SCHEME OF INSTRUCTION & EXAMINATION
MCA II YEAR
Faculty of Information Technology
Proposed for Academic year 2010-2011

Sl. No.	Syllabus Ref. No.	SUBJECT	Scheme of Instructions		Scheme of Examination		
			Periods per week		Dura-tion in Hrs	Maximum Marks	
			L/T	D/P		Univ. Exam	Sessi-onals
		II YEAR I SEMESTER					
1	CS 701	Software Engineering	4	-	3	80	20
2	CS 702	Data Base Management Systems	4	-	3	80	20
3	CS 703	Design and Analysis of Algorithms	4	-	3	80	20
4	CS 704	Operating Systems	4	-	3	80	20
5	CS 705	Operations Research	4	-	3	80	20
		Practicals					
1	CS 731	Programming Lab-V (DBMS Programming)	-	3	3	50	25
2	CS 732	Programming Lab-VI (OS Lab)	-	3	3	50	25
		TOTAL	**20**	**6**	**-**	**500**	**150**
		II YEAR II SEMESTER					
1	CS 751	Data Warehousing and Data Mining	4	-	3	80	20
2	CS 752	Computer Networks	4	-	3	80	20
3	CS 753	Unix Programming	4	-	3	80	20
4	CS 754	Web Programming	4	-	3	80	20
		Elective (any one)	4	-	3	80	20
1	CS 755	Artificial Intelligence					
2	CS 756	Distributed Systems					
3	CS 757	Information Systems Control & Audit					
4	CS 758	Information Retrieval Systems					
		Practicals					
1	CS 781	Programming Lab-VII (Unix Programming Lab)	-	3	3	50	25
2	CS 782	Programming Lab-VIII (Web Programming Lab)	-	3	3	50	25
		TOTAL	**20**	**6**	**-**	**500**	**150**

CS -701

SOFTWARE ENGINEERING

Instruction	4 periods per week
Duration of University Examination	3 Hours
University Examination	80 marks
Sessional	20 marks

Unit- I

The software Problem: cost, Schedule and Quality, Scale and Change

Software processes: Process and project, Component Software Processes, Software Development process Models, Project management Process

Unit - II

Software Requirement Analysis and Specification : Value of a good SRS, Requirements process , Requirements specification, Functional Specification with Use Cases, Other approaches for analysis.

Software Architecture: Role of Software Architecture, Architecture Views, Component and Connector view, Architecture Styles for C and C View, Documenting Architecture Design, evaluating Architectures.

Unit – III

Planning a Software Project: Effort Estimation, Project Schedule and staffing, Quality Planning, Risk Management Planning, Project Monitoring Plan, Detailed scheduling,

Design: Design concepts, Function oriented Design, Object Oriented Design, Detailed Design, Verification, Metrics

Unit – IV

Coding and Unit Testing: Programming Principles and Guidelines, Incrementally developing code, managing evolving code, unit testing, code inspection, Metrics

Testing: Testing Concepts, Testing Process, Black Box testing, White box testing, Metrics

Unit – V

Maintenance and Reengineering: Software Maintenance, supportability, Reengineering, Business process Reengineering, Software reengineering, Reverse engineering, Restructuring, Forward engineering, Economics of Reengineering

Software process Improvement: introduction, SPI Process, CMMI, PCMM, Other SPI Frameworks, SPI return on investment, SPI trends

Suggested Readings:

1)   Pankaj Jalote, "Software Engineering- A Precise Approach", Wiley India, 2010.

2) Roger S.Pressman, "Software Engineering – Apractitioner's Approach", Seventh Edition, McGrawHill Higher Education, 2010

3) Deepak Jain, "Software Engineering", Oxford University Press, 2009.

4) Rajib Mall, "Fundamentals of Software Engineering", Third Edition, PHI, 2009.

5) Sommerville, "Software Engineering", Seventh Edition, Pearson Education, 2007.

CS 702

DATABASE MANAGEMENT SYSTEMS

Instruction	4 periods per week
Duration of University Examination	3 Hours
University Examination	80 marks
Sessional	20 marks

Unit- I
Introduction to DBMS & ER Model: File systems Versus DBMS, Advantages of a DBMS, Database Design & ER diagrams, Entities, Attributes & Entity sets, Relationships, and relationship sets, Additional features of the ER model, conceptual Design with the ER Model .

The Relational Model: Introduction to the Relational Model, Integrity Constraints over Relations, logical Database Design(ER to Relational), Introduction to Views, Destroying/Altering Tables and views.

Schema Refinement and Normal Forms: Schema Refinement, functional dependencies, normal Forms, normalization, Schema refinement in Database Design.

Unit - II
Relational Algebra and Calculus: Preliminaries, Relational Algebra, Relational calculus, Expressive power of algebra and calculus.

SQL : Queries, Constraints, Triggers : The form of Basic SQL query, Set operators, nested Queries, aggregate functions, null values, Triggers and Active database, designing active databases, Accessing databases from applications using embedded SQL, Cursors, Dynamic SQL.

Unit- III
Overview of Storage and Indexing: File Organizations and Indexing, Index data Structures, Comparison of files Organizations.

Tree-Structured indexing: Indexed sequential access method(ISAM),
B+ Trees, search, Insert, delete, B+ Trees in Practice.
Hash-Based Indexing: Static Hashing, Extendable Hashing, Linear Hashing, Extendible Hashing versus Linear Hashing.

Unit-IV
Transaction Management: ACID properties, Transactions and schedules, concurrent execution of transactions, lock-based Concurrency control.
Concurrency Control: 2PL,Serializability,and recoverability, Introduction to lock management, Dealing with deadlock, Specialized locking techniques, concurrency control without locking.

Unit- V
Crash Recovery: Introduction to ARIES, The Log, Other Recovery related Structures, The WAL, Checkpointing , Recovering from a System Crash, Media Recovery.
Security & Authorization: Introduction to database security, access control, discretionary Access Control, mandatory access control, Additional Issues related to security.

Suggested Readings

1) Raghu Ramakrishnan, Johannes Gehrke, "Database Management Systems". Third Edition, McGraw Hill, 2003.

2) Abraham Silberschatz, Henry F Korth, S Sudharshan, "Database System Concepts", Sixth Edition, McGraw-Hill International Edition, 2011

3) Peter Rob, Carlos Coronel, " Database System Concepts", Cengage Learning, 2008.

4) Ramez Elmasri, Durvasul VLN Somayajulu, Shamkant B Navathe, Shyam K Gupta, "Fundamentals of Database- Systems", Fourth Edition, Pearson Education, 2006

CS 703

DESIGN And ANALYSIS OF ALGORITHMS

Instruction	4 periods per week
Duration of University Examination	3 Hours
University Examination	80 marks
Sessional	20 marks

UNIT -I

Introduction: What is an algorithm. Algorithm Specification. Performance analysis. Randomized Algorithms.

Elementary Data Structures: Stacks and Queues, Trees, Dictionaries, Priority Queues, Sets and Disjoint Set Union, Graphs.

UNIT -II

Divide and conquer: The General Method, Binary Search, Finding The Maximum And Minimum, Merge Sort, Quick Sort And Selection Stressen's Matrix Multiplication, Convex Hull.

The Greedy Method : Knapsack Problem, Tree Vertex Splitting, Job Sequencing With Deadlines, Minimum-Cost Spanning Trees, Optimal Storage On Tapes, Optimal Merge Patterns, Single Source Shortest Paths

UNIT -III

Dynamic Programming: General Method, Multistage Graphs, All Pairs Shortest Path, Signal –Source Short Paths, Optimal Binary Search Trees, 0/1 Knapsack, Reliability Design ,Traveling Salesperson Problem.
Basic Traversal and Search Techniques: Techniques for Binary trees, Techniques for Graphs, Connected Components and Spann~ng Trees, Biconnected Components and DFS.
UNIT -IV

Back-tracking: General Method , 8- queens problem, Sum of Subsets, Graph coloring , Hamiltonian Cycles, Knapsack problem,

Branch- bound: The Method, 0/1 Knapsack Problem, Traveling Salesperson .

UNIT -V

NP- hard and NP – complete Problems: Basic Concepts, Cook's Theorm, NP-Hard Graph Problems, NP –Hard Scheduling Problems, NP-Hard Code Generation , Some Simplified NP-Hard Problems.

Suggested Reading:

1) E Horowitz, S Sahni, S Rajasekaran, "Fundamentals of Computer Algorithms", Second Edition, University Press, 2007.

2) R.Pannerselvam, "Design and Analysis of Algorithms", PHI, 2007.

3) Hari Mohan Pandey, "Design, Analysis and Algorithm", University Science Press, 2009.
4) Udit Agarwal, "Algorithm Design & Analysis", Dhanpat Rai, 2008

5) TH Cormen, CE Leiserson, RL Rivert, C Stein, "Introduction to Algorithm", Third Edition, PHI, 2010.

6) PH Dave, HB Dave, " Design and Analysis of Algorithm", Pearson Education, 2008

CS 704

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OPERATING SYSTEMS

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Instruction	4 periods per week
Duration of University Examination	3 Hours
University Examination	80 marks
Sessional	20 marks

UNIT - I

Introduction to Operating Systems : OS structure and strategies, Process concept, Interprocess communication, Threads, Multithreaded Programming.

Process Scheduling: Scheduling Criteria, Scheduling Algorithms, Multi Processor scheduling, Thread Scheduling.

UNIT - II

Memory Management, swapping, contiguous allocation, paging, Static and dynamic partition, demand paging, page replacement algorithms, thrashing, segmentation, segmentation with Paging.

File System Interface — File Concept, Access Methods, Directory Structure, File System Mounting, File sharing, Protection.

File System Implementation : File-System Structure, File-System Implementation, Directory

Implementation, Allocation Methods and Free Space management, Efficiency and Performance, Recovery.

UNIT - III

Process synchronization : Critical Section problem, Semaphores, monitors.
Dead Locks : Necessary conditions, resource allocation graph, methods for handling deadlocks, preventions, avoidance, detection and recovery.
Protection – Goal, domain of protection, access matrix.

UNIT - IV

Device Management : Disk Structure, Disk Attachment, Disk Scheduling, Disk Management, Swap Space Management, RAID structure, Stable storage Implementation.

I/O System : I/O hardware, Application I/O Interface, Kernel I/O Subsystem, Transforming I/O request to hardware operation, STREAMS

UNIT - V

Case Studies
Linux System : Design Principles, Kernel Modules, Process Management, Scheduling Memory Management, File Systems, Input and Output, Inter-process Communication, Network Structure, Security.

Windows XP – General Architecture. The NT Kernel, The NT Executive.

Suggested Readings :

1) Abraham Silberschatz,Peter B.Galvin, Ger Gagne, " Operating System Concepts" Wiley India, 2006.
2) Andres S.Tanenbaum, "Modern Operating Systems", 3rd ed. PHI, 2009.
3) Robert Love, "Linux Kernel Development", Pearson Ed, 2004.
4) William Stallings, " Operating Systems" 6th ed, PHI, 2009

CS 705

OPERATIONS RESEARCH

Instruction	4 periods per week
Duration of University Examination	3 Hours
University Examination	80 marks
Sessional	20 marks

Unit-I

Linear Programming: Introduction, Concept of Liner programming Model, Development of LP models, Graphical Method, Linear Programming Methods, Special cases of Linear Programming, Duality Sensitivity Analysis.

Unit-II

Transportation problem: Introduction, Mathematical Model for Transportation Problem, Types of Transportation Problem, Methods to solve Transportation Problem, Transshipment Model.

Unit-III

Assignment Problem: Introduction, Zero- One Programming Model, Types of Assignment Problem, Hungarian Method., Branch-and-Bound Technique for Assignment Problem.
Integer Programming: Introduction, Integer Programming Formulations, The Cutting – Plane Algorithm, Branch-and-Bound Technique, Zero-One Implicit Enumeration Algorithm.

Unit-IV

Dynamic Programming: Introduction, Applications of Dynamic Programming, Solution of Linear Programming Problem through Dynamic Programming.

Unit-V

Game Theory: Introduction, Game with Pure Strategies, Game with Mixed Strategies, Dominance Property, Graphical Method for 2 x n or m x 2 Games, Linear Programming Approach for Game Theory.

Suggested Reading:

1) Pannarselvam, "Operations Research", 2nd ed, PHI, 2006.

2) Prem Kumar Guptha, DS Hira," Operations Research", S. Chand, 2010.

3) Rathindra P.Sen, "Operations Research-Algorithm and Application"PHI, 2010.

4) JK Sharma "Operations Research", Fourth Edition, Mac Millan, 2009

CS 731

Programming Lab -V
D B M S - LAB

Instruction	3 periods per week
Duration of University Examination	3 Hours
University Examination	50 marks
Sessional	25 marks

I. SQL / PL–SQL:

1. Creation of database (exercising the commands for creation)

2. Simple to complex condition query creation using SQL Plus.

3. Demonstration of blocks, cursors & database triggers.

II. Forms/Reports :

4. Creation of forms for the case study assigned.

5. Creation of Reports based on different queries.

6. Creating password and security features for applications.

7. Usage of file locking and table locking facilities in applications.

8. Creation of Small full fledged database application spreading over to 3 sessions.

Note:

(i)   Use Case Studies such as Library Information System, Pay roll system, Bank information system, Reservation system, Inventory system etc.

(ii)   The creation of Sample database for the purpose of the experiments is expected to be pre-decided by the instructor based on the case study assigned to the students.

(iii)   Preferable Oracle DBMS package should be used to carry the Lab experiments.

CS 732

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PROGRAMMING LAB-VI
(Operating Systems LAB)

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Instruction	3 periods per week
Duration of University Examination	3 Hours
University Examination	50 marks
Sessional	25 marks

1. Printing file flags for specified descriptor.

2. Print type of file for each command line arguments.

3. Recursively descends a directory hierarchy counting file types.

4. Program using process related system calls.

5. Programs to create threads.

6. Program using signals.

7. Echo server-using Pipes.

8. Echo Server-using messages.

9. Producer & Consumer Problem using Semaphores and Shared memory.

10. Producer & Consumer problem using message passing.

11. Readers and Writers problem using message passing.

12. Dining philosopher's problem using semaphores.

13. Program using File Locking

14. Understanding and submitting and assignment on RC scripts.

15. Programs using linux shell script (Note 2 Shell programs covering the salient features of Shell).

CS 751
Data Warehousing and Data Mining

Instruction	4 periods per week
Duration of University Examination	3 Hours
University Examination	80 marks
Sessional	20 marks

UNIT – I

Introduction: Motivation, Data Warehousing and Data Mining, Data Models, Data Warehousing and OLAP: User's Perspective, Data Mining: User's perspective, Related Disciplines, other Issues, Future Trends.
Frequent Pattern Matching: Introduction, Problem Definition, Mining association rules, applications, variations, Interestingness, FIM algorithms, Current Status, Optimal FIM algorithms, Incremental mining, conciseness of results, Sequential rules.

UNIT – II

Classification: Introduction, Problem definition, Applications, Evaluation of clusters, Other issues, Classification techniques, Optimal Classification algorithms, Regression.
Clustering: Introduction, Problem definition, Applications, Measurement of similarity, evaluation, classification of clustering algorithms, partitioning methods, Hierarchical Methods, Density Based Methods, Grid Based methods, Outlier detection

UNIT – III

Applications of Data Mining, Issues and Challenges, Current Trends.
Introduction to Data Warehousing: History, Demand for strategic information, Data warehouse Definition, Users, Benefits and Concerns.
Data Warehousing: Defining Features: Introduction, Features, Granularity, Information Flow mechanism, Metadata, Classes of data, Lifecycle of a data, Data Flow from warehouse to operational systems.

UNIT – IV

Architecture of a data warehouse: Introduction, Characteristics, Goals, Architecture, Data warehouse and data mart, issues, building data marts
Data warehouse Scheme: Introduction, Dimension Modeling, Star Schema, Snowflake schema, Aggregate tables, Fact Constellation, Strengths of DM, Data Warehouse and Data model.
Dimensional Modelling: Characteristics of dimension tables, Fact table, Factless fact table, updates, cyclicity of data.

UNIT – V

Dimensional Modeling: Other Types Of Dimension Tables, Keys To DW Schema, Enhancing Performance, Technology Requirements.
The ELT Process, Introduction, Data Extraction, Transformation, Loading, Quality.
OLAP in the Data warehouse: OLAP, Multidimensional analysis, Functions, Applications, Models, Design, Tools and Products, Data Design, Administration and performance, OLAP platforms.

Suggested Readings:

1) Vikram Pudi P. Radha Krishna, Data Mining, oxford University Press, 1st Ed 2009.
2) Reema Theraja. Data Warehousing, Oxford University Press, 2009.
3) Jiawei Han, Micheline Kamber. Data Mining – Concepts and Techniques, Morgan Kayufman, 2006.
4) Arun K. Pujari, Data Mining Techniques, University Press, 2nd Ed, 2009.
5) Pang-Ning Tan, Michael Steinbach, Vipin Kumar, Introduction to Data Mining, Pearson Education, 2008.
6) MH Dunham, " Data Mining", Pearson Education, 2009.
7) S. Anabory, " Data Warehousing in the real worlds", Pearson Education, 2009.

CS 752

COMPUTER NETWORKs

Instruction	4 periods per week
Duration of University Examination	3 Hours
University Examination	80 marks
Sessional	20 marks

UNIT – I

Data Communications: Components – Direction of Data Flow – networks – Components and Categories – types of connections – Topologies – Protocols and standards – ISO/OSI models, TCP/IP.

Transmission Media – Coaxial Cable – Fiber Optics – Line Coding – Modems – RS232 Interfacing.

UNIT – II

Datalink Layer: Error detection and correction, CRC, Hamming code, Flow Control and Error control – stop and wait –go back-N ARQ – selective repeat ARQ – Sliding window – HDLC.

Mac Layer : LAN – Pure and Slotted ALOHA, Ethernet IEEE 802.3 – IEEE 802.4 – IEEE 802.5, Bridges.

UNIT – III

Network Layer : Internetworks - virtual circuit and Datagram approach, Routers IP addressing, subnetting, CIDR.

Routing – Distance Vector Routing, Link State Routing, OSPF and BGP.

UNIT – IV

Transport Layer : Services of transport layer, Multiplexing.

Transmission control Protocol (TCP) – Congestion Control , Timer management, Quality of Services(QOS), and User Datagram Protocol (UDP)

UNIT – V

Application Layer : Domain Nanie Space (DNS) – SMTP – FTP – HTTP-WWW.

Suggested Readings:

1) Andres S.Tanenbaum, "Computer Networks", Pearson Education, 4th Ed. 2008.
2) Behrouz A. Forouzan, "Data Communication and Networking", Tata McGraw-Hill, 2009.
3) James F. Kurose and Keith W. Ross, "Computer Networking: A Top=Down Approach Featuring the Internet". Pearson Education, 2006.

CS 753

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UNIX PROGRAMMING

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Instruction	4 periods per week
Duration of University Examination	3 Hours
University Examination	80 marks
Sessional	20 marks

Unit – I

Unix: Introduction, commands, file system, security and file permission, regular expression and grp, shell programming, awk [Chapter 1,3,4,5,9,10,12 and 14 of text book]

Unit- II

The Unix Model, signal, process control, daemon process.

Interprocess Communication: Introduction, file and record locking, other unix locking techniques, pipes, FIFOs, streams and messages, namespaces, message queues, semaphores and shared memory.

[chapter 2 and 3 text book 2]

Unit - III

Socket Programming, Socket address, elementary socket system calls, advanced socket system calls, reserved ports, socked options, asynchronous I/O, Input/Output Multiplexing; Out-off band data, sockets and signals, internet super server. [chapter 6 of text book 2]

Unit - IV

The Basics of Perl : Origin and uses of Perl, Strings and escape characters, Scalar variables, control statements, fundamentals of arrays, Hashes, Functions, regular expressions and Pattern matching, File input and output.

Introduction to PHP: Overview, Syntactic characteristics, primitives, operations and expressions, output, control statements, arrays, functions. Pattern matching, form handling files, cookies and session tracking.

[chapter 8 and 11 of text book 3]

Unit- V

Python Basics, Python Objects, Numbers, Sequences: Strings, Lists and Tuples, Mapping and Set types, Conditionals and loops, files and Input/Output, Errors and Exceptions, Functions and Functional Programming, Modules, Object Oriented programming. [Part one of text book 4]

Suggested Readings:

1) Behrouz A. Forouzan and Richard F. Gilbarg, "Unix and Shell Programming:a text book" Cengage Learning, 2008.
2) W. Richard Stevens, "Unix Network Programming", Pearson Education 2009.
3) Robert W. Sebesta, "Programming the World Wide Web", Pearson Education, 2008
4) Wesley J. Chun, "Core Phython Programming", Prentice Hall.
5) Sumitabha Das, "Unix concepts& Applications", Fourth ed, Tata McGrawhill, 2006.

CS 754

WEB PROGRAMMING

Instruction	4 periods per week
Duration of University Examination	3 Hours
University Examination	80 marks
Sessional	20 marks

UNIT – I

HTML : Markup languages, common tags, header, Test Styling, linking images, Formatting text, Unordered lists, nested and ordered list, Tabs and formatting, Basic forms, Complex forms linking, Meta Tags.

Dynamic HTML : Cascading Style sheets in line styles, Style element, External Style sheet, text flow and Box model, user style sheets.

UNIT – II

Object model and collections : Object referencing, collections all, children frames, navigator object.

Event model : ONCLICK, ONLOAD, Error Handling, ON ERRORS, ONMUOUSEMOVE, ONMUSEOVER, ONMOUSEOUT, ONFOCUS, ONBLUR, ONSUBMIT.

Dynamic HTML : Filters and transitions, Data binding with Tabular data control binding to IMG, TABLE, structured graphics, Active controls.

UNIT – III

Introduction to scripting, Java Script, Data types, Arithmetic's Equality relational, assignment increment, decrement operators, Java Script Control structures – if, if-else, while.

JavaScript Control Structures : For, Switch, Do/While, break

Programming modules, recursion, recursion vs iteration global functions arrays, using arrays, Reference and reference parameters, passing arrays to functions, multiple-subscripted arrays, objects – math, string, Boolean and number.

UNIT – IV

Client side scripting with VB script, operations, Data types and control structures, Functions, Arrays, String manipulations, classes and objects.

Web Servers : Personal Web server, internet information server, Apache Web server, Installation of a Web server.

UNIT – V

Active Server Pages, Client side Scripting vs Server side Scripting, Server side Active X component, ADO, file system objects, Session tracking, CGI and PERL5, String.

Processing and Regular Expressions, Server side includes, Cookies and PERL XML Document Type Definitions, XML Parsers, Using XML with HTML.

Suggested Readings:

1) Deiterl, Deitel & NIETO, " Internet & World Wide Web – How to program", Pearson Education, Third Edition, 2004.
2) Steven Holzner, " HTML Black Book – Comprehensive Problem Server ", Dream Tech Press, 2000.
3) B Sosinsky, V Hilley, "Programming the Web – An Introduction", MGH, 2004.

CS 755

ARTIFICIAL INTELLIGENCE
(Elective-I)

Instruction	4 periods per week
Duration of University Examination	3 Hours
University Examination	80 marks
Sessional	20 marks

UNIT – I

What is Artificial Intelligence: The AI Problems, The Underlying Assumption, What is an AI Technique, The Level of the Model, Criteria for Success.

Problems, Problem Spaces, and Search: Defining the problem as a State of Space Search, Production systems, Problem Characteristics, Production System Characteristics.

UNIT – II

Heuristic Search Techniques: Generate-and-Test, Hill Climbing, Best-First Search, Problem Reduction, Constraint Satisfaction.

KR using Predicate Logic: Representing Simple Facts in Logic, Representing Instance and ISA Relationships, Computable Functions and Predicates, Resolution, Natural Deduction.

UNIT – III

Representing Knowledge Using Rules: Procedural versus Declarative Knowledge, Logic Programming, Forward versus Backward Reasoning, Matching, Control Knowledge.

Symbolic Reasoning Under Uncertainty: Introduction to Nonmonotonic Reasoning, Logics for Nonmonotonic Reasoning, Implementation Issues, Augmenting a Problem-Server, Implementation: Depth-First Search, Implementation: Breadth-First Search.

UNIT – IV

Statistical Reasoning: Probability and Bayes Theorem, Certainty Factors and Rule-based Systems, Bayesian Networks, Dempster-Shafer Theory, Fuzzy Logic.

Weak Slot-and-Filler Structures: Semantic Nets, Frames.

Strong Slot-and-Filler Structures: Conceptual Dependency, Scripts, CYC.

UNIT – V

Game Playing: The Minimax Search Procedure, Adding Alpha-beta Cutoffs, Additional Refinements, Iterative Deepening.

Planning: The Blocks World, Components of a Planning System, Goal Stack Planning, Nonlinear Planning Using Constraint Posting, Hierarchical Planning, Reactive Systems.

Suggested Readings:

1) Elaine Rich, Kevin Knight, Shivashankar B Nair "Artificial Intelligence", Third Ed.TMH, 2009.

2) NP Padhy, "Artificial Intelligence and Intelligent Systems" – Oxford 2009.

3) S Russell, P Norvig, "Artificial Intelligence", Second Ed, Pearson Education, 2009.

CS 756

DISTRIBUTED SYSTEMS
(Elective-I)

Instruction	4 periods per week
Duration of University Examination	3 Hours
University Examination	80 marks
Sessional	20 marks

UNIT – I

Introduction to Distributed Systems : Definition, Goals, Hardware and software concepts and client/server model.
Processes : Threads, Clients, Servers, Code Migration, Software agents.

UNIT – II

Naming : Entities : DNS, X.500, Locating Mobile entities, removing unreferenced entities

Synchronization : clock, logical clock, Global state, election algorithms, Mutual exclusion, distributed Transaction.

UNIT – III

Consistency and Replication: Data-Centric, Client-Centric Consistency Models, Distribution and Consistency protocols.

Fault Tolerance: Introduction, Process resilience, Reliable client-server and Group communication, Distributed Commit and Recovery.

UNIT – IV

Distributed Object based Systems: CORBA, D-COM & GLOBE. Distributed File System, Case studies : SUN NFS, CODA

UNIT – V

Distributed shared memory : Implementation algorithms, memory coherence, and Design issues.

Distributed Scheduling: Issues in Load Distributing, Components of Load Distributing Algorithms, Load Distributing Algorithms.

Suggested Readings:

1) Andrew S. Tanebaum and Van Steen, Distributed Systems, Pearson Education, 2002.
2) Singhal M, Shivaratri N.G: Advanced Concepts in Operating systems. McGraw-Hill Intl., 1994.

CS 781

PROGRAMMING LAB – VII
(Unix Programming Lab)

Instruction	3 Periods per week
Duration of University Exam	3 Hours
University Exam	50 Marks
Session	25 Marks

1. Examples using Shell scripts.
2. Programming using IPC
3. Socket programs.
4. Perl Programs using regular expressions and pattern matching.
5. PHP Programs using form handling using cookies.
6. Python programs based on object oriented design.

CS 782

PROGRAMMING LAB - VIII
(Web Programming Lab)

Instruction   3 Periods per week

Duration of University Exam   3 Hours

University Exam   50 Marks

Session   25 Marks

1.   Creating HTML pages to test Different Tags.

    a) Headers

    b) Linking Images

    c) Images as anchor

    d) Text Formatting

2.   a) HTML Table Formatting

    b) Ordered and Unordered Lists

3.   Creating Frames.

4.   Examination result in Java Script.

5.   Creation of Quiz program.

6.   Usage Data and the methods of Date and Time objects.

7.   Floating alerts, aligning text and setting box dimension using CSS.

8   Demonstrating object hierarchy using collection children.

9.   Using HTML Events.

10.   Using Transition & Filters like Flip filter, Chroma filter, Shadow filter etc.,

11.   VB Script classes and regular expression.

12.   Installing Web Server (PWS or IIS).

13.   Guest book Active Server pages.

14.   Creation of Small full fledged database application using ADO spreading

    over to 3 sessions.