

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

MCA SYLLABUS



TELANGANA UNIVERSITY

NIZAMABAD – 503322. (T.S)

Telangana University

SCHEME OF INSTRUCTION & EXAMINATION

MCA I YEAR

w.e.f: 2011-2012

SEMESTER – I

Sl. No	Syllabus Ref. No.	SUBJECT	Scheme of Instruction		Scheme of Examination		
			Periods per Week		Duration in Hrs.	Maximum Marks	
						Univ. Exam	Sessionals
		THEORY					
1	CS 601	Discrete Mathematics	4	-	3	70	30
2	CS 602	Probability & Statistics	4	-	3	70	30
3	CS 603	Computer Programming and Problem Solving	4	-	3	70	30
4	CS 604	Elements of Information Technology	4	-	3	70	30
5	CS 605	Modern Economic Analysis	4	-	3	70	30
		PRACTICAL					
1	CS 631	Programming Lab – I (C & C++ Programming)	-	6	3	50	25
2	CS 632	Programming Lab – II (EIT Lab)	-	6	3	50	25
		Total	20	12		450	200

Instruction: 4 Periods per week

Duration of University Examination: 3 Hours

University Examination: 70 Marks

Sessional: 30 Marks

UNIT – I

Fundamentals of Logic: Basic Connectives and Truth Tables, Logical Equivalence, Logical Implication, Use of Quantifiers, Definitions and the Proof of Theorems.

Boolean Algebra: Switching Functions, Logic gates, Don't Care Condition.

Set Theory: Sets and Subsets, Set operations and the Laws of Set theory, Counting and Venn Diagrams.

UNIT-II

Properties of Integers: The well-ordering principle, Recursive definitions, The Division Algorithm, Euclidean Algorithm, Fundamental theorem of arithmetic. Functions: Cartesian Product, Functions, Onto Functions, Special Functions, Pigeonhole Principle, Composition and Inverse Functions, Computational Complexity. Relations: Partial Order Relations, Lattices, Equivalence Relations and Partitions.

UNIT-III

Principle of inclusion and Exclusion: Principles of Inclusion and Exclusion, Generalization of principle, Derangements, Rooks Polynomial, Arrangements with Forbidden Positions.

Generating Functions: Introductory examples, Definitions and examples, Partition of Integers, Exponential generating function, Summation operator.

UNIT-IV

Recurrence Relations: First-order linear recurrence relation, Second-order linear homogeneous recurrence relations with constant coefficients, Non-homogeneous recurrence relations, Divide-and-conquer algorithms.

Algebraic Structures: Definition, Examples and properties.

Groups: Definition, Examples and elementary properties, Homomorphism, Isomorphism and Cyclic groups.

UNIT – V

Graph Theory: Definitions and examples, Subgraphs, Complements and graph isomorphism, Vertex degree, Planar graphs: Hamiltonian paths and Cycles, Graph coloring.

Trees: Definitions, Properties and Examples, Rooted Trees. Spanning Trees and Minimum Spanning Trees.

Suggested Reading:

1. Ralph P. Grimaldi, "Discrete and Combinatorial Mathematics", person Education, 4th Edition, 200,

References:

1. Kenneth H Rosen, "*Discrete Mathematics and its Applications*" Tata McGraw Hill , 6th Edition, 2007.
2. J.P. Tremblay & R. Manohar, "*Discrete mathematical Structures-with Applications to Computer science*" , McGraw Hill. 1987."
3. Joe L. Mott, A. Kanda! & T.p. Baker, "*Discrete mathematics for Computer scientists, & mathematicians*", prentice Hall N.J., 1986
4. Kevin Ferland, "Discrete Mathematics", Houghton Mifflin Company, 2009.

Instruction: 4 Periods per week

Duration of University Examination: 3 Hours

University Examination: 70 Marks

Sessional: 30 Marks

UNIT -I

Data Validation and Information Abstraction: Methods of collecting data efficiently, Gathering information from data charting.

UNIT -II

Probability: Laws of Probability, Probability distributions, Discrete, Equiprobable, binomial Poisson.

UNIT -III

Continuous Distributions: Rectangular, normal, gamma and beta.

UNIT-IV

Statistical Methods: Frequency distributions, Mathematical Expectation, Moments, Skewness and Kurtosis.

UNIT -V

Correlation and Regression, Introduction to tests of Significance, u, t, x tests.

Suggested reading:

1. S.C. Gupta and V.K. Kapoor, "Fundamentals of mathematical Statistics", 1989.
2. William Mendenhall, Robert J. Beaver, Barbara M. Beaver, " Introduction to Probability and Statistics ", Thomson Brooks/Cole, Eleventh Edition, 2003.
3. Richard A. Johnson, "Probability and Statistics for Engineers ", Prentice Hall of India. Seventh Edition 2005.

Instruction: 4 Periods per week

Duration of University Examination: 3 Hours

University Examination: 70 Marks

Sessional: 30 Marks

The First Three Units (I, II & III) are for 'C' Programming and the last Two Units (IV and V) are for C++

UNIT -I

Introduction to Computers: Computer Systems, Computing Environments, Computer Languages, Creating and Running programs, System Development.

Introduction to C Language: C programs, identifiers, Types, Variables, Constants, Operators. Input/Output, Expressions:- precedence and associativity, evaluating expressions, type conversion, statements, Selection:- making decisions (conditional statements), repetition (control statements).

UNIT-II

Functions : Designing Structured Programs, Functions in C, User-defined functions, Inter-function communication (Parameter passing mechanism), Standard Functions, Scope, Recursion.

Arrays: Concepts, Using Arrays in C, Inter-Function Communication (Passing arrays to functions), Two Dimensional arrays, Multidimensional arrays. Application:- selection, bubble and insertion sort.'

Pointers: Introduction, Pointers for Inter-Function Communication, Pointers to Pointers, Compatibility, Arrays and Pointers Cw.r.t arithmetic, passing arrays to function), memory allocation functions ..

Strings : String concepts, C Strings, String Input/Output Functions, Array of Strings, String Manipulation functions.

UNIT -III

Enumerated, Structure, and Union Types: The Type -Definition (*typedef*), Enumerated types, Structure, Unions. Enumerations, Unions, Pre-Processor Directives.

Text Input/Output Files in C: Files, Streams, Standard Library Input/Output functions, Formatting Input/Output Functions, Character Input/Output Functions,

Binary Input/Output : Text versus Binary streams, Standard Library Functions in Files, Converting File Type.

UNIT-IV

Introduction to C++: Introduction and Basic elements of C++.

Functions in C++: User-defined functions, Types of functions, Parameter passing mechanisms, Overloading, Inline functions, Function Templates.

UNIT- V

Classes: Introduction to classes, Inheritance, Operator Overloading, Dynamic Polymorphism using Virtual functions, Abstract Classes. Templates and Exceptional Handling.

Suggested Reading:

- 1) Behrouz A. Forollzan, Richard F Grilberg, "*Computer Science - A Structured approach using C*", 3rd Edition, Cengage Learning 2007. (For Units I, II, III).

- 2) D. S. Malik, "*C++ Programming Language* ", Cengage Learning, 2009. (For Units IV and V)

References:

1. Harry.H. Cheng, "*C/C++ for Engineers and Scientist - An Integrative Approach*", McGraw-Hill, International Edition, 2009.
2. Owen L. Astrachan, "*Programming with C++*", Tata Mcgraw Hill, 2007.
3. Bjarne Stroustrup, "*The C++ Programming language*", 3rd Edition, Addison- Wesley, 1998 ..

Instruction:	4 Periods per week
Duration of University Examination:	3 Hours
University Examination:	70 Marks
Sessional:	30 Marks

UNIT -I

Digital Age: Digital basis of Computers, Data/Information, Hardware Input, Output, Memory, Communication Hardware, Software, Application Software, System Software, Communications, Five kinds of Computers, Development in communication Technology, Connectivity and . Interactivity, Five Generations of Programming Languages, Programming languages used today, Object Oriented & Visual Programming.

Operating Systems: Booting, Managing Storage, Resources, Files tasks, Common operating systems: Windows 95/98, DOS, and Windows -NT.

UNIT -II

Processors: The CPU and Main Memory, Data Representation, Micro Computer System Unit, Input & Output devices, Keyboard, Pointing devices, Source data entry devices, Soft copy output, Hardcopy output, more output devices, Diskettes, Hard-disks, Optical disks, Flash memory, Magnetic tape, Compression and Decompression.

UNIT -III

Telecommunications: DATA, Video, Audio communication, the Internet, the World Wide Web, new Internet technologies, Communication channels, Networks,- conduits of communication, Communication networks, Local networks, factors affecting communication among devices.

UNIT- IV

Files & Databases: Data storage hierarchy, File management, Files Management Systems, Database Management Systems, type of database organization, and features of a DBMS.

Application Software: Common features of software, Word processing, Spread sheet, software for Cyber space, Internet programming, HTML, XML, & Active X.

UNIT - V

Information Systems: Organization:- Departments, Tasks, I'v1anagement Levels, Management Information systems, Six phases of system analysis and design.

Software Development: Programming as a five step procedures.

Security Issues: Threats to computers & Communication systems, Safeguarding computers, and communications.

Suggesied Reading:

- 1) Williams B.K. Sawyer et.al., "*Using. information Technology*", Sixth Edition, Tata McGraw Hill, 2006.

References:

- 1) Aksoy & DeNardis "*Introduction to fr?ormatiol1 technology*", Cengage Learning, 2006.
- 2) Dennis P. Curtin & Kim Folley, et.a!., n!!?!i>rll1utiol1 Technology. *The breaking Wave*", Tata McGraw Hill, 1998.
- 3) ITL Edn Solutions Ltd. "*Introduction to b!formaiiol1 Technology*", Pearson Education,2005.

Instruction:	4 Periods per week
Duration of University Examination:	3 Hours
University Examination:	70 Marks
Sessional:	30 Marks

UNIT -I

The nature and scope of Managerial Economics, Fundamental concepts of managerial Economics.

UNIT -II

Demand Analysis, concepts of demand, demand elasticity's.

UNIT -III

Production and cost analysis and principles: Production function, single output isoquantum, average cost curve -Laws of returns -Laws of supply, price determination under different competitive situation.

UNIT -IV

National income: Concepts, measurement and determinants.

Planning: The machinery for planning in India, Salient features of India's Five, Year plans.

UNIT-V

Indian Financial Systems, Functions and role of Reserve Bank of India. Conventional Banks and Industrial Finance. Term "lending Financial Institutions -role and functions .

Suggested reading:

- 1) Dhiraj Bhattacharya & Pranab Chakraborti, "*Fundamentals of Business Economics*", A. H. Wheeler & Co. (P) Ltd., 1986.
- 2) Barry Keating & J. Holton Wilson, "*Managerial Economics*", Biztantra, Second edition, 2003.
- 3) Dominick Salvatore, "*Managerial Economics*", Thomson, Fourth Edition, 2001.

Instruction:	6 Periods per week
Duration of University Examination:	3 Hours
University Examination:	50 Marks
Sessional:	25 Marks

C –Programs:

1. Program to calculate simple formulae like area of **Circle**, Rectangle etc,
2. Program to find Maximum, Minimum and Sum of given set of numbers.
3. Program to find whether a number is Prime or not.
4. Program to find *Sinc(x) and Cosine(x,)* using series expansion
5. Program to demonstrate Cal!-by-Reference parameter passing mechanism.
6. Program to implement Linear and Binary Search mechanisms.
7. Program to implement Selection and Bubble sort.
8. Program to implement Matrix multiplication using pointers.
9. Program to find the number of letters, words and sentences in a given string.
10. Program to do String manipulation without using in-built library functions.
11. Program to generate address labels using structures.
12. Program to demonstrate Sequential file Access.
13. Program to demonstrate Random File Access.

C++ Programs

1. Recursive functions (Greatest common divisor, Tower of Hanoi, Fibonacci etc).
2. Classes for Bank Account, Student Information, Library Catalogue, Employee
3. Creation of Complex, Vector classes using operator overloading.
4. Creation of Inheritance hierarchy (bank account, person)
5. Template functions for Min () and Max () for finding minimum and maximum in a List
6. Program on Class Templates
7. Programs demonstrating virtual, pure virtual functions using abstract base class "Shape".
8. Programs to demonstrate multiple inheritances and exception handling.
9. Programs demonstrating Stream and File I/O using student and employee classes.

(EIT Lab)

Instruction:	6 Periods per week
Duration of University Examination:	3 Hours
University Examination:	50 Marks
Sessional:	25 Marks

At the end of the course, students should be able to:

1. Identify and describe the relationships and role of the components of the "Logical" diagram of the computer. (e.g. processor, RAM, ROM, BIOS, input, output, storage.)
 2. Relate the "logical" diagram of a computer system to the "physical" system by identifying physical components of a computer and describing their purpose. (e.g. the processor, memory chips, motherboard, disk drives, and controller cards such as AGP board, network cards, sound card, as well as parallel and serial ports etc)"
3. Assemble the computer which they will use and load the OS with partitions for Windows and Linux, configure for network connection
4. Troubleshoot his/her PC from time to time
5. Install/Un installs SW/HW on his/her PC from time to time
6. Identify and distinguish between various types of application software. by describing and using them. (e.g. word processor, spreadsheet, database, browser, mailers etc.)
 7. MS Word: Create documents with standard formatting commands, single/multi column, insert pictures/objects, drawings, hyperlinks, header/footer, and tables. No macros.
8. MS Power Point: Create presentations with preset animations, using different layouts, backgrounds, slide master, insert pictures/objects, drawings, hyperlinks, header/footer, tables
9. MS Excel: Creating worksheets with various kinds of data, making charts, conditional formatting, awareness of the various functions- statistical, date/time, math/trig etc, ability to explore (help) and use these functions if need be, demonstration through some common functions like sum, average, standard deviation, logical and information.
10. HTML: Should be able to create their web-page (title, text, frames, hyperlinks to some sites, pictures, lists, tables, fonts, forms and color) without using any web authoring tools.

11. Distinguish between various commercially available systems by relating the cost to features available on each system.

Alias	Cp	Fip	Man	Talk
Banner	Date	Gv	Mkdir	telnet
Bc	Diff	Gunzip	More	Unzip
Gh	Dir	Head	Mv	Vi
Cal	Display	History	Passwd	Vim
Cat	Df	Id	Pine	Vimtutor
Cc	Du	Indent	Ps	Wall
Ed	Echo	Dill	Pwd	Wait
Chgrp	Exit	Last	Reboot	Whereis
Chmod	Fg	Login	Rm	Who
Clear	File	Logname	Rmdir	Whoami
Chfn	Finger	In	Shutdown	Wrie
Chown	Find	Logout	Tail	Zip
Cmp	Gzip	Is	Tar	Ands
		mail		

12. MS-Access: Create database for student information, library information and inventory. Generation of queries, reports and transaction processing.

TELANGANA UNIVERSITY

SCHEME OF INSTRUCTION & EXAMINATION

MCA I YEAR

SEMESTER- II

w.e.f: 2011-2012

Sl. No	Syllabus Ref. No.	SUBJECT	Scheme of Instruction		Scheme of Examination		
			Periods per Week		Duration in Hrs.	Maximum Marks	
						Univ. Exam	Sessionals
		THEORY					
1	CS 651	Accounting & Financial Management	4	-	3	70	30
2	CS 652	Principles of Object Oriented Programming	4	-	3	70	30
3	CS 653	Management Information Systems	4	-	3	70	30
4	CS 654	Data Structures	4	-	3	70	30
5	CS 655	Computer Architecture	4	-	3	70	30
		PRACTICAL					
1	CS 681	Programming Lab – III (OOP Lab)	-	6	3	50	25
2	CS 682	Programming Lab – IV (DS Lab)	-	6	3	50	25
		Total	20	12		450	200

Instruction:	4 Periods per week
Duration of University Examination:	3 Hours
University Examination:	70 Marks
Sessional:	30 Marks

UNIT -I

An overview of Accounting cycle -Basic. concepts and conventions -Books of Account - Terminal statement.

UNIT- II

Financial statement analysis and interpretation -Ratio analysis.

UNIT -III

Working capital -Sources and uses –Funds flow and cash flow analysis -Management of inventory_

UNIT- IV

Capital Budgeting -Techniques for evaluation -Cost of capital -Computation of specific costs, and weighted average cost of capital

UNIT-V

Analysis of costs and their behavior -Cost volume -Profit analysis Variable costing and absorption costing.

Budgets- Flexible Budgeting -Long and Short term forecasting.

Suggested Reading:

- 1) James. C Van Horne, "*Fundamentals of Financial Management*", Pearson edition, Eleventh edition, 2001.
- 2) Khan MY, Jain PK, "*Financial Management*", Tata McGraw Hill, Second Edition, 1993
- 3) Maheswari SN, "*Management Accounting and Financial Control*", Sultan Chand & Co.
- 4) Gupta G, Radhaswamy M, "*Advanced Accountancy*", Sultan Chand,& Sons.

CS 652

PRINCIPLES OF OBJECT ORIENTED PROGRAMMING

Instruction:	4 Periods per week
Duration of University Examination:	3 Hours
University Examination:	70 Marks
Sessional:	30 Marks

UNIT-I

Object Oriented System Development: Understanding Object Oriented Development, Understanding Object Oriented Concepts, Benefits of Object Oriented Development.

Java Programming Fundamentals: Introduction, Overview of Java, Data types, Variables and Arrays, Operators, Control Statements, Classes, Methods, Inheritance, Packages and Interfaces.

UNIT-II

Exceptional Handling, Multithreaded Programming, 1 to basics, Reading console input and output, Reading and Writing Files, Print Writer Class, String Handling.

UNIT -III

Exploring Java language , Collections Overview, Collections interfaces, Collection Classes, Iterators, Random Access Interface, Maps, Comparators, Arrays, Legacy classes and Interfaces, String Tokenizer, Bit Set, Date, Calendar observable, Timer.

UNIT IV

Java I/O classes and Interfaces, Files, Stream and Byte Classes, Character Streams, Serialization.

UNIT -V

GUI and Event Driven Programming: Applet Class, Event Handling, Delegation event model event classes, event listener Interfaces.

Customizing Frame Windows, GUI Programming Basics, Text Related CUI Components, Layout Managers, Effective use of Nested panels, Other GUI components, Menus and Handling Mouse Events.

Suggested reading:

1. Patrick Naughton "JAVA 2, The Complete Reference" Tata McGraw Hill 2005.
2. Richard A. Johnson, "Java Programming and Object-Oriented Application Development" Cengage Learning, India edition 2009

References:

1. John Dean and Raymond Dean "Introduction to Programming with JAVA A problem solving approach", McGraw Hill 2008.
2. Joc Wigglesworth and Paula McMillan, Java Programming: Advanced Topics" Cengage Learning, 3rd Edition 2009
- 3.

CS653

MANAGEMENT INFORMATION SYSTEMS

Instruction:	4 Periods per week
Duration of University Examination:	3 Hours
University Examination:	70 Marks
Sessional:	30 Marks

UNIT-I

An Introduction to concepts of System and Organizations. Strategic uses of Information Technology, Business Process in Engineering and Information Technology.

UNIT-II

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Applications of Operational Information Systems to Business, Tactical and Strategic Information System to Business.

UNIT -III

Information Systems Planning, approach to System Building Alternative Application Development.

UNIT-IV

Managing Knowledge, Knowledge Management in the Organization, Enhancing Management Decision-Making, DSS, GDSS, and ESS.

UNIT- V

Management of Information Systems. Information System security and control, Ethical issue, managing firm infrastructure and Enterprise system.

Suggested Reading:

1. Robert Schultheis, Mary Summer, "*Management Information Systems The Manager's view*", Tata McGraw Hill, fourth edition, 2006.
2. Kenneth C. Loudon, Jane P laudon, "*Management Information System*", Prentice Hall, 2008

Reference:

1. Ralph Stair, George Reynolds" *Principles information Systems*", Cengage Learning 2008.
2. James A, O'Brien, "*Management Information Systems* ", Tata McGraw Hill, Sixth edition, 2004.

Instruction:	4 Periods per week
Duration of University Examination:	3 Hours
University Examination:	70 Marks
Sessional:	30 Marks

UNIT – I

Linear Lists: Array based representation Linked Lists: Properties, Operations, Ordered Linked Lists, Doubly Linked Lists, Circular Linked Lists.

UNIT - II

Matrices: Special and Sparse matrices.

Stacks: Operations, array and linked representation of stacks, applications of stacks

Queues: Operations, array and linked representation of queues, applications of queues.

UNIT-III

Trees: Definitions and properties. Binary trees: Binary tree traversal (recursive and non recursive). Binary Search Trees: Operations and Analysis, AVL Trees: Operations on AVL trees. B- Trees, Operations on B-Trees

UNIT -IV

Searching Algorithms: Sequential Search and Binary Search. Complexity analysis of searching algorithms. Hashing: Collision resolution, Open addressing, Quadratic probing, Chaining. Hashing Analysis. Sorting Algorithms: Selection Sort, Quick Sort, Merge Sort, Heap Sort, Shell Sort. Complexity analysis of sorting algorithms.

UNIT -V

Graphs: Definitions, notations and representations. Operations on Graphs, Graph Traversals, Applications of Graphs: Shortest Path and Minimal Spanning Tree Algorithms.

Suggested Reading:

1. S Sahani, "Data Structures, Algorithms and Applications in C++" Second Edition, Universities Press, 2005.

References:

2. D S Malik, "Data Structures using C++", Cengage Learning, 2003
3. Carmen Leiserson & Rivest, "Introduction to Algorithms", Prentice Hall India, 1996.
4. Mark Allen Weiss, "Data structures and Algorithm Analysis in C++", Third Edition, Pearson Education, 2007

Instruction:	4 Periods per week
Duration of University Examination:	3 Hours
University Examination:	70 Marks
Sessional:	30 Marks

UNIT -I

Digital Logic Circuits: Digital Computers, Logic Gates, Boolean Algebra, Map Simplification, Combinational Circuits, Flip Flops, Sequential Circuits.

Digital Components: Integrated Circuits, Decoder, Multiplexers, Registers, Shift Registers, Binary counter, Memory unit.

Data Representation: Data types, Complements, Fixed and Floating Point Representation, Other binary codes and error Detection codes.

UNIT -II

Register Transfer and Micro operations: Register Transfer language, Register transfer, Bus and Memory Transfer, Arithmetic Micro operations, Logic Micro operations, Shift Micro operations and Arithmetic logic shift unit.

Basic Computer Organization and Design: Instruction codes, Computer Registers, Computer Instructions, Timing and Control, Instruction Cycles, Memory Reference Instructions, Input, Output and Interrupts, Design of Accumulator logic.

UNIT -III

Programming the Basic Computer: Introduction, Machine Language, Assembly Language, The Assembler, Programming Arithmetic and Logic Operations, Subroutines, and I/O, Programming.

Micro programmed Control: Control Memory, Address Sequencing, Micro program Example, Design of Control Unit.

UNIT -IV

Central Processing Unit: Introduction, General Register Organization, Stack Organization, Instruction Formats, Addressing Modes, Data Transfer and Manipulation, Program Control, RISC.

Parallel Processing: Pipelining, Arithmetic Pipeline, Instruction Pipeline, RISC Pipeline. Computer Arithmetic: Addition and Subtraction, Multiplication algorithms, Division Algorithms, Floating point arithmetic operations, decimal arithmetic unit, and decimal arithmetic operations.

UNIT -V

Input -Output organization: Peripheral Devices, I/O Output interlace, Asynchronous data transfer, Modes of transfer, Priority Interrupt, OM A, Input output Processor, Serial Communication.

Memory Organization: Memory Hierarchy, Main Memory, Cache Memory.

Suggested Reading:

1. M. Morris Mano, "Computer System Architecture", Pearson Education Asia, Third Edition, 1993.

References:

2. Miles Murdocca, Vincent Heuring, "Computer Architecture and Organization", John Wiley & Sons 2007.
3. Sivarama P Dandamudi "Fundamentals of Computer Organization and Design", Wiley Dream Tech publishers, 2003.
4. William Stallings, "Computer Organization & Architecture", Pearson Education, Sixth Edition 2003,
5. G.V.Anjaneyulu "Computer Organization".

TELANGANA UNIVERSITY

Instruction:	6 Periods per week
Duration of University Examination:	3 Hours
University Examination:	50 Marks
Sessional:	25 Marks

1. A program to illustrate the concept of class with constructors, methods and overloading.
2. A program to illustrate the concept. of inheritance and dynamic polymorphism
3. A program to illustrate the usage of abstract class. ~
4. A program to illustrate multithreading.
5. A program to illustrate thread synchronization.
6. A program to illustrate Exception handling.
7. A program to illustrate user-defined Exceptions
8. A program to demonstrate use of User-defined Packages.
9. A program using String Tokenizer .
10. A program using Linked list class
11. A program using Tree Set class
12. A program using Hash Set and Iterator classes.
13. A program using Map classes.
14. A program using Enumeration and Comparator interfaces.
15. A program using File and File name Filter
16. A program to illustrate the Usage of Byte and Character I/O streams.
17. A program to illustrate the Usage of Serialization
18. Program using Date class
19. An application involving GUI with different controls, menus and event handling.
20. A program to implement an applet.

(Data Structures Lab)

Instruction:	6 Periods per week
Duration of University Examination:	3 Hours
University Examination:	50 Marks
Sessional:	25 Marks

1. Implementation of ADT Stacks.(Arrays and Linked representations).
2. Infix to Postfix conversion (unparenthesized)
3. Infix to Postfix conversion (Parenthesized)
4. Evaluation or postfix expression.
5. Implementing Parenthesis Matching Application using Stack
6. Implementation of ADT Queues. (Linear, Circular and DeQueue)
Application of Queues (Super-market, Ticket reservation etc)
7. Implementation of ADT Linked Lists (Singly, doubly and Circular)
Implementation of Linear, binary search.
8. Implementation of Hashing
9. Implementation of Collision resolution techniques.
10. Implementation of Insertion sort.
11. Implementation of Selection sort.
12. Implementation of Shell sort.
13. Implementation of Quick sort.
14. Implementation of Merge sort.
15. Implementation of basic operations on Binary trees.
16. Implementation of traversals on binary trees.
17. Implementation of Binary Search Trees
18. Implementation of Heap sort.
19. Implementation of operations of AVL Trees.
20. Implementation of Red-Black Trees.
21. Implementation of Graph Search Methods.
22. Program to find a Minimal Spanning Tree.

Telangana University

SCHEME OF INSTRUCTION & EXAMINATION

MCA II YEAR

w.e.f: 2011-2012

SEMESTER – I

Sl. No	Syllabus Ref. No.	SUBJECT	Scheme of Instruction		Scheme of Examination		
			Periods per Week		Duration in Hrs.	Maximum Marks	
						Univ. Exam	Sessionals
		THEORY					
1	CS 701	SOFTWARE ENGINEERING	4	-	3	70	30
2	CS 702	DATABASE MANAGEMENT SYSTEM	4	-	3	70	30
3	CS 703	DESIGN & ANALYSIS OF ALGORITHMS	4	-	3	70	30
4	CS 704	OPERATING SYSTEMS	4	-	3	70	30
5	CS 705	OPERATIONS RESEARCH	4	-	3	70	30
		PRACTICALS					
1	CS 731	Programming Lab-V (DBMS Lab)	-	6	3	50	25
2	CS 732	Programming Lab-VI (OS LAB)	-	6	3	50	25
		Total	20	12		450	200

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 Requirements 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 , Architectural styles for C & 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 Reading :

1. Pankaj Jalote, "Software Engineering- A Precise Approach", Wiley India, 2010.
2. Roger. S.Pressman , "Software Engineering - A Practitioner'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.

DATABASE MANAGEMENT SYSTEMS

Instruction	4 Periods per week
Duration of University Examination	3 Hours
University Examination	80 Marks
Sessionals	20 Marks

UNIT-I

Introduction to DBMS and ER Model : File Systems versus DBMS, Advantages of a DBMS, Database Design and E-R Diagrams, Entities, Attributes and Entity Sets, Relationships and Relationship Sets, Additional Features of the ER Model, Conceptual Design with the ER Model.

The Relational Model: Introduction to Relational Model, Integrity Constraints over Relations, Logical Database Design (ER to Relational), Introduction to Views, Destroying / Altering Tables & 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 Operators, Null Values, Triggers and Active Databases, 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 File Organizations.

Tree-Structured Indexing: Indexed Sequential Access Method (ISAM); B+ Trees, Search, Insert Delete, B+ Trees in Practice.

Hash-Based Indexing: Static Hashing, Extendible Hashing, Linear Hashing, Extendible 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 and Authorization: Introduction to Database Security, Access Control, Discretionary Access Control, Mandatory Access Control, Additional Issues related to Security.

Suggested Reading :

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

References :

1. Abraham Silberschatz, Henry F Korth, S Sudharshan, "Database System Concepts", Sixth Edition, McGraw-Hill International Edition, 2011.
2. Peter Rob, Carlos Coronel, "Database System Concepts", Cengage Learning, 2008.
3. Ramez Elmasri, Durvasul VLN Somayajulu, Shamkant B Navathe, Shyam K Gupta, "Fundamentals of Database Systems", Fourth Edition, Pearson Education, 2006.

TELAN

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 : Binary Search, Finding the Maximum and Minimum, Merge Sort, Quick Sort, Selection, Strassen'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 Paths, Single-Source Shortest Paths, Optimal Binary Search Trees, 0/1 Knapsack, Reliability Design, The Traveling Salesperson Problem.

Basic Traversal and Search Techniques : Techniques for Binary Trees, Techniques for Graphs, Connected Components and Spanning 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 Sales Person.

UNIT-V

NP-Hard and NP-Complete Problems : Basic Concepts, Cook's Theorem, 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, Universities 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.

TELANGANA UNIVERSITY

OPERATING SYSTEMS

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.

Deadlocks: 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 Reading :

1. Abraham Silberschatz, Peter B Galvin, Greg Gagne, "Operating System Concepts", Wiley India, 2006.
2. Andres S Tanenbaum, "Modern Operating Systems", 3rd Edition, PHI, 2009.
3. Robert Love, "Linux Kernel Development", Pearson Education, 2004.
4. William Stallings, "Operating Systems", Sixth Edition, PHI, 2009.

TELANGANA UI

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 Linear 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 $2 \times n$ or $m \times 2$ Games, Linear Programming Approach for Game Theory.

Suggested Reading :

1. Pannarselvam, "Operations Research", Second Edition, PHI, 2006.
2. Prem Kumar Gupta, 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, MacMillan, 2009.

TELANGANA UNIVERS

CS 731

PROGRAMMING LAB - V
(DBMS Programming 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. Crating 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 as Library Information Studies, 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 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.

TELANGANA

CS 732

PROGRAMMING LAB - VI
(OPERATING SYSTEMS LAB)

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 director 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)

TELANC

Telangana University

SCHEME OF INSTRUCTION & EXAMINATION

MCA II YEAR

w.e.f: 2011-2012

SEMESTER – II

Sl. No	Syllabus Ref. No.	SUBJECT	Scheme of Instruction		Scheme of Examination		
			Periods per Week		Duration in Hrs.	Maximum Marks	
						Univ. Exam	Sessionals
		THEORY					
1	CS 751	Data Warehousing and Data Mining	4	-	3	70	30
2	CS 752	Computer Networks	4	-	3	70	30
3	CS 753	Unix Programming	4	-	3	70	30
4	CS 754	Web Programming	4	-	3	70	30
ELECTIVE –I (Any One)							
5	CS 755 CS 756 CS 757	Artificial Intelligence Distributed Systems Information Retrieval Systems	4	-	3	70	30
		PRACTICALS					
1	CS 731	Programming Lab – VII Unix Programming Lab	-	6	3	50	25
2	CS 732	Programming Lab – VIII Web Programming Lab	-	6	3	50	25
		Total	20	12		450	200

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 Schema: Introduction, Dimension Modeling, Star Schema, Snowflake schema, Aggregate tables, Fact Constellation, Strengths of DM, Data Warehouse and Data model

Dimensional Modelling: Characteristics of dimension table, 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 ETL Process, Introduction, Data Extraction, Transformation, Loading, Quality

OLAP in the Datawarehouse: OLAP, Multidimensional analysis, Functions, Applications, Models, Design, Tools and Products, Data Design, Administration and performance, OLAP platforms.

Suggested Reading:

1. Vikram Pudi P. Radha Krishna , Data Mining, Oxford University Press, 1st edition 2009
2. Reema Theraja. Data Warehousing. Oxford University Press, 2009.
3. Jiawei Han, Micheline Kamber. Data Mining – Concepts and Techniques, Morgan Kayuffman, 2006.
4. Arun K Pujari, Data Mining Techniques, University Press, 2nd Edn, 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 Anahory, D Murray, “Data Warehousing in the real world”, Pearson Education, 2009.

TELANGANA UI

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 model, TCP/IP

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

UNIT II

DATA LINK 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 Name Space (DNS) – SMTP – FTP – HTTP - WWW

References:

1. Andrew S. Tanenbaum, "Computer Networks", Pearson Education, Fourth Edition, 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.

TELANGANA UNIVERSITY

Unix Programming

Instruction
Duration of University Examination
University Examination
Sessional

4 Periods per week
3 Hours
80 Marks
20 Marks

Unit I

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

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, socket options, asynchronous I/O, Input/ Output Multiplexing, out-of 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]

Books:

- 1: Behrouz A. Forouzan and Richard F. Gilberg, "Unix and Shell programming: a Text book"- 10 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 Python Programming", Prentice hall
5. Sumitabha Das, "Unix concepts & Applications", Fourth Edition, Tata McGrawhill, 2006.

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, text 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.

Java Script 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, multiplesubscripted 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 Sever 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 Definition, XML Parsers, Using XML with HTML.

Suggested Reading :

1. Deitel, 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.

TELANGANA

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 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-Solver, 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 Reading :

1. Elaine Rich, Kevin Knight, Shivashankar B Nair "Artificial Intelligence", Third Edition, TMH, 2009.
2. NP Padhy, "Artificial Intellilgence and Intelligent Systems"- Oxford, 2009.
3. S Russell,PNorvig, "Artificial Intelligence", Second Edition, Pearson Education, 2009.
4. Ela Kumar, "Artificial Intelligence", IK International, 2008.

TELANGANA UNIVERSITY

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 Reading:

1. Andrew S. Tanenbaum and Van Steen, *Distributed Systems*, Pearson Education, 2002.
2. Singhal M, Shivaratri N.G: *Advanced concepts in operating systems*. McGraw-Hill Intl., 1994.

INFORMATION RETRIEVAL SYSTEMS
(Elective-I)

Instruction	4 Periods per week
Duration of University Examination	3 Hours
University Examination	80 Marks
Sessional	20 Marks

UNIT-I

Introduction

Retrieval Strategies: Vector Space model, Probabilistic Retrieval Strategies

Language Models: Simple Term Weights, Non Binary Independence Model

UNIT-II

Retrieval Utilities: Relevance Feedback, Clustering, N-grams, Regression Analysis, Thesauri

UNIT-III

Retrieval Utilities: Semantic Networks, Parsing

Cross-Language Information Retrieval: Introduction, Crossing the Language Barrier

UNIT-IV

Efficiency: Inverted Index, Query Processing, Signature Files, Duplicate Document Detection

UNIT-V

Integrating Structured Data and Text: A Historical Progression, Information Retrieval as a Relational

Application, Semi-Structured Search using a Relational Schema

Distributed Information Retrieval: A Theoretical Model of Distributed Retrieval, Web Search

Suggested Readings:

1. David A. Grossman, Ophir Frieder. Information Retrieval – Algorithms and Heuristics, Springer, 2nd Edition (Distributed by Universities Press), 2004.
2. Gerald J Kowalski, Mark T Maybury. Information Storage and Retrieval Systems, Springer, 2000
3. Soumen Chakrabarti, Mining the Web : Discovering Knowledge from Hypertext Data, Morgan-Kaufmann Publishers, 2002.
4. Christopher D. Manning, Prabhakar Raghavan, Hinrich Schütze, An Introduction to Information Retrieval, Cambridge University Press, Cambridge, England, 2009

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CS 781

PROGRAMMING LAB - VII
(Unix Programming Lab)

Instruction

Duration of University Examination

University Examination

Sessional

3 Periods per week

3 Hours

50 Marks

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

TELANGANA UNIVERSITY

CS 782

**PROGRAMMING LAB-VIII
(WEB PROGRAMMING LAB)**

Instruction	3 Periods per week
Duration of University Examination	3 Hours
University Examination	50 Marks
Sessional	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.

Telangana University

SCHEME OF INSTRUCTION & EXAMINATION

MCA III YEAR

w.e.f: 2011-2012

SEMESTER – I

Sl. No	Syllabus Ref. No.	SUBJECT	Scheme of Instruction		Scheme of Examination		
			Periods per Week		Duration in Hrs.	Maximum Marks	
						Univ. Exam	Sessionals
		THEORY					
1	CS 801	SOFTWARE TESTING	4	-	3	70	30
2	CS 802	MIDDLE WARE TECHNOLOGIES	4	-	3	70	30
3	CS 803	OBJECT ORIENTED SYSTEM DEVELOPMENT	4	-	3	70	30
ELECTIVE – II (Any One)							
4	CS 804 CS 805 CS 806 CS 807 CS 808	ELECTRONIC COMMERCE HUMAN COMPUTER INTERACTION SOFTWARE REUSE TECHNIQUES SOFT COMPUTING XML AND WEB SERVICES	4	-	3	70	30

ELECTIVE – III (Any One)							
5	CS 809	MOBILE COMPUTING					
	CS 810	INFORMATION SECURITY					
	CS 811	SYSTEM ADMINISTRATION	4	-	3	70	30
	CS 812	RICH INTERNET APPLICATIONS					
	CS 813	SOFTWARE PROJECT MANAGEMENT					
		PRACTICALS					
1	CS 831	Programming Lab – IX (OOSD LAB)	-	6	3	50	25
2	CS 832	Programming Lab - X (MIDDLEWARE TECHNOLOGIES LAB)	-	6	3	50	25
		Total	20	12		450	200

SOFTWARE TESTING

Instruction	4 Periods per week
Duration of University Examination	3 Hours
University Examination	70 Marks
Sessional	30 Marks

Unit-I

A Mathematical Context: A Perspective on Testing, Examples

Functional Testing: Boundary Value Testing, Equivalence Class Testing, Decision Table-Based Testing, Retrospective on Functional Testing.

Unit-II

Structural Testing: Path Testing, Dataflow Testing, Retrospective on Structural Testing.

Unit-III

Integration and System Testing: Levels of Testing, Integration Testing, System Testing, Interaction Testing.

Unit-IV

Object-Oriented Testing: Issues in Object-Oriented Testing, Class Testing, Object-Oriented Integration Testing, GUI Testing, Object-Oriented System Testing.

Unit-V

Millennium Testing: Exploratory Testing, Model-Based Testing, Test-Driven Development, All Pairs Testing, Software Testing Excellence.

Suggested Reading:

1. Paul C. Jorgensen, Software Testing: A Craftsman's Approach, 3rd Edition, CRC Press, 2007.
2. Boris Beizer, Software Testing Techniques, Dreamtech, 2009.

Instruction	4 Periods per week
Duration of University Examination	3 Hours
University Examination	70 Marks
Sessional	30 Marks

Unit – I

Client/Server Concepts: Client-Server, File Server, Database server, Group server, Object Server, Web server, Middleware – General middleware – Service specific middleware. Client/Server Building blocks – RPC – Messaging – Peer- to- Peer. Web Services – SOA, SOAP, WSDL, REST Services.

Unit – II

EJB Architecture: EJB – EJB Architecture – Overview of EJB software architecture – View of EJB – Conversion – Building and Deploying EJBs – Role in EJB.

Unit – III

EJB Applications: EJB Session Beans – EJB entity beans – EJB Clients – EJB Deployment Building an application with EJB.

Unit – IV

CORBA: EJB – Distributed Systems – Purpose – Exploring CORBA alternatives – Architecture overview – CORBA and networking model – CORBA object model – IDL – ORB – Building an application with CORBA.

Unit – V

COM: COM – Data types – Interfaces – Proxy and Stub – Marshalling – Implementing Server/Client – Interface Pointers – Object Creation, Invocation, Destruction – Comparison COM and CORBA – Introduction to .NET – Overview of .NET architecture – Marshalling – Remoting.

Suggested Reading:

1. Robert Orfali, Dan Harkey and Jeri Edwards, The Essential Client / Server Survival Guide, Galgotia Publications Pvt.Ltd, 2002 (Unit 1).
2. Tom Valesky, Enterprise Java Beans, Pearson Education, 2002 (Unit 2 & 3).
3. Jason Pritchard, COM and CORBA side by side, Addison Wesley, 2000 (Unit 4 & 5).
4. Jesse Liberty, Programming C#, 2nd Edition, O' Reilly Press, 2002 (Unit 5).
5. Arno Puder, Kay Romer and Frank Pilhofer, Distributed Systems Architecture, Morgan Kaufman, 2006.
6. Mowbray, Inside CORBA, Pearson Education, 2002.
7. Jeremy Rosenberger, Teach yourself CORBA in 14 days, Tec Media, 2000.

OBJECT ORIENTED SYSTEM DEVELOPMENT

Instruction	4 Periods per week
Duration of University Examination	3 Hours
University Examination	70 Marks
Sessional	30 Marks

Unit – I

UML Introduction : Why we model, Introducing the UML, Hello World. Basic Structural Modeling: Classes, Relationships, Common Mechanisms, Diagrams, Class Diagrams.

Advanced Structural Modeling : Advanced Classes, Advanced Relationships, Relationships, Interfaces, Types and Roles, Packages, Instances, Object Diagrams , Components.

Unit – II

Basic Behavioral Modeling: Interactions, Use Cases, Use Case Diagrams, Interaction Diagrams, Activity Diagrams.

Advanced Behavioral Modeling: Events and signals, State Machines, Processes and Threads, Times and space, State Chart Diagrams.

UNIT – III

Architectural Modeling: Artifacts, Deployment Collaborations, Patterns and Frameworks, Artifact diagrams, Deployment diagrams, Systems and models.

Unit – IV

Unified Software Development Process: The Unified Process, The Four Ps, A Use-Case-Driven Process, An Architecture, An Architecture – Centric Process, An Iterative and incremental Process.

Unit – V

Core Workflows: Requirements Capture , Capturing Requirements as Use Cases, Analysis, Design, Implementation, Test.

Suggested Reading:

1. Grady Booch, James Rumbaugh, Ivor Jacobson, The Unified Modeling Language – User Guide, (Covering UML 2.0) 2nd Edition , Pearson Education, India, 2007.
2. Ivor Jacobson, Grady Booch, James Rumbaugh, The Unified Software Development Process, Pearson Education, India, 2008.

ELECTRONIC COMMERCE (Elective-II)

Instruction	4 Periods per week
Duration of University Examination	3 Hours
University Examination	70 Marks
Sessional	30 Marks

UNIT – I

Electronic Commerce – Electronic Commerce Framework, Electronic Commerce and Media Convergence, Anatomy of E-Commerce applications, Electronic Commerce Consumer applications, Electronic Commerce Organization Applications.

Consumer Oriented Electronic Commerce – Consumer- Oriented Applications, Mercantile Process Models, Mercantile Models from the Consumers' Perspective., Mercantile Models from the Merchants's Perspective.

UNIT – II

Electronic Payment systems – Types of Electronic Payment Systems, Digital Token – Based Electronic Payment Systems, Smart Cards Electronic Payment Systems, Credit Card- Based Electronic Payment Systems, Risk and Electronic Payment systems, Designing Electronic Payment Systems.

UNIT – III

Inter Organizational Commerce And EDI- Electronic Data Interchange, EDI applications in business, EDI: Legal, Security, and Privacy issues, EDI and Electronic Commerce

EDI Implementation, MIME, and Value added networks.-Standardization and EDI, EDI Software Implementation, EDI Envelope for Message Transport, Value-Added Networks, Internet-Based EDI.

Intraorganizational Electronic Commerce – Internal Information Systems, Work Flow Automation and Coordination, Customization and internal Commerce, Supply chain Management.

UNIT – IV

Corporate Digital Library – Dimensions of Internal electronic Commerce Systems, Types of Digital Documents, Issues behind Document Infrastructure, Corporate Data Warehouse

Advertising and Marketing on the Internet – Information based marketing, advertising on Internet, on-line marketing process, market research.

UNIT – V

Consumer Search and Resource Discovery – Search and Resource Discovery paradigms, Information search and Retrieval, Electronic Commerce catalogues or Directories, information filtering, Consumer-Data Interface3:Emerging Tools.

Multimedia and Digital Video – key multimedia concepts, Digital Video and Electronic Commerce, Desktop video processing, Desktop video conferencing.

HUMAN COMPUTER INTERACTION (Elective-II)

Instruction	4 Periods per week
Duration of University Examination	3 Hours
University Examination	70 Marks
Sessional	30 Marks

UNIT - I

Importance of the user interface. Characteristics of graphical and web user interfaces, User Interface Design Process: Knowing the client, Understanding business function, Principles of good screen design.

UNIT - II

System Menus and Navigation Schemes, Kinds of windows, Device based controls, Screen based controls, Test and Messages.

UNIT - III

Feedback, Guidance and assistance. Internationalization and accessibility, graphics, icons and images, colours, Layout windows and pages.

UNIT - IV

Interaction Design: Introduction, Goals, Usability, Conceptualization interaction: Problem space, Conceptual models, Interface metaphors, Interaction paradigms, Cognition: Conceptual frameworks for cognition. Collaboration and Communication: Social mechanism, Conceptual framework.

UNIT - V

Affective aspects, Expressive interface, User frustration, Agents, Process of interaction design, Activities characteristics, Practical issues, Life cycle models, Design: Prototyping and construction, Prototyping, conceptual design, Physical design Evaluation: Introduction, Framework, Testing and modelling users: Kinds of tests, Doing user testing, Experiments, Predictive models.

Suggested Reading:

1. Wilbert O. Galitz, The Essential Guide to User Interface Design, Wiley Dream tech 2002.
2. Sharp, Rogers, Preece, Interaction Design, John Wiley, 2007.
3. Andrew Sears, Julie A Jacko, Human, Computer Interaction Fundamentals, CRC Press, 2009.
4. Dan R Oslan, Human, Computer Interaction, Cengage Learning, 2010.

CS 806

SOFTWARE REUSE TECHNIQUES (Elective – II)

Instruction	4 Periods per week
Duration of University Examination	3 Hours
University Examination	70 Marks
Sessional	30 Marks

UNIT -I

Software reuse success factors, Reuse driven software engineering business, Object oriented software engineering, applications and component sub systems, use case components, object components.

UNIT -II

Design Patterns – Introduction, Creational patterns, factory, factory method, abstract factory, singleton, builder prototype.

UNIT -III

Structural Patterns- Adapters, bridge, composite, decorator, façade, flyweight, proxy.
Behavioral Patterns – Chain of responsibility, command, interpreter.

UNIT -IV

Behavioral Patterns – Iterator, mediator, memento, observer, state, strategy, template, visitor, other, design patterns- Whole part, master- slave, view handler, forwarder- receiver, client – dispatcher- server, publisher – subscriber.

UNIT -V

Architectural patterns – Layers, pipes and filters, black board, broker, model - view controller, presentation- abstraction – control, micro kernel, reflection.

Suggested Reading:

1. Ivar Jacobson, Martin Griss, Patrick Hohson – Software Reuse. Architecture, Process and Organization for Business Success, ACM Press, 1997.
2. Erich Gamma, Richard Helm, Ralph Johnson, John Vlissides – Design Patterns- Addison, 1995, Pearson Education.
3. Frank Buschmann etc. – Pattern Oriented Software Architecture – Volume 1, Wiley 1996.
4. James W Cooper – Java Design Patterns, a tutorial, Addison 2000, Pearson Education.

SOFT COMPUTING (Elective - II)

Instruction	4 Periods per week
Duration of University Examination	3 Hours
University Examination	70 Marks
Sessional	30 Marks

UNIT - I

Fundamentals of Neural Networks: Basic Concepts of Neural Networks, Human Brain, Model of an Artificial Neuron, Neural Network Architectures, Characteristics of Neural Networks, Learning Methods, Taxonomy of Neural Network Architectures, History of Neural Network Research, Early Neural Network Architectures, Some Application Domains.

Back Propagation Networks: Architecture of a Back Propagation Network, Back Propagation Learning, Illustration, Applications.

UNIT -II

Associative Memory: Autocorrelators, Heterocorrelators, Wang Et Al's Multiple Training Encoding Strategy, Exponential BAM, Associative Memory for Real-Coded Pattern Pairs, Applications, Recent Trends.

Adaptive Resonance Theory: Introduction, ART1, ART2, Applications, Sensitives of Ordering of Data.

UNIT -III

Fuzzy Set Theory: Fuzzy Versus Crisp, Crisp Sets, Fuzzy Sets, Crisp Relations, Fuzzy Relations. Fuzzy Systems: Crisp Logic, Predicate Logic, Fuzzy Logic, Fuzzy Rule Based Systems, Defuzzification Methods, Applications.

UNIT -IV

Fundamentals of Genetic Algorithms: Genetic Algorithms: History, Basic Concepts, Creation of Offsprings, Working Principle, Encoding, Fitness Function, Reproduction.

Genetic Modeling: Inheritance Operators, Cross Over, Inversion, And Deletion, Mutation Operator, Bit-Wise Operators, Bit-Wise Operators used in GA, Generational Cycle, Convergence of Genetic Algorithms, Applications, Multi-Level Optimization, Real Life Problem, Differences and Similarities Between GA and Other Traditional Methods, Advances in GA.

UNIT -V

Integration of Neural Networks, Fuzzy Logic and Genetic Algorithms: Hybrid Systems, Neural Networks, Fuzzy Logic, and Genetic Algorithms Hybrids, Preview of Hybrid Systems

Genetic Algorithms Based Backpropagation Networks: Ga Based Weight Determination, Applications.

Fuzzy Logic Controlled Controlled Genetic Algorithms: Soft Computing Tools, Problem Description of Optimum Design, Fuzzy Constraints, Illustrations, GA in Fuzzy Logic Controller Design, Fuzzy Logic Controller, FLC-GA Based Structural Optimization, Applications.

Suggested Reading:

1. S.Rajasekaran, G.A. Vijayalakshmi Pai, Neural Networks, fuzzy logic, and genetic algorithms - Genetic Algorithm, PHI Learning Private Limited-2010
2. S.N.Sivanandam, S.N.Deepa Wiley India, Principles of SOFT COMPUTING, Second Edition 2011.

CS 808

XML AND WEB SERVICES (Elective – II)

Instruction	4 Periods per week
Duration of University Examination	3 Hours
University Examination	70 Marks
Sessional	30 Marks

UNIT - I :

Introduction : Role Of XML - XML and The Web - XML Language Basics - SOAP - Web Services - Revolutions Of XML - Service Oriented Architecture (SOA).

UNIT - II :

XML Technology : XML Technology, XML - Name Spaces - Structuring With Schemas and DTD - Presentation Techniques - Transformation - XML Infrastructure.

UNIT - III:

SOAP: Overview Of SOAP - HTTP - XML-RPC - SOAP: Protocol - Message Structure - Intermediaries - Actors - Design Patterns And Faults - SOAP With Attachments.

UNIT - IV :

WEB Services: Overview - Architecture - Key Technologies - UDDI - WSDL - ebXML - SOAP And Web Services In E-Com - Overview Of .NET And J2EE.

UNIT - V :

XML Security: Security Overview - Canonicalization - XML Security Framework - XML Encryption - XML Digital Signature - XKMS Structure - Guidelines For Signing XML Documents - XML In Practice.

Suggested Reading :

1. Frank. P. Coyle, XML, Web Services And The Data Revolution, Pearson Education, 2002.
2. Ramesh Nagappan , Robert Skoczylas and Rima Patel Sriganesh, Developing Java Web Services, Wiley Publishing Inc., 2004.
3. Sandeep Chatterjee, James Webber, Developing Enterprise Web Services, Pearson Education, 2004.
4. McGovern, et al., Java Web Services Architecture, Morgan Kaufmann Publishers, 2005. Gustavo A, Fabio C, Harumi K, Vijay M. Web Services: Concepts, Architectures and Applications. Springer (Universities Press), 2004

MOBILE COMPUTING (Elective -III)

Instruction	4 Periods per week
Duration of University Examination	3 Hours
University Examination	70 Marks
Sessional	30 Marks

UNIT - I

Introduction and applications of mobile computing, Wireless transmission: Frequencies, Signals, Antennas, Signal Propagation, Multiplexing, Modulation, Spread spectrum, Cellular systems. Medium Access Control, SDMA, FDMA, TDMA, CDMA, Comparisons.

UNIT - II

Telecommunication system, GSM, DECT, TDMA, TETRA, UMTS & IMT-2000. Satellite systems: Applications, Basics, routing, localization, Handover. Broadcast systems: Cyclic representation of data, Digital audio Broadcasting, Digital video Broadcasting, Convergence of Broadcasting and mobile communication.

UNIT - III

Wireless LAN: Infrared Vs Radio Transmission, Infrastructure and Ad hoc Networks, IEEE 802.11, HIPERLAN, Bluetooth.

UNIT - IV

Mobile IP, Dynamic Host Configuration Protocol, Mobile Adhoc Networks, Mobile Transport Layer, Traditional TCP, Classical TCP improvements, TCP over 2.5/3G Wireless Networks, Performance Enhancing Proxies.

UNIT - V

Operating Systems for Mobile Devices: Features of Windows CE, Palm OS, Symbian OS, Java Card support for Mobility: File systems, WWW, Wireless Application Protocol.

Suggested Reading:

1. Jochen M. Schiller, Mobile Communications, 2nd edition, Pearson Education, India 2003.
2. Hansmann, Merk, Nicklous, Stober, Principles of Mobile Computing, 2nd edition Springer International edition, 2003.
3. Dharm P. Agarwal, Qing An Zeng, Introduction to wireless and Mobile systems, 2nd edition Thomas India 2007.
4. Frank Adelstien, Sandeep K.S.Gupta, Fundamentals of Mobile and Pervasive Computing, Tata McGraw Hill, 2005.
5. Ivan Stojmenovic, Handbook of Wireless and Mobile Computing, Wiley India, 2006.

INFORMATION SECURITY (Elective – III)

Instruction	4 Periods per week
Duration of University Examination	3 Hours
University Examination	70 Marks
Sessional	30 Marks

UNIT -I

Introduction: History, Critical characteristics of information, NISTISSC security model, Components of an information system, Securing the components, Balancing security and access, The SDLC, The security SDLC.

Need for Security: Business needs, Threats, Attacks- secure software development.

UNIT -II

Legal, Ethical and professional Issues: Law and ethics in information security, Relevant U.S laws- international laws and legal bodies, Ethics and information security.

Risk Management: Overview, Risk identification, Risk assessment, Risk control strategies, selecting a risk control strategy, Quantitative versus qualitative risk control practices, Risk management discussion points, Recommended risk control practices.

UNIT -III

Planning for Security: Security policy, Standards and practices, Security blue print, Security education, Continuity strategies.

Security Technology: Firewalls and VPNs: Physical design, Firewalls, Protecting remote connections

UNIT -IV

Security Technology: Intrusion detection, access control and other security tools: Intrusion detection and prevention systems, Scanning and analysis tools, Access control devices.

Cryptography: Foundations of cryptology, Cipher methods, Cryptographic Algorithms, Cryptographic tools, Protocols for secure communications, Attacks on cryptosystems.

UNIT - V

Implementing Information Security: Information security project management, Technical topics of implementation, Non technical aspects of implementation, Security certification and accreditation.

Security and Personnel: Positioning and staffing security function, Employment policies and practices, Internal control strategies. Information security maintenance : Security management models, The maintenance model, Digital forensics

Suggested Reading:

1. Michel E Withman and Herbert J Mattord, Principles and Practices of Information Security, Cengage Learning, 2009.
2. Thomas R Peltier, Justin Peltier, John Blackley, Information Security Fundamentals, Auerbach Publications, 2010.
3. Detmar W Straub, Seymour Goodman, Richard L Baskerville, Information Security, Policy, Processes and Practices, PHI, 2008.
4. Mark Merkow and Jim Breithaupt, Information Security Principle and Practices, Pearson

CS 811

SYSTEM ADMINISTRATION (Elective – III)

Instruction	4 Periods per week
Duration of University Examination	3 Hours
University Examination	70 Marks
Sessional	30 Marks

UNIT - I

Functions of system administration, UNIX : Files, Processes Devices, file system , essential administrative tools: Grep, awk, files and directory commands, starting and shutdown process.

UNIT - II

User accounts, security, managing system resources : System performance, managing CPU usage, memory, disk I/O automating tasks with scripts.

UNIT - III

File system and Disks: Mounting, adding disks, CD -Rom devices, and backup and restore terminals modems and printers.

UNIT - IV

TCP/IP Network Management: TCP/IP networking, adding a new host, NFS/NIS, monitoring the network, E-mail, configuring and building Kernel for Linux.

UNIT - V

Windows 2003 Server: Startup, shutdown, server configuration , user accounts, managing processes, disks and file system security.

Note: First four units are related to UNIX system , Fifth unit is related to Windows 2003 Server.

Suggested Reading :

1. Aeleon Frisch, Essential System Administration , O'Reilly, 1995, Second Edition.
2. Aeleon Frisch, Essential Windows Administration, O'Reilly, 1998, First Edition.
3. Nemeth, Unix System Administration, Pearson Education, 2000.

CS 812

RICH INTERNET APPLICATIONS (Elective -III)

Instruction	4 Periods per week
Duration of University Examination	3 Hours
University Examination	70 Marks
Sessional	30 Marks

UNIT - I

Web 2.0 Folksonomies and Web 2.0, Software as a service. Multiple delivery channels (Voice – VOXML, and ANT (HTML), Social Networking.

UNIT - II

Client side programming – Overview of JavaScript, Objects in JavaScript, Regular expressions, Overview of XML, DTD and XML Schema, DOM and SAX Parsers, CSS, XSLT.

UNIT - III

Web Services- SOA, SOAP, WSDL, REST Services.

JSON Format- Ajax introduction, XML HTTP object comparison with I frames.

UNIT -IV

Building Rich Internet Application- Flash Player, Flex framework, MXML introduction, Action Script Introduction, working with Action Script, Flex Data binding, Common UI Components using Datagrids. Tree controls, Pop up controls etc.

UNIT -V

Mashup using Flex and Ajax. Web services in Flex. Semantic web (Web 3.0). Resource Description Framework, use and examples, Ontologies, Web ontology language (OWL).

Suggested Reading:

1. Ivan Bayross, Web Enabled Commercial Application Development using HTML, DHTML, Javascript, Perl CGI, BPB Publications, 2007.
2. Colin Mook, Essential Actionscript 3.0, O'Reilly publications, 2007.
3. Steven Holzner, Ajax Bible Wiley India Edition, 2007.
4. Justin Gethland et al, A Web 2.0 Primer Pragmatic Ajax, SPD Publications, 2006.

CS 813

SOFTWARE PROJECT MANAGEMENT (Elective -III)

Instruction	4 Periods per week
Duration of University Examination	3 Hours
University Examination	70 Marks
Sessional	30 Marks

Unit – I

Introduction to Software Project Management, Project Evaluation and Programme Management, An Overview of Project Planning.

Unit – II

Selection of an Appropriate Project Approach, Software Effort Estimation, Activity Planning.

Unit – III

Risk Management, Resource Allocation, Monitoring & Control.

Unit – IV

Managing Contracts, Managing People in Software Environments, Working in Teams.

Unit – V

Software Quality, An Overview of PRINCE 2

Suggested Reading:

1. Bob Hughes and Mike Cotterell, "Software Project Management", Tata McGraw Hill, 5th Edition, 2010.
2. "Walker Royce", Pearson, 1st Edition.

O O S D L A B

Instruction	6	Periods per week
Duration of University Examination	3	Hours
University Examination	50	Marks
Sessional	25	Marks

Students have to perform the following O O A D steps on a given

Case Study:

- * Use Case Modeling
- * Structural Modeling
- * Behavioral Modeling
- * Architectural Modeling

The output should consists of:

- * Use case Diagrams
- * Class Diagrams
- * Sequence Diagrams
- * Collaboration Diagrams
- * State Chart Diagrams
- * Activity Diagrams
- * Deployment Diagrams
- * Component Diagrams

Students should form into groups. They should carry out the Case Study as a group activity. The lab should be carried out using a CASE Tool. Finally they should submit a report.

Students should familiarize themselves with Rational Test Suite/ Win Runner/ Load Runner.

PROGRAMMING LAB X

MIDDLEWARE TECHNOLOGIES LAB

Instruction	6 Periods per week
Duration of University Examination	3 Hours
University Examination	50 Marks
Sessional	25 Marks

1. Create a Distributed name Server (like DNS) RMI.
2. Create a Java Bean to draw various graphical shapes and display it using or without using BDK.
3. Develop an enterprise Java Bean for student Information System.
4. Develop an enterprise Java Bean for Library operations.
5. Create and invoke Web Services.
6. Develop a component for converting the currency values using COM/.NET.
7. Develop a component for browsing CD catalogue using COM/.NET.
8. Develop a component for retrieving information from message box using DCOM/.NET.
9. Develop a middleware component for retrieving Stock Market Exchange information using CORBA.
10. Develop a middleware component for retrieving Bank balance using CORBA.

Telangana University

SCHEME OF INSTRUCTION & EXAMINATION

MCA III YEAR

w.e.f: 2011-2012

SEMESTER – II

Sl. No	Syllabus Ref. No.	SUBJECT	Scheme of Instruction		Scheme of Examination		
			Periods per Week		Duration in Hrs.	Maximum Marks	
			L/T	D/P		Univ. Exam	Sessionals
		THEORY					
1	CS 851	Project Seminar		3	-	-	25
2	CS 852	Project		6	-	Grade	50

- **GRADES:** Excellent / Very Good / Good / Satisfactory / Unsatisfactory

PROJECT SEMINAR

Instruction

3 Periods per week

Sessional

25 Marks

1. Oral presentation is an important aspect of Computer Science education. The objective of the seminar is to prepare the student for systematic independent study of the art topics in the broad area of his/her specialization.
2. Seminar topics can be chosen by the students with the advice from the faculty members.
3. Students are the exposed to the following aspects of seminar presentations.

Literature survey

Organization of the material

PPT Presentation

Technical writing

Each student is required to

4. Submit one page of Synopsis of the seminar talk two days before for display on notice board.
5. Give 20 minutes PPT presentation, followed by 10 minutes discussion.
6. Submit a report on the seminar topic with a list of references and slides used within a week.

The sessional marks will be awarded to the students by atleast 2 faculty members on the basis of an oral and written presentation as well as their involvement in the discussion.

PROJECT

Instruction	6 Periods per week
Duration of University Examination	Viva-Voce
University Examination	Grade
Sessional	50 Marks

Sixth Semester of the MCA course is exclusively meant for project work. Project has to be carried out by each student individually in a period of 15 weeks of duration. Students should submit a synopsis at the end of 1st week in consultation with the Project Guide. The synopsis should consist of definition of the problem, scope of the problem and plan of action. After completion of four weeks students are required to present a Project Seminar on the topic covering the aspects of analysis, design and implementation of the project work.

At the end of the semester the students are required to present themselves for a University Viva-voce examination in which each student will be awarded with a grade.

A committee consisting of two faculty members of the respective college along with a guide will evaluate the project and award internal marks.

TELANGANA UNIVERSITY