राष्ट्रीय प्रौद्योगिकी संस्थान रायपुर
NATIONAL INSTITUTE OF TECHNOLOGY RAIPUR
(Institute of National Importance)
G.E. Road, Raipur – 492010 (CG)

Phone: (0771) 225 42 00
Fax: (0771) 225 46 00
Email:
director.nitrr@rediffmail.com
Website: www.nitrr.ac.in

COURSE OF STUDY AND SCHEME OF EXAMINATION OF B.TECH
NATIONAL INSTITUTE OF TECHNOLOGY, RAIPUR

Branch- Computer science & Engineering   **Course- B.Tech.(NIT Scheme)**

Semester- VII

S.No.	Board of Studies	Sub. Code	Subject Name	Periods/week			Examination Scheme					Total Marks	Credits L+(T+P)/2
				L	T	P	TA	FE	SE	T.C.A	ESE		
1	Comp. Sc. & Engg.	CS20711(CS)	Artificial Intelligence & Expert System	3	1	-	20	15	15	50	70	120	4
2	Comp. Sc. & Engg.	CS20712(CS)	Network Programming	3	1	-	20	15	15	50	70	120	4
3	Comp. Sc. & Engg.	(Refer Table-1)	Elective-I	3	1	-	20	15	15	50	70	120	4
4	Comp. Sc. & Engg.	(Refer Table-2)	Elective-II (Professional)	4	1	-	20	15	15	50	70	120	5
5	Comp. Sc. & Engg.	CS20721(CS)	Artificial Intelligence & Expert System(Lab)	-	-	3	30	-	-	30	20	50	2
6	Comp. Sc. & Engg.	CS20722(CS)	Networking Programming Lab	-	-	3	30	-	-	30	20	50	2
7	Comp. Sc. & Engg.	CS20723(CS)	Pract. Training	-	-	-	50	-	-	50	-	50	2
8	Comp. Sc. & Engg.	CS20724(CS)	Minor Project	-	-	12	100	-	-	100	50	150	6
9	Comp. Sc. & Engg.	CS20725(CS)	Seminar & Report writing	-	-	2	50	-	-	50	-	20	1
			Total	13	4	20	340	60	60	460	370	830	30

H.O.D
Comp.Sc. & Engg**.**

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Elective-I

(Table-1)

S.No.	Board of Studies	Subject Code	Subject Name
1	Comp. Science & Engg	CS20731(CS)	Digital Image Processing
2	Comp. Science & Engg	CS20732(CS)	Enterprise Resource Planning
3	Comp. Science & Engg	CS20733(CS)	Natural Language Processing
4	Comp. Science & Engg	CS20734(CS)	Real time Systems
5	Comp. Science & Engg	CS20735(CS)	Logical & Functional Processing
6	Comp. Science & Engg	CS20736(CS)	Flexible Elective(Subject will be decided by the department as per the latest requirement of Academic/Industries)
7	Comp. Science & Engg	CS20737(CS)	Flexible Elective(Subject will be decided by the department as per the latest requirement of Academic/Industries)
8	Comp. Science & Engg	CS20738(CS)	Flexible Elective(Subject will be decided by the department as per the latest requirement of Academic/Industries)
9	Comp. Science & Engg	CS20739(CS)	Flexible Elective(Subject will be decided by the department as per the latest requirement of Academic/Industries)
10	Comp. Science & Engg	CS207310(CS)	Flexible Elective(Subject will be decided by the department as per the latest requirement of Academic/Industries)

Elective-II

(Table-2)

S.No.	Board of Studies	Subject Code	Subject Name
1	Comp. Science & Engg	CS20741(CS)	Advanced Computer Architecture
2	Comp. Science & Engg	CS20742(CS)	Advanced Operating System
3	Comp. Science & Engg	CS20743(CS)	Advanced Data Base Systems
4	Comp. Science & Engg	CS20744(CS)	Internet Working with TCP/IP
5	Comp. Science & Engg	CS20745(CS)	Flexible Elective(Subject will be decided by the department as per the latest requirement of Academic/Industries)
6	Comp. Science & Engg	CS20746(CS)	Flexible Elective(Subject will be decided by the department as per the latest requirement of Academic/Industries)
7	Comp. Science & Engg	CS20747(CS)	Flexible Elective(Subject will be decided by the department as per the latest requirement of Academic/Industries)
8	Comp. Science & Engg	CS20748(CS)	Flexible Elective(Subject will be decided by the department as per the latest requirement of Academic/Industries)
9	Comp. Science & Engg	CS20749(CS)	Flexible Elective(Subject will be decided by the department as per the latest requirement of Academic/Industries)
10	Comp. Science & Engg	CS207410(CS)	Flexible Elective(Subject will be decided by the department as per the latest requirement of Academic/Industries)

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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING
SYLLABUS

Name of Subject	Artificial Intelligence & Expert System	Subject Code	CS20711(CS)
Semester	B.Tech VII Sem	Board of Studies	Comp. Sc. & Engg.
Maximum Marks	70	Minimum Marks	28
Lecture Periods/Week	Tutorial Periods/Week	Practical Periods/Week	Credits
3	1		4

UNIT I - Overview & Search Techniques:-
Introduction to AI, Problem Solving, State space search, Blind search: Depth first earch, Breadth first search, Informed search : Heuristic function, Hill climbing search, Best first search, A* & AO* Search, Constraint satisfaction. Game tree, Evaluation function, Mini-Max search, Alpha-beta pruning, Games of chance.

UNIT II - Knowledge Representation (KR):-
Introduction to KR, Knowledge agent, Predicate logic, WFF, Inference rule & theorem proving: forward chaining, backward chaining, resolution; Propositional knowledge, Boolean circuit agents. Rule Based Systems, Forward reasoning: Conflict resolution, backward reasoning: Use of backtracking, Structured KR: Semantic Net - slots, Inheritance, Frames exceptions and defaults attached predicates, Conceptual Dependency formalism, Other knowledge representations.

UNIT III - Handling uncertainty & Learning: -
Source of uncertainty, Probabilistic inference, Bayes' theorem, Limitation of naïve Bayesian system, Bayesian Belief Network (BBN), Inference with BBN, Dempster-Shafer Theory, Overview of Fuzzy Logic, Non monotonic reasoning: Dependency directed backtracking, Truth maintenance systems. Learning: Concept of learning, Learning model, learning decision tree, Paradigms of machine learning, Supervised & Unsupervised learning, Example of learning, Learning by induction, Learning using Neural Networks.

UNIT IV - Natural Language Processing (NLP) & Planning :-
Overview of NLP tasks, Parsing, Machine translation, Components of Planning System, Planning agent, State-Goal & Action Representation, Forward planning, Backward chaining, Planning example : partial-order planner, Block world.

UNIT V - Expert System & AI languages:-
Need & Justification for expert systems- cognitive problems, Expert System Architectures, Rule based systems, Non production system, knowledge acquisition, Case studies of expert system. AI language: Prolog syntax, Programming with prolog, Back tracking in prolog, Lisp syntax, Lisp programming.

Text Books :-
1. Elaine Rich and Kevin Knight: Artificial Intelligence- Tata MeGraw Hill.
2. Dan W.Patterson Introduction to Artificial Intelligence and Expert Systems- Prentice Hal of India.

Reference Books :-
1. Nils J.Nilsson: Principles of Artificial Intelligence- Narosa Publishing house.
2. Clocksin & C.S. Melish; Programming in PROLOG- Narosa Publishing house.
3. M. Sasikumar, S.Ramani, et. al.: Rule based Expert Systems (A practical Introduction) Narosa Publishing House.

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Name of Subject	Network Programming	Subject Code	CS20712(CS)
Semester	B.Tech VII Sem	Board of Studies	Comp. Sc. & Engg.
Maximum Marks	70	Minimum Marks	28
Lecture Periods/Week	Tutorial Periods/Week	Practical Periods/Week	Credits
3	1		4

UNIT- I NETWORKING & TCP/IP:
Communication protocols, Network architecture, UUCP, XNS, IPX/SPX for LANs, TCP & IP headers,IPv4 & v6 address structures, Programming Applications: Time & date routines, Internet protocols: Application layer, Transport layer, Network layer, Datalink layer protocols, Chat, Email, Web server working method & programming.

UNIT-II UNIX SOCKET PROGRAMMING IN C:
Creating sockets, Posix data type, Socket addresses, Assigning address to a socket, Java socket programming, Thread programming, Berkeley Sockets: Overview, socket address structures, byte manipulation & address conversion functions, elementary socket system calls – socket, connect, bind, listen, accept, fork, exec, close, TCP ports (ephemeral, reserved),Berkeley Sockets: I/O asynchronous &multiplexing models, select & poll functions, signal & fcntl functions, socket implementation (client &server programs), UNIX domain protocols.

UNIT- III WINSOCK PROGRAMMING:
Windows socket API, window socket & blocking I/O model, blocking sockets, blocking functions, timeouts for blocking I/O, API overview, Different Winsock APIs & their programming technique.

UNIT- IV JAVA SOCKET PROGRAMMING:
Java network programming, packages, RMI, Client side programming: Creating sockets, Implementing generic network client, Server side programming: Steps for creating server, Accepting connection from browsers, Adding multithreading to a server.

UNIT- V ADVANCE JAVA WEB PROGRAMMING:
Parsing data using string Tokenizer, Retrieving file from an HTTP server, Retrieving web documents byusing the URL class. Overview of Javascript, Introduction to Java Beans, Introduction to CGI programming.

Name of Text Books:-
1. Steven.W.R: UNIX Network Programming, PHI (VOL I& II)
2. Window Socket Programming by Bobb Quinn and Dave Schutes
3. Davis.R.: Windows Network Programming, Addison Wesley
4. NETWORK PROGRAMMING With Windows Socket By Baner .P., PH NewJersey.

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Name of Subject	Digital Image Processing	Subject Code	CS20731(CS)
Semester	B.Tech VII Sem	Board of Studies	Comp. Sc. & Engg.
Maximum Marks	70	Minimum Marks	28
Lecture Periods/Week	Tutorial Periods/Week	Practical Periods/Week	Credits
3	1		4

Unit I: Introduction:
Image formation model, Spatial & Gray level resolution, Image enhancement in special domain: Piecewise transformation functions, Histogram equalization, Histogram specification, image averaging, spatial filters-smoothing and sharpening, Laplacian filter, Canny edge detector.

Unit II: Image enhancement in frequency domain & Image Segmentation:
2D discrete fourier transform & its inverse, filtering in frequency domain, Ideal & Gaussian low pass filters, High pass filtering, FFT, Line detection, Edge detection, Edge linking & boundary detection, Thresholding, Region based segmentation.

Unit III: Morphological Image Processing:
Logic operations involving binary image, Dialation & Erosion, Opening & Closing, Applications to Boundary extraction, region filling, connected component extraction.

Unit IV: Image Compression:
Coding redundancy- Huffman coding, LZW coding, run length coding, Lossy compression- DCT, JPEG, MPEG, video compression.

Unit V: Image Representation & 3D:
Boundary descriptors, Shape numbers, Texture, Projective geometry, Correlation based and feature based stereo correspondence, shape from motion, optical flow.

Name of Text Books:-
1. Ganzalez and Woods, Digital Image Processing, Pearson education.
2. Sonka and Brooks, Image Processing, TSP ltd,

Name of Reference Books :-
1. Jain and Rangachar, Machine Vision, MGH.
2. Schalkoff, Digital Image Processing, John Wiley and sons.

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Name of Subject	Enterprise Resource Planning	Subject Code	CS20732(CS)
Semester	B.Tech VII Sem	Board of Studies	Comp. Sc. & Engg.
Maximum Marks	70	Minimum Marks	28
Lecture Periods/Week	Tutorial Periods/Week	Practical Periods/Week	Credits
3	1		4

UNIT – I OVERVIEW OF BUSINESS FUNCTIONS :
Business function in an organization, material management, scheduling, shop floor control. Forecasting, accounting & finance, human resources, productivity management.

UNIT- II TYPICAL BUSINESSS PROCESSES
Core processes, product control, sales order processing, purchase, administrative process, human resource, finance support processes, marketing, strategic planning, research & development problems in traditional functional view. Need for integrated process view, information as a resource, motivation for ERP.

UNIT – III EVOLUTION OF INFORMATION SYSTEM
EDP (electronic data processing) system, management information systems (MIS), executive information systems, information needs of organization, ERP as an integrator of information needs at various levels, decision making involved at the above level.

UNIT – IV ERP MODELS /FUNCTIONALITY
Sales-order-processing, MRP, scheduling, forecasting, maintenance, distribution, finance, features of each of the models description of data flows across module, overview of the supporting databases, technologies required for ERP.

UNIT – V IMPLEMENTATION ISSUES
Pre Implementation issues, financial justification of ERP, evaluation of commercial software during implementation issues, reengineering of various business process, education & training, project management, post implementation issues, performance measurement.

Name of Text Books:
1. V.K. Garg & N.K. Venkatkrishnan ; ERP, concepts & practices, PHI.
2. S. Sadagopan : MIS, PHI

Name of Reference Books :-
1. V. Rajaraman : Analysis & Design of Information Systems, PHI
2. K. M. Hussain & D. hussain ; Information systems, Analysis, Design & Implementation,TMH.
3. MONAK & BRADY : Concepts in ERP, vikas pub. Thomson
4. J. Kanter : Managing with information, PHI.

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Name of Subject	Natural Language Processing	Subject Code	CS20733(CS)
Semester	B.Tech VII Sem	Board of Studies	Comp. Sc. & Engg.
Maximum Marks	70	Minimum Marks	28
Lecture Periods/Week	Tutorial Periods/Week	Practical Periods/Week	Credits
3	1		4

Unit –I Introduction & Syntactic processing
The study of Language, Linguistic background, Grammars and Parsing, Features and Augmented Grammars, Grammars for Natural Language, Towards Efficient Parsing, Ambiguity Resolution.

Unit -II Semantic Interpretation
Semantics and Logical Form, Linking Syntax and Semantics, Ambiguity Resolution, Strategies for Semantic Interpretation, Scoping and the Interpretation of Noun Phrases.

Unit -III Pragmatics
Discourse: Reference Resolution, Syntactic and Semantic Coherence, Text Coherence, An Inference based resolution algorithm. Dialogue and Conversational Agents: What makes dialogue different? Dialogue structure and coherence.

Unit –IV Natural language Generation
Introduction to language generation, an architecture for generation, surface realization, systemic grammar, functional unification grammar, discourse planning.

Unit –V Machine Translation
Language Similarities and Differences, transfer metaphor, syntactic transformations, lexical transfer, idea of interlingua, direct translation, using statistical Techniques

Name of Text Books:
1. Speech and Language Processing, by Jurafsky, D. & Martin, J.H.
2. Natural Language Understanding (2nd ed.), Allen, J

Name of Reference Books:
1. Foundations of General Linguistics (2nd ed.) by Atkinson, M, Kilby, D A & Roca, I
2. An Introduction to Language (5th ed.), Fromkin, V & Rodman, R
3. Natural Language Processing for Prolog Programmers, by Covington, M A
4. Natural language processing in Prolog: an introduction to computational linguistics, By Gazdar, G & Mellish, C

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Name of Subject	Real Time System	Subject Code	CS20734(CS)
Semester	B.Tech VII Sem	Board of Studies	Comp. Sc. & Engg.
Maximum Marks	70	Minimum Marks	28
Lecture Periods/Week	Tutorial Periods/Week	Practical Periods/Week	Credits
3	1		4

Unit-I Basic Real- Time Concepts, Computer Hardware, Language Issues:
Basic component Architecture, terminology, Real Time Design Issues, CPU, Memories, Input- Output, Other Devices Language Features, Survey of Commonly Used Programming Languages, Code Generation

Unit- II Software life cycle, Real Time Specification and Design Techniques, Real Time Kernels:
Phases of software life cycle, Non-temporal Transition in the software life cycle, Spiral model, Natural languages, Mathematical Specification, Flow Charts, Structure Charts, Pseudo code and programmable Design Languages, Finite state Automata, Data Flow Diagrams, Petrinets, Statecharts, Polled Loop Systems, phase/State Driven Code,
Coroutines, Interrupt Driven System, Foreground/Background Systems Full Featured Real Time OS

Unit-III Inter task Communication and Synchronization, Real Time memory Management, System Performance Analysis and Optimization:
Buffering Data, Mail boxes Critical Region, Semaphores, Event Flags and Signals ,Deadlock, Process Stack Management, Dynamic Allocation, Static Schemes, Response Time Calculation, Interuupt Latency, Time Loading and its Measurement, Scheduling NP Complete, Relocating Response Times And time Loading, Analysis of Memory Requirements, Reducing Memory Loading, I/O Performance.

Unit-IV Queuing Models, Reliability, Testing, And Fault Tolerance, Multiprocessing Systems:
Basic Buffer size Calculation, Classical Queuing Theory, Little's Law, Faults, Failures ,bugs AND effects.\, Reliability, Testing, Fault Tolerence, Classification of Architectures, Distributed Systems, Non Von Neumann Architectures.

Unit-V Hardware/ Software Integration, Real Time Applications:
Goals of Real Time System Integration, Tools, Methodology, The Software Hesisenberg Uncertainity Principle, Real Time Systems As Complex System, First Real Time Application Real Time Databases, Real time Image Processing Real Time UNIX, building Real Time Applicaions with Real Time Programming Languages.

Text Books :
1. Real Time System, Jane W.S.Liu
2. Real Time Systems Design and Analysis by Phillip A. Laplante,PHI

Reference Books:
1. Hard Real Time Computing Systems Predictablle Scheduling Algorithms and applications By Giorgio C. Buttazzo
2. Real Time Design Patterns: Robust Scalable Architecture for Real Time System by Bruce Powel Douglass
3. Real Time System: Scheduling, Analysis and Verification by Albert M. K. Cheng

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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING
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Name of Subject	Logical & Functional Processing	Subject Code	CS20735(CS)
Semester	B.Tech VII Sem	Board of Studies	Comp. Sc. & Engg.
Maximum Marks	70	Minimum Marks	28
Lecture Periods/Week	Tutorial Periods/Week	Practical Periods/Week	Credits
3	1		4

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.

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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING
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Name of Subject	Advanced Computer Architecture	Subject Code	CS20741(CS)
Semester	B.Tech VII Sem	Board of Studies	Comp. Sc. & Engg.
Maximum Marks	70	Minimum Marks	28
Lecture Periods/Week	Tutorial Periods/Week	Practical Periods/Week	Credits
4	1		5

Unit I: Pipeline:
Linear pipeline processor: Nonlinear pipeline processor, Instruction pipeline design, Mechanisms, Dynamic instruction scheduling, Arithmetic pipeline design, Super-scalar processors, VLIW architecture.

Unit II: Memory Hierarchy & I/O organization:
Cache memories, Cache coherence, High bandwidth memories, High bandwidth I/O, Disk I/O, Bus specifications and standards.

Unit III: Parallel Computer Models & Program parallelism:
Classification of Machines, SISD, SIMD & MIMD, Condition of parallelism, data and resource dependencies, Program partitioning & scheduling, grain size latency, control flow versus data control, data flow architecture.

Unit IV: Synchronous Parallel Processing:
Vector instruction types, vector access memory schemes, vector and symbolic processors, SIMD architecture, SIMD parallel algorithms, SIMD computers and performance enhancements.

Unit V: System Interconnection:
Network properties and routing, static interconnection networks, dynamic interconnection networks, Multiprocessor system interconnection, Multistage & combining networks.

Name of Text Books:-
1. Flynn, computer Architecture: Pipelined and parallel processor design, JB, Boston.
2.Computer Architecture & Parallel processing - Kai Hwang 7 Briggs.(MGH).

Name of Reference Books :-
1. R.W. Hockney, C.R. Jesshope, "Parallel Computer 2 –Arch..& Algo.", Adam Hilger.
2. K. Hwang, "Advanced Computer Architecture with ParallelProgramming", MGH.
3.Parallel computing- Theory and practice - Michael J Quinn- Mc Graw Hill

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Name of Subject	Advanced Operating System	Subject Code	CS20742(CS)
Semester	B.Tech VII Sem	Board of Studies	Comp. Sc. & Engg.
Maximum Marks	70	Minimum Marks	28
Lecture Periods/Week	Tutorial Periods/Week	Practical Periods/Week	Credits
4	1		5

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 WINDOWSOS 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.

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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING
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Name of Subject	Advanced Database System	Subject Code	CS20743(CS)
Semester	B.Tech VII Sem	Board of Studies	Comp. Sc. & Engg.
Maximum Marks	70	Minimum Marks	28
Lecture Periods/Week	Tutorial Periods/Week	Practical Periods/Week	Credits
4	1		5

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 intra operation 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

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G.E. Road, Raipur – 492010 (CG)

Phone: (0771) 225 42 00
Fax: (0771) 225 46 00
Email:
director.nitrr@rediffmail.com
Website: www.nitrr.ac.in

DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING
SYLLABUS

Name of Subject	Inter Networking with TCP/IP	Subject Code	CS20744(CS)
Semester	B.Tech VII Sem	Board of Studies	Comp. Sc. & Engg.
Maximum Marks	70	Minimum Marks	28
Lecture Periods/Week	Tutorial Periods/Week	Practical Periods/Week	Credits
4	1		5

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,MBONE.

UNIT –IV TCP IMPLEMENTATION
TCP operation, TCP state machine, Timers, events and messages, timer process, deleting and inserting timer event, flow control and adaptive retransmission, congestion avoidance and control, urgent data processing and push function.

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)

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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING
SYLLABUS

Name of Subject	Artificial Intelligence & Expert System Lab	Subject Code	CS20721(CS)
Semester	B.Tech VII Sem	Board of Studies	Comp. Sc. & Engg.
Maximum Marks		Minimum Marks	
Lecture Periods/Week	Tutorial Periods/Week	Practical Periods/Week	Credits
-	-	2	1

Experiments to be performed:
(i) Write a prolog program to find the rules for parent, child, male, female, son, daughter, brother, sister, uncle, aunt, ancestor given the facts about father and wife only.
(ii) Write a program to find the length of a given list
(iii) Write a program to find the last element of a given list
(iv) Write a program to delete the first occurrence and also all occurrences of a particular element in a given list.
(v) Write a program to find union and intersection of two given sets represented as lists.
(vi) Write a program to read a list at a time and write a list at a time using the well defined read & write functions.
(vii) Write a program given the knowledge base, If x is on the top of y, y supports x. If x is above y and they are touching each other, x is on top of y. A cup is above a book. The cup is touching that book. Convert the following into wffs, clausal form; Is it possible to deduce that `The book supports the cup'.
(viii) Write a program given the knowledge base, If Town x is connected to Town y by highway z and bikes are allowed on z, you can get to y from x by bike. If Town x is connected to y by z then y is also connected to x by z. If you can get to town q from p and also to town r from town q, you can get to town r from town p. Town A is connected to Town B by Road
1. Town B is connected to Town C by Road
2.Town A is connected to Town C by Road
3. Town D is connected to Town E by Road
4. Town D is connected to Town B by Road
5. Bikes are allowed on roads 3, 4, 5.
Bikes are only either allowed on Road 1 or on Road 2 every day. Convert the following into wff's, clausal form and deduce that `One can get to town B from town D'.
(ix) Solve the classical Water Jug problem of AI.
(x) Solve the classical Monkey Banana problem of AI.
(xi) Solve the classical Crypt arithmetic problems such as DONALD + GERALD = ROBERT of AI.
(xii) Solve the classical Missionary Cannibals problem of AI.
(xiii) Solve the classical Travelling Salesman Problem of AI.
(xiv) Solve the classical Blocks World Problem of AI.
(xv) Write a program to search any goal given an input graph using AO* algorithm.
List of Equipments/Machine required :
(i) PC with Wndows XP
(ii) Visual prolog compiler
Recommended Books :
(i) Ivan Bratko : Logic & prolog programming.
(ii) Carl Townsend : Introduction to Turbo Prolog, (BPB, Publication).
(iii) W.F. Clocksin & Mellish : Programming in PRLOG (Narosa Publication House)

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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING
SYLLABUS

Name of Subject	Networking Programming Lab	Subject Code	CS20722(CS)
Semester	B.Tech VII Sem	Board of Studies	Comp. Sc. & Engg.
Maximum Marks		Minimum Marks	
Lecture Periods/Week	Tutorial Periods/Week	Practical Periods/Week	Credits
-	-	3	1

(JAVA NETWORK PROGRAMMING)

1. Write an echo program with client and iterative server using TCP.

2. Write an echo program with client and concurrent server using TCP.

3. Write an echo program with client and concurrent server using UDP.

4. Write a program to retrieve date and time using TCP.

5. Write a program to retrieve date and time using UDP.

6. Write a client and server routines showing Blocking I/O.

7. Write a client and server routines showing I/O multiplexing.

8. Write an echo client and server program using Unix domain stream socket.

9. Write an echo client and server program using Unix domain Datagram socket.

10. Write a client and server program to implement file transfer.

11. Write a client and server program to implement the remote command execution

12. Write a client program that gets a number from the user and sends the number to server for conversion
    into hexadecimal and gets the result from the server.

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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING
<u>SYLLABUS</u>

Name of Subject	Report Writing and Seminar	Subject Code	CS20725(CS)
Semester	B.Tech VII Sem	Board of Studies	Comp. Sc. & Engg.
Maximum Marks		Minimum Marks	
Lecture Periods/Week	Tutorial Periods/Week	Practical Periods/Week	Credits
-	-	2	1

Unit -I
Introduction to Technical Writing: how differs from other types of written communication Purpose of technical writing, Correspondence: prewriting, writing and rewriting Objectives of Technical Writing. Audience Recognition: High-tech audience, Low tech audience, Lay audience, Multiple Audience.

Unit - II
Correspondence: Memos, Letters, E-mails, Its differentiation, types of letters, Document Design, its importance, Electronic Communication: Internet, Intranet, extranet, Writing effective e-mail.

Unit - III
Summary: Report Strategies, Effective style of technical report writing: Structures: content, introduction, conclusions, references, etc., Presentation, Writing first draft, revising first draft, diagrams, graphs, tables, etc. report lay-out.

Unit -IV
Report Writing: Criteria for report writing, Types of Report: Trip report, Progress report, lab report, Feasibility report, project report, incident report, etc. Case Studies.

Unit -V
Proposals & Presentation: Title page, Cover letter, Table of Content, list of illustrations, summary, discussion, conclusion, references, glossary, appendix, Case Studies. Oral Presentation/ Seminar:

Text Books:
1. Sharon J. Gerson & Steven M. Gerson "Technical Writing - Process& Product", Pearson Education.

Reference Books:
1. Sunita Mishra, "Communication Skills for Engineers" Pearson Education
2. Davies J.W. "Communication for engineering students", Longman
3. Eisenberg, "Effective Technical Communication", Mc. Graw Hill.