dijkstra's algorithms, Distance Vector routing, Link state routing, Flow and Congestion Control: packet discarding , Traffic shaping , Choke packets, RSVP, IP fragment, RIP, OSPF, Inside router, Network layer performance model, Poisson model, M/M/1 Queue, Blocking probability, Little's formula, Transport Layer Protocols : Basic functions, Connection Management : Establishment and releases , Crash recovery, TCP & UDP, Reliability Models, AIMD Policy.

UNIT-IV UPPER LAYERS: -

Session Layer Protocols: Dialog Management, Synchronization, Presentation layer functions: translation, encryption, compression, Cryptography : substitution and Transposition Ciphers, Data Encryption standards (DES) , DES Chaining, Breaking DES, Public Key cryptography, Authentication protocols, Different compression coding techniques. Application layer protocols & services : Email, World Wide Web, file transfer protocol, remote file server, internet telephony & chatting.

UNIT-V SPECIAL & HIGH SPEED NETWORKS & NETWORK DEVICES:

FDDI : access method , addressing, electrical specification, frame format, comparison of FDDI-I & FDDI-II . DQDB & WAN implementation. × .25 networks its features. Frame Relay: operation, congestion control & frame format. SONET / SDH : layers , frame & application. Internet & related software's NETSCAPE & MOSAIC .
Networking devices: Repeaters, Bridge Routers & Gateways.

Text Books:-

1. Computer networks", Second Ed., A.S. Tannenbaum, Prentice Hall India.
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/?P, Vol. 1, D.E. Corner, Prentice Hall India.
3. Computer Networking with IP, Stalling, Pearson Education.

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

Semester – VI
Subject: Compiler Design
Total theory periods-**40**
Total marks in end semester exam – **80**
Minimum number of class tests to be conducted – **03**

Branch-**Computer Science & Engineering**.
Code –**322612 (22)**
Total Tutorial Periods: **12**

UNIT –1 INTRODUCTION :
Introduction to Compiler, single and multi-pass compilers, Translators, Phases of Compilers, Compiler writing tools, Bootstrapping, Backpatching. Finite Automata and Lexical Analyzer: Role of Lexical Analyzer, Specification of tokens, Recognition of tokens, Regular expression, Finite automata, from regular expression to finite automata transition diagrams, Implementation of lexical analyzer Tool for lexical analyzer LEX, Error reporting.

UNIT-2 SYNTAX ANALYSIS AND PARSING TECHNIQUES :
Context free grammars, Bottom-up parsing and top down parsing. Top down Parsing : elimination of left recursion, recursive descent parsing, Predicative Parsing ,Bottom Up Parsing : Operator precedence parsing, LR parsers, Construction of SLR, canonical LR and LALR parsing tables, Construction of SLR parse tables for Ambiguous grammar, the parser generator – YACC, error recovery in top down and bottom up parsing.

UNIT – 3 SYNTAX DIRECTED TRANSLATION & INTERMEDIATE CODE GENERATION :
Synthesized and inherited attributes, dependency graph, Construction of syntax trees, bottom up and top down evaluation of attributes, S-attributed and L-attributed definitions ,Postfix notation; Three address codes, quadruples, triples and indirect triples, Translation of assignment statements, control flow, Boolean expression and Procedure Calls.

UNIT- 4 RUNTIME ENVIRONMENT :
Storage organization, activation trees, activation records, allocation strategies, Parameter passing symbol table, dynamic storage allocation.

UNIT – 5 CODE OPTIMIZATION & CODE GENERATION :
Basic blocks and flow graphs, Optimization of basic blocks, Loop optimization, Global data flow analysis, Loop invariant computations. Issue in the design of Code generator, register allocation, the target machine, and simple Code generator.

Text Books :

1. Compilers-Principles, Techniques and Tools, Alfred V. Aho, Ravi Sethi and Ullman J.D., Addison Wesley.
2. Principle of Compiler Design, Alfred V. Aho, and J.D. Ullman, Narosa Publication.

Reference Books

1. Compiler design in C, A.C. Holub, PHI.
2. Compiler construction (Theory and Practice), A.Barret William and R.M. Bates, Galgotia Publication.
3. Compiler Design, Kakde.

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

Semester – **VI**
Total theory periods-**40**
Subject: **UNIX and SHELL Programming**
Total marks in end semester exam – **80**
Minimum number of class tests to be conducted **– 02**

Branch-**Computer Science & Engineering.**
Code –**322613 (22)**
Total Tutorial Periods: **12**

UNIT – 1: INTRODUCTION :

Introduction to Multi user System, History of UNIX, Features & Benefits, Versions of UNIX, Features of UNIX File System,, Commonly Used Commands like who, pwd, cd, mkdir, rm, rmdir, ls, mv, ln, chmod, cp, grep, sed, awk ,tr, yacc etc. getting Started (Login/Logout)

Vi Editor: Introduction to Text Processing, Command & edit Mode, Invoking vi, deleting & inserting Line, Deleting & Replacing Character, Searching for Strings, Yanking, Running Shell Command Macros, Set Window, Set Auto Indent, Set No.

UNIT-2 : INTRODUCTION TO SHELL SCRIPTS & AWK PROGRAMMING :

Bourne Shell, C Shell, Shell Variables, Scripts, Meta Characters and Environment, if and case Statements, for, while and until loops.

Awk Pattern Scanning and Processing, begin and end Patterns, Awk Arithmetic and Variables, built In functions and Operators, Arrays, Strings.

UNIT- 3 : GENERAL OVERVIEW OF THE SYSTEM :

System Structure, User Perspective, Operating System Services Assumption about Hardware, The Kernel and Buffer Cache Architecture of UNIX Operating System, System Concepts, Buffer Headers, Structure of the Buffer Pool, Scenarios for Retrieval of the Buffer, Reading and Writing Disk Blocks, Advantages and Disadvantages of Buffer Cache.

UNIT- 4 : INTERNAL REPRESENTATION OF FILES .:

System Calls for the File System, INODES, Structure of Regular File, Directories, Conversions of a Path, name to an INODE, Super Block, INODE Assignment to a New File, Allocation of Disk Blocks. Open, Read, Write, File and Record Close, File Creation ,Creation of Special Files ,Change Directory and Change Root, Change Owner and Change Mode, STAT and FSTAT, PIPES, Mounting and Unmounting Files System, Link, Unlink.

UNIT –5 : STRUCTURES OF PROCESSES AND PROCESS CONTROL

Process States and Transitions Layout of System Memory, The Context of a Process, Manipulation of the Process Address Space, Sleep Process Creation/Termination, The User ID of a Process, Changing the Size of a Process. The Shell. Case Study of Various LINUX Versions.

Text Book

1. The Design of Unix Operating System,Maurice J. Bach, Pearson Education
2. Advance UNIX, a Programmer's Guide, S. Prata, BPB Publications, New Delhi.
3. Unix Concepts and Applications, Sumitabh Das.

Reference Books :

1. The UNIX Programming Environment, B.W. Kernighan & R. Pike, Prentice Hall of India.
2. Guide to UNIX Using LINUX, Jack Dent Tony Gaddis, Vikas/ Thomson Pub. House Pvt. Ltd.

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Semester – VI
Subject: **Software Engineering**
Total theory periods-**40**
Total marks in end semester exam – **80**
Minimum number of class tests to be conducted **– 02**

Branch-**Computer Science & Engineering.**
Code –**322614 (22)**
Total Tutorial Periods: **12**

UNIT –1 SOFTWARE PROCESS

Introduction – S/W Engineering Paradigm – life models (water fall, incremental, spiral, WINWIN spiral, evolutionary, prototyping, object oriented) – system - computer based system – verification – validation – life cycle process – development process – system engineering hierarchy.

UNIT –2 SOFTWARE REQUIREMENTS

Functional and non-functional–user–system–requirement engineering process- feasibility studies – requirements – elicitation– validation and management – software prototyping– prototyping in the software process – rapid prototyping techniques – user interface prototyping – S/W document. Analysis and modeling – data, functional and behavioral models structured analysis and data dictionary.

UNIT – 3 DESIGN CONCEPTS AND PRINCIPLES

Design process and concepts – modular design – design heuristic – design model and document. Architectural design software architecture data design architectural design transform and transaction marring – user interface design – user interface design principles acquisitions system – monitoring and control system. SCM – Need for SCM – Version control – introduction to SCM process – Software configuration items.

UNIT – 4 TESTING & MAINTENANCE

Taxonomy of software testing – levels – test activities – types of s/w test – black box testing - testing boundary condition – structural testing –test coverage criteria Based on data flow mechanisms – regression testing – testing in the large. S/W testing strategies –strategic approach and issue – unit testing – integration testing – validation testing – system testing and debugging.

UNIT – 5 SOFTWARE PROJECT MANAGEMENT

Measures and measurements – S/W complexity and science measure – size measure –data and logic structure measure information flow measure. Software cost estimation function oriented models – COCOMO model-Delphi method- Defining a Task Network – Scheduling Earned Value Analysis – Error Tracking – Software changes – program evolution dynamics software maintenance – Architectural evolution Taxonomy of CASE tools.

TEXT BOOK

1. Software engineering – A practitioner's Approach, Roger S. Pressman, McGraw-Hill International Edition, 5th edition, 2001
2. Object Oriented Modelling & Design, Remgaugh J. Blaha, M. Premeralant, W. Eddy F. And Lornsen W. (PHI)

REFERENCES

1. Software engineering, Ian Sommervile, Person education Aisa. 6th edition 2000.
2. An Integrated Approach to Software Engineering , Pankaj Jalote, Springer Verlag.
3. Software Engineering – An Engineering Approach, James F. Peters and Witold Pedryez., Johan Wiley and Sons. New Delhi. 2000.

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

Semester – VI
Subject: **Computer Graphics**
Total theory periods-**40**
Total marks in end semester exam – **80**
Minimum number of class tests to be conducted – **02**

Branch-**Computer Science & Engineering.**
Code –**322615 (22)**
Total Tutorial Periods: **12**

UNIT-I OVERVIEW OF GRAPHICS SYSTEM: -

Video display devices, Input 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, Liang Barsky 2-D & 3-D clipping :Cohen Sutherland, Polygon clipping: Sutherland Hodgeman & 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, Painter's 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 Modeling: Generation through sweep techniques, Constructive sold geometry, B representations, Octrees, Ray Tracing & their Theory, Animation: In-between 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 , Schaum Series.

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

Semester: **VI** Branch: **Computer Sc. & Engg.**
Subject: **Digital Signal Processing** Code: **322631(22)**
Total Theory Periods: **40** Total Tutorial Periods: **Nil**
Total Marks in End Semester Exam: **80**
Maximum number of Class Tests to be conducted: 0**2**

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 AND 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
Subject**: Advanced Microprocessors & Micro-Controllers**
Total Theory Periods: **40**
Total Marks in End Semester Exam: **80**
Maximum number of Class Tests to be conducted: **02**

Branch: **Computer Sc. & Engg.**
Code: **322632(22)**
Total Tutorial Periods: **Nil**

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 unit, control unit, Instruction Decoder Unit, Segmentation unit & page unit. General purpose Registers, Flag Register, Test & Debug Register, and Pipelining. Addressing mode and Instruction set of microprocessor 80386

UNIT-IV TASK AND MODES OF OPERATION

Real mode, Virtual Mode, Protected Mode, Page based Virtual Memory; Single level tasks: Segment Register. 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. Microcomputer 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
Subject : **Multimedia and Virtual Reality**
Total Theory Periods: **40**
Total Marks in End Semester Exam.: **80**
Minimum Number of Class tests to be conducted: **02**

Branch: **Computer Science & Engineering**
Subject Code**: 322633(33)**
Total Tutorial Periods: **Nil**

UNIT-I INTRODUCTION

Concept of Multimedia, media & data stream, Main properties of multimedia system, Data stream characteristics of continuous media, multimedia Applications, Hardware and software requirements, Multimedia Products & its evolution.

UNIT-II COMPONENTS OF MULTIMEDIA

Text, Basic sound concepts, MIDI, Speech, Basic concept of Images, Graphics format, Overview of image processing, Basic concepts of Video & animation, Conventional system, Transmission, Enhanced system, High Definition system, Computer based animation, Design & authoring Tools, Categories of Authority Tools, Types of products

UNIT-III DATA COMPRESSION

Coding requirement, Source, entropy, hybrid coding, JPEG, MPEG, Text compression using static Huffmann technique, Dynamic Huffmann Technique, Statistical coding techniques.

UNIT-IV OPTICAL STORAGE MEDIA

Videodisk and other WORMS, Compact Disk digital audio, Advantage of CD-DA Frames tracks blocks of CD-DA, CD-ROM, Further CD-Rom based developments, Principles of CDWO, Prospects of CD technologies.

UNIT-V VIRTUAL REALITY

Introduction to Virtual reality & Virtual reality Systems,
Related Technologies: Tele-operation & augmented reality system
VRML Programming, Domain Dependent Application like Medical, Visualisation
Visibility computation Time Critical rendering,

Text/ Reference: -

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, Pearson Education.
3. Fundamentals of Computer Graphics and Multimedia, D.P. Mukherjee, PHI

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

Semester: VI
Subject**: Management Information Systems**
Total Theory Periods: **40**
Total Marks in End Semester Exam: **80**
Minimum Number of Class tests to be conducted: **02**

Branch: **Computer Science & Engineering**
Subject Code: **322634(22)**
Total Tutorial Periods: **Nil**

UNIT - ?: MANAGEMENT & ORGANIZATIONAL SUPPORT SYSTEMS FOR DIGITAL FIRM

Definition of MIS; Systems approach to MIS: Report writing s/w, MIS and Human factor considerations, concept of organizational information sub-system, MIS & problem solving. Case Studies.

UNIT -??: INFORMATION SYSTEMS & BUSINESS STRATEGY

Information Management. Who are the users? Manager & Systems, Evolution of Computer based information system (CBIS), Model of CBIS. Information services organization : Trend to End-User computing, justifying the CBIS, Achieving the CBIS, Managing the CBIS, Benefits & Challenges of CBIS implementation. Strategic Information System, Business level & Firm level Strategy, Case Studies.

UNIT-???: INFORMATION SYSTEMS IN THE ENTERPRISE

Systems from Management & Functional perspective & their relationship: Executive Information System, Decision Support System Sales & Marketing Information System, Manufacturing Information System, Human-Resource Information System. Finance & Account Information System. Case Studies.

UNIT-?V: INFORMATION TECHNOLOGY FOR COMPETITIVE ADVANTAGE

Firm in its environment, What are the information resources ? Who manages the information resources ? Strategic planning for information resources. End-User Computing as a strategic issue, Information resource management concept. Case Studies.

UNIT-V: E-COMMERCE & INTERNATIONAL INFORMATION SYSTEM

Introduction to E-Commerce, Business Intelligence. E-Commerce strategy, Electronic Data Interchange, E-commerce methodology, E-commerce technology, Business application of the Internet. Electronic Business success strategies.

Managing International Information Systems: IIS architecture, Global business drivers , challenges, strategy: divide, conquer, appease, cooptation, business organization, problems in implementing global information systems,

Computer crime, ethics & social issues.

Text Books:-

1. MIS A Concise Study, S.A. Kelkar, PHI.
2. MIS managing the digital firm, Kenneth C. Laudon & Jane P. Laudon (Pearson Education).

Reference Books :-

1 MIS, Suresh K. Basandra (Wheelers)
2 Introduction to computer Information System for Business, Mark G. Simkin, S. Chand & Co., 1996.
3 Analysis & Design of Information Systems, James A. Senn. MCGraw-Hill International.

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

Semester: VI Sem
Subject: **Inter Networking With TCP/IP**
Total Theory Periods: 40
Total Marks in end semester examination: 80
Minimum number of class tests to be conducted: 03

Branch: **Computer science and Engineering**
Code: **322635(22)**
Total Tutorial Periods**: Nil**

UNIT –I INTRODUCTION

Introduction to internetworking, Overview of OSI Model TCP/IP protocol suite, Basics of switching technologies and switches, Comparisons of different models, Gateways.

UNIT – II INTERNET PROTOCOL

Purpose of Internet Protocol, Internet datagram, Options, Checksum, ARP and RARP, Routing Methods: Routing Table and Routing module, ICMP, IGMP.

IP Addresses: Introduction, Address Classification, A sample internet with classful addressing, Subnetting, Supernetting, Classless addressing, Security at the IP Layer, IPSec, IPv4 and IPv6 packet formats.

UNIT –III ROUTING PROTOCOLS: UNICAST ROUTING PROTOCOLS

Interior and Exterior routing, RIP, OSPF, BGP, **Multicasting:** Introduction, Multicast Routing, Multicast Routing Protocols, Multicast Trees, DVMRP, MOSPF, CBT,PIM, M-BONE.

UNIT –IV TRANSPORT CONTROL PROTOCOL: TCP

TCP operation, Segment, Sliding window, Silly window, Options, TCP state machine, Karn's Algorithm, Congestion control- Leaky bucket and Token bucket algorithms. **UDP:** User Datagram, UDP operations, Checksum calculation.

UNIT-V TCP/IP OVER ATM NETWORKS

ISDN and B-ISDN, ATM reference model, ATM Switch, Interconnection Network, Virtual circuit in ATM, Paths, Circuits and identifiers, ATM cell transport and adaptation layers, packet type and multiplexing, IP Address binding in an ATM Network, Logical Subnet Concept and Connection Management.

Name of The Text Book:

1. Internetworking with TCP/IP by Comer (Vol. 1)(PHI Pub.)
2. TCP/IP Protocol suite by Behrouz A. Forouzan.(TMH Pub.)

Name of the Reference Book:

1. Computer Networking by James F. Kurose, Keith W. Ross (Pearson Education)
2. TCP/IP Illustrated By Wright and Stevens (Vol.2) (Pearson Education)
3. An Introduction to Computer Networks by Kenneth C. Mansfield Jr. James L. Antonakes (PHI)

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

Semester: VI Sem
Subject**: Advanced Operating System**
Total Theory Periods: **40**
Total Marks in end semester examination: **80**
Minimum number of class tests to be conducted: **02**

Branch: **Computer science and Engineering.**
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 press.
2. Operating System , Milan, TMH.
3. LINUX OS, BPB publication.

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

Semester: VI Sem
Branch: **Computer science and Engineering.**
Subject: **Logical & Functional Programming**
Code: **322637(22)**
Total Theory Periods**: 40**
Total Tutorial Periods: **Nil**
Total Marks in end semester examination**: 80**
Minimum number of class tests to be conducted: **02**

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 (overview): 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 SML 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

Semester: **VI**
Subject Name: **Advanced Database Systems**
Total Theory Periods: **40**
Total Marks in End Semester Exam. **80**
Minimum Number of Class tests to be conducted: **02**

Branch: Computer Science & Engineering
Subject Code: 322638 (22)
Total Tutorial Periods: **Nil**

UNIT- I **DISTRIBUTED DATABASE DESIGN :-**
Design strategies, Distribution design issues, Fragmentation, Allocation, 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 **TRANSACTION PROCESSING & RECOVERY :-**
Centralized & client server 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 Algorithm, Recovery in multi-database 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 **DIFFERENT 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 book:

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

References:-

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 Semester
Subject– **Computer Networks Lab**
Total Practical Periods – **40**
Total Marks in end semester examination – **40**

Branch – **Computer Science and Engineering**
Code – **322621 (22)**

List of experiments to be conducted in Computer Network Lab.

1. Introduction to Local Area Network with its cables, connectors and topologies.
2. Installation of Switch. Hub their cascading and network mapping.
3. Installation of UTP, Co-axial cable, Cross cable, parallel cable NIC and LAN card.
4. Case Study of Ethernet (10 base 5,10 base 2,10 base T)
5. Installation and working of Net meeting and Remote Desktop.
6. Installation and working with Telnet (Terminal Network).
7. Installation and working with FTP (File Transfer Protocol).
8. Installation and Computers via serial or Parallel ports and enable the computers to share disk and printer port.
9. To connect two Personal Computer with Telephone line.
10. Installation of Modem and Proxy Server.
11. Working with Null Modem.
12. Installation of Windows 2003 server/ Windows 200 server.
13. Configuration of DHCP.
14. Introduction to Server administration.

Recommended Books.

1. Computer Network and internet by Dougles E. Comer (Pearson Education)
2. List of Software required :-
3. Windows 2003 server/Windows 2000 server.
4. List of Hardware required :-
5. LAN Trainer Kit LAN Card Cable, Connectors, HUB, Switch, Crimping Tools.

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

Semester – VI
Subject**: Computer Graphics Lab**
Total Practical Periods **– 40**
Total Marks in end semester examination – **40**

Branch – **Computer Science And Engineering**
Code – **322622 (22)**

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 Bresenham'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 Translation of Line.
8. Write a program to perform scaling of line.
9. Write a program shearing of Rectangle.
10. Write a program to implement boundary –fill algorithm.
11. Write a program to implement flood –fill algorithm.
12. Write a program to implement Bezier curve using four control points.
13. Write a program to implement CohenSutherland line clipping algorithm.
14. Write a program to implement Liang Barsky line clipping algorithm.
15. Write a program to implement face of a cartoon.

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: B.E. VI Sem.
Subject: **Software Technology Lab –3**
Total Practical Periods : **50**
Total Marks in End Semester Exam**. : 40**

Branch: **Computer Science & Engineering.**
Code: **322623 (22)**

NOTE for Students to Follow strictly:-

- Every **two to three students** should form a group and should develop a software that could be developed with in **one month** of time.
- The groups should prepare a **softcopy as well as hardcopy** of the documentation as per phases given below.
- Every student in the group should have a copy of the documentation
- Every student should get his own copy of the documentation properly checked from the **Teacher In-charge**, after every phase of development given below.
- Before the Final Practical examinations, every individual student should submit his own hardcopy of the documentation in a **Punched Cardboard File Only.**
- One **CD** of the project and its documentation (softcopy), from every group should be submitted during **final submissions**.
- During **Final Submissions**, every copy of the documentation should be accompanied by a **Submission Certificate** duly signed by the **Teacher In-charge and Head of Department**.

Planning Phase

1. **Problem Statement :-**
   - **a.** Description of the present situation.
   - **b.** Problem constraints (Manpower, Software and Hardware).
   - **c.** Statement and brief description of Goals (Process and Product).
   - **d.** Statement and brief description of Requirements (Functions, Hardware, Software and User interface) of the overall product.
   - **e.** List and Description of the users and their role, who will use the software product.
2. **Solution strategy :-**
   - **a.** List and brief description of all possible solutions.
   - **b.** List and brief description of all accepted solutions.
   - **c.** List and brief description of all rejected solutions.
3. **Development process :-**
   - **a.** Life cycle model for the project.
   - **b.** Team structure for the project (Details of team members also needed).
   - **c.** Software Configuration Management :-
     - **i.** List and brief description of non-changeable objects that would contribute to the software phase wise.
     - **ii.** List and brief description of changeable objects that would contribute to the software phase wise.
   - **d.** Software Quality assurance :-

i. List and brief description of quality attributed decided for evaluating the software product phase wise.
ii. List and brief description of the validations (are we making the product right ?) and verifications (are we making the right product?) phase wise.

e. Risk management :-
i. List and brief description of any kind of Risks that may occur phase wise.
ii. List and brief description of any possible solutions for the above mentioned risks.

4. **Software metrics :-**
   a. Deciding the complexity category of the product under development.
   b. Estimating Lines of Code needed for the complete development of the product.
   c. Calculating Programmer months for the project.
   d. Calculating the development time for the project.
   e. Calculating the Average staffing level for the project.
   f. Using COCOMO model for performing cost estimation for the product.
5. **Review of the Planning Phase :-**
   a. Points and brief description of the reviews conducted and report of the results obtained.

Analysis and Design Phase

1. **Analysis document for the product :-**
   a. Data Dictionary :- List and brief description of all the components to be used in ERD, DFD and STD.
   b. Data Object Description document :- Entity Relationship Diagram (ERD)
   c. Process Specification document :- Data Flow Diagram (DFD)
   d. Control Specification document:- State Transition Diagrams (STD)
2. **Creating Designs document :-**
   a. Data Design :- Description of the data objects and suggested algorithm.
   b. Architectural Design :- Description of how to encapsulate the data with data structures and modules.
   c. Interface Design :- Description of Interfaces to be created between various modules and between user and program.
   d. Procedural Design :- Using flow charts and decision tables the entire system is explained.
3. **Preliminary design review :-**
   a. Statements of Reviews done on the initial designs and comments for improvement, if necessary.
4. **Test Plan document :-**
   a. List and brief description of Functional Tests (Black-Box testing) to be conducted and results expected.
   b. List and brief description of Structural Tests (White-Box or Glass-Box testing) to be conducted and results expected.
   c. List and brief description of Performance Tests to be conducted and results expected.
   d. List and brief description of Stress Tests to be conducted and results expected.

5. **Critical Design review :-**

a. Statements of reviews done on the final designs, listing out important points, if necessary, to be remembered during the implementation phase.

6. **Milestones, Walkthroughs and Inspection document :-**

a. Setting up Milestones for the implementation and testing phases.

b. Setting up Walkthrough schedules for the implementation phase.

c. Setting up Inspection schedules for the implementation phase.

Implementation Phase

1. **Coding :-** Here the actual coding is done according to the designs created and standards decided.
2. **Coding standards :-** Standards need to be followed related to the variable declarations and use.
3. **Internal documentation:-** Here small descriptions in the form of comments in the program code is used, describing the meaning of the code, modules or operations performed.
4. **Error documentation :-** List and brief description of errors displayed with their meanings and causes.
5. **Unit testing :-** Testing of individual modules and required code areas are done by using coding that would display temporary results. Those results are evaluated for correctness of code. A table is created stating the test criteria and results.
6. **Validation and Verification :-** A table is created stating the validation and verification activities performed on the code and results found.
7. **Review document :-** According to the milestones set, the reviews, walkthroughs and inspections are done and a document describing the above process and results found, is created.

Testing Phase

1. **Testing table :-** The tests decided in Test plan document are conducted and a table is created showing the details of the test performed, expected results and actual found results.
2. **Test report :-** A summary of the Test report is created and suggestions for the steps to be taken further are listed with brief description.

User Manual

1. A document is created describing from the user point of view, how to use and trouble shoot the software product.
2. Different documents should be created for different category of users of the product.
3. A document describing the installation procedures.
4. Frequently Asked Questions and answers document is created from the user point of view.
5. Do’s and Don’ts for the user.
6. List and brief description of Errors displayed and their meanings.
7. Contact details for further assistance.

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

Semester**: B.E. VI Sem.** Branch: **Computer Science & Engineering**
Subject: **UNIX & SHELL Programming Lab** Code: **322624 (22)**
Total Practical Periods: **50**
Total Marks in End Semester Exam. :**40**

1. Write a shell script to accept three numbers and display the largest.
2. Write a shell script to find the number of files in a directory.
3. Write a shell script to display first ten positive numbers using until loop.
4. Write a shell script to check if a particular user has logged in or not. If not, continue the loop till he/she logins. Once the required user logins, display a message.
5. Write a shell script to accept the name, grade, and basic salary from the user. Write the details into a file called employee, separating the fields with a colon (,) continue the process till the user wants.
6. Write a menu driven program to display a menu of options and depending upon the user's choice execute the associated command.
7. Write a shell script to check whether a file is existing or not.
8. Write a shell script to find the mode of a file in a directory.
9. Write a shell script which will accept different numbers and find their sum.
10. Write a shell script to calculate the total salary payable to all the employees from the employee file. The salary should be taken from the 8th field of the employee file.
11. Write a shell script to copy the source file to the target file.
12. Write a shell script to print the first 10 odd numbers using the while loop.
13. Write a shell script to generate the factorial of a given number entered through keyboard.
14. A five digit number is input through the keyboard. Write a shell script to calculate the sum of its digits.
15. Write a shell script to generate the Fibonacci series.
16. Write a shell script to reverse the digits of a given number.

Reference Books:

1. S. Prata, Advance UNIX, a Programmer's Guide, BPB Publications, New Delhi.
2. Sumitabh Das, Unix Concepts and Applications.

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

Semester: VI
Subject: Managerial Skills
Total Practical Periods: 28
Total Marks in End Semester Exam: Nil
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