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VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)

IBRAHIMBAGH, HYDERABAD - 31

DEPARTMENT OF COMPUTER APPLICATIONS

MCA II Year (I & II Semesters)

COURSE STRUCTURE & SYLLABUS

BOS APPROVED on 18.5.2015

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)

(AFFILIATED TO OSMANIA UNIVERSITY & ACCREDITED BY A.I.C.T.E)

DEPARTMENT OF COMPUTER APPLICATIONS

IBRAHIMBAGH, HYDERABAD – 500 031

www.vce.ac.in

VASAVI COLLEGE OF ENGINEERING (AUTONOMUS), HYDERABAD – 31

DEPARTMENT OF COMPUTER APPLICATIONS

Department – VISION

To enable students to achieve excellence in computational skills embedded with human values.

MCA PROGRAM – MISSION

To imbibe technical competence for developing innovative solutions and new applications in computer science, there by transforming them as better professionals.

MCA PROGRAM – PROGRAM EDUCATIONAL OBJECTIVES (PEOS):

1. To gain knowledge and proficiency for analysis, design and problem solving, to have a successful career in industry and for higher studies.
2. To promote application of technical knowledge coupled with project management abilities.
3. To imbibe leadership qualities with professional ethics and communication skills.
4. To provide positive attitude for lifelong learning.

MCA PROGRAM – PROGRAM OUTCOMES (POs):

a. An ability to apply knowledge in computer applications to become successful professionals.
b. An ability to develop logic and understand the essential mathematics related to Information Technology.
c. An ability to Design, implement, and evaluate a software product.
d. An ability to apply skills for solving technical problems in software development.
e. An ability to familiarize with emerging & advanced software tools.
f. An ability to experience the industrial environment for understanding the impact of computational solutions in a global & societal context.
g. An ability to analyse the knowledge of contemporary issues.
h. An ability to apply professional ethics.
i. An ability to get readiness to collaborate in a multi-disciplinary team.
j. An ability to communicate effectively.
k. An ability to participate in life-long learning.
l. An ability to handle the projects through appropriate project management techniques.

CONTENTS

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS), HYDERABAD-31
DEPARTMENT OF COMPUTER APPLICATIONS

SCHEME OF INSTRUCTION & EXAMINATION

MCA II YEAR I-Semester

Sl. No.	Syllabus Ref. No.	SUBJECT	Scheme of Instruction			Scheme of Examination			
			Periods per week			End Sem Exam hrs	Maximum Marks		Credits
Theory			**L**	**T**	**P**		**End Sem Exam**	**Sessionals**	
1	CA 6010	Database Management Systems	4	1	-	3	70	30	3
2	CA 6020	Operations Research	4	1	-	3	70	30	3
3	CA 6030	Operating Systems	4	1	-	3	70	30	3
4	CA 6040	Design and Analysis of Algorithms	4	1	-	3	70	30	3
5	CA 6050	Software Testing	4	1	-	3	70	30	3
6	HS 6060	Finishing School – I	2	-	-	1 ½	35	15	1
Practical									
7	CA 6315	Mini Project – I	-	-	2	-	-	25	1
8	CA 6321	Programming Lab – V (DBMS Lab)	-	-	6	3	50	25	2
9	CA 6331	Programming Lab – VI (OS Lab)	-	-	6	3	50	25	2
TOTAL			**22**	**05**	**14**	**22 ½**	**485**	**240**	**21**

Dr. P. Hemagiri Rao

Dr. Rajeev Wankar 11/03/16

Mr. S. Rambabu

Mr. S. Bala Krishna 11/3/16

Mr. Oruganti Prasad

MCA II Year I-Semester

CA 6010

DATABASE MANAGEMENT SYSTEMS

Lecture	: 4 Hrs/Week	**Internal Assessment**	: 30
Tutorial	: 1 Hrs/Week	**End Sem Exam**	: 70
Practical	: -	**Credits**	: 03

Course Objectives

The course will enable the learners to:

1. Understand the role of a database management system in an organization.
2. Describe the structure and operations of database management system.
3. Explain the different phases involved in the design and implementation of a relational database.

Course Outcomes

At the end of the course the learners should be able to:

1. Describe basic database concepts; explain the database design process using E-R Model.
2. Illustrate Relational Model and relational algebra operations. Develop data manipulation commands using SQL.
3. Illustrate advanced SQL concepts and explain normalization techniques.
4. Discuss Tree, Hash-based Indexing Methods and transaction management.
5. Describe Concurrent control of transactions and database recovery process.

Course Contents:

Unit – I

Introduction: Database System Applications, Purpose of Database systems, view of Data, Database Languages, relational Databases, Database Design, Data Storage and Querying, Database Architecture, Data Mining and Information Retrieval, Specialty Databases, Database Users and Administrators.

Database Design and E-R Model: Overview of the Design Process, The E-R Model, Constraints, E-R Diagrams, Reduction to Relation Schemes, E-R Design Issues, Extended E-R Features, Other Aspects of Database Design.

Unit – II

Relational Model: Structure of Relational databases, Database Schema, Keys, Schema Diagrams, Relational Query Languages, Relational Algebra, Relational Operations,

Structured Query Language: Overview of the SQL Query Language, Basic structure of SQL Queries, Additional Basic Operations, Set Operations, Null Values, Aggregate Functions, Nested Sub Queries, Join Expressions, Views, Transactions, Integrity Constraints, SQL Data Types and Schemas, Authorization.

Unit – III

Advanced SQL: Accessing SQL from a Programming Language, Functions and Procedures,Triggers, Recursive Queries.

Relational Database Design: Features of Good Relational Designs, Atomic Domains and First Normal Form, Decomposition Using Functional Dependencies, Functional Dependency Theory, Algorithm for Decomposition, Decomposition using Multivalve Dependencies.

Unit-IV

Indexing and Hashing: Basic Concepts, Ordered Indices, B+ Tree Index Files, Multiple-Key Access, Static Hashing, Dynamic Hashing, Comparison of Ordered Indexing and Hashing, Bitmap Indices.

Transaction Management: Transaction Concept, Storage Structure, Transaction Atomicity and Durability, Transaction Isolation, Serializability, Transaction Isolation and Atomicity, Transaction Isolation Levels, Implementation of Isolation Levels.

Unit- V

Concurrency Control: Lock-Based Protocols, Deadlock Handling, Multiple Granularity, Timestamp-Based Protocols, Validation-Based Protocols, Multiversion Schemes, Insert or Delete Operations and Predicate Reads, Concurrency in Index Structures.

Recovery System: Failure Classification, Storage Structure, Recovery and Atomicity, Recovery algorithms, Buffer Management, Failure with Loss of Nonvolatile Storage, ARIES, Remote Backup Systems.

LEARNING RESOURCES:

Prescribed Textbook:

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

Reference Books:

1. Date CJ, Kannan A, Swamynathan S, "An Introduction to Database Systems", Eight Edition, Pearson Education, 2006.
2. Raghu Ramakrishnan, Johannes Gehrke, "Database Management Systems". Third Edition, McGraw Hill, 2003.
3. Ramez Elmasri, Durvasul VLN Somayajulu, Shamkant B Navathe, Shyam K Gupta, "Fundamentals of Database- Systems", Fourth Edition, Pearson Education, 2006.
4. Peter Rob, Carlos Coronel, "Database Systems", Thomson, 2007.

Web Resources:

1. http://nptel.ac.in

MCA II Year I-Semester

CA 6020

OPERATIONS RESEARCH

Lecture	: 4 Hrs/Week	**Internal Assessment**	: 30
Tutorial	: 1 Hrs/Week	**End Sem Exam**	: 70
Practical	: -	**Credits**	: 03

Course objectives:

The course will enable the learners to:

To provide a fundamental account of the basic results and techniques of linear programming (LP) and its related topics in operations research. There is an equal emphasis on all three aspects of understanding, algorithms and applications.

Course Outcomes:

At the end of the course the learners should be able to:

1. Understand the fundamental concept and approach of linear programming formulate and solve linear programming problems using the techniques graphical method, Simplex Method, Artificial Simplex methods, dual Simplex algorithm and Sensitive Analysis and interpret the solution.
2. Formulate and solve transportation transshipment problems
3. Formulate and solve assignment problems and solve the LPs using Integer Programming techniques.
4. Formulate and solve the real world problems using Dynamics programming
5. Solutions of real world problems using Game theory.

Course Contents:

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.

LEARNING RESOURCES:

Prescribed textbook:

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

Reference Books:

1. Hamdy A. Taha, "Operations Research: An Introduction", 8th edition, Pearson Prentice Hall.
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.

MCA II Year I-Semester

CA 6030

OPERATING SYSTEMS

Lecture	: 4 Hrs/Week	**Internal Assessment**	: 30
Tutorial	: 1 Hrs/Week	**End Sem Exam**	: 70
Practical	: -	**Credits**	: 03

COURSE OBJECTIVES:

The course will enable the learners to:

1. Have an overview of what an operating systems are, learn process concepts scheduling algorithms and inter process communication
2. Understand several algorithms, properties used in memory management
3. Explore various methods related to inter process communication, process synchronization, dead locking and learn mechanisms related to security and protection
4. Understand system I/O in depth, including system design , interfaces, internal system structures and functions
5. Understand how process, memory, device and file management functions are designed and constructed in linux and windows operating system.

COURSE OUTCOMES:

At the end of the course the learners should be able to:

1. Work out problems and depict gantt charts related to process scheduling algorithms
2. Distinguish system calls and system programs and solve problems related to memory management algorithms
3. Implement process synchronization concepts using semaphores and shared memory
4. Compare and contrast different raid structures and answer questions regarding disk scheduling, characteristics of I/O devices and interrupt driven I/O cycle. Also implement concept of file operations
5. Distinguish different operating system features with respect to memory, file and storage management parameters.

COURSE CONTENTS:

UNIT-I

Introduction to operating systems: OS structure and strategies, Process concept, Inter process communication, Threads, Multithreaded programming.

Process scheduling: Scheduling criteria, Scheduling Algorithms, Multi Process scheduling, Thread Scheduling.

UNIT-II

Memory Management, swapping, contiguous allocation, paging, static and dynamic partition, demand paging, page replacement algorithms, thrashing, segmentation with paging, Virtual memory.

File System Interface: File Concept, Access Methods, Directory Structure, File System Mounting, File sharing, protection.

File System implementation: File system structure, File system implementations, Directory implementation, Allocation Methods, Free space management, Efficiency and performance, recovery.

UNIX file system, Windows file system

UNIT-III

Process Synchronization: Critical section problem, semaphore, monitors.

Deadlocks: Necessary conditions, resource allocation graph, methods for handling deadlocks, preventions, avoidance, detection and recovery, protection, goals of protection, domain of protection, access matrix .

UNIT-IV

Device Management: Disk structure, Disk Attachment, Disk Scheduling, Disk 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

LINUX System: Design Principles, Kernel Modules, Process Management, Scheduling Memory Management, File Systems, Input and Output, Interprocess communication, Network Structure, Security.

Windows XP: Design Principles, Architecture, Environmental subsystem, File Subsystem, Networking, Programming interface.

LEARNING RESOURCES:

Prescribed Textbook:

1. Abraham Silberchatz, Peter B.Galvin, Greg Gagne, "*Operating System-Concepts*", Wiley India, 2006.

2. Andrew S.Tanenbaum, "*Modern Operating Systems*", Third Edition, Pearson education, Asia-2008.

Reference Text Book :

1. Harvey M. Deitel, Paul Deitel, and David R. Choffnes, "Operating systems" Third Edition.

Web Resource:

1. NPTEL Operating system video lectures by Prof. P.K. Biswas, IIT kharagpur.

MCA II Year I-Semester

CA 6040

DESIGN AND ANALYSIS OF ALGORITHMS

Lecture	: 4 Hrs/Week	**Internal Assessments**	: 30
Tutorial	: 1 Hrs/Week	**End Sem Exam**	: 70
Practical	: -	**Credits**	: 03

Course Objectives:

The course will enable the learners to:

1. To provide basic understanding the fundamental principles underlying algorithm analysis and design and be able to apply them in specific instances
2. To provide an understanding of Divide and conquer and greedy techniques
3. To apply dynamic programming technique.
4. To enable understanding of Backtracking and branch and bound technique many of its applications
5. To provide basics of NP completeness and few reducibility problems.

Course Outcomes:

At the end of the course the learners should be able to:

1. Apply asymptotic notations and apply them to simple methods, including methods that utilize complex loops and recursion.
2. Analyze time complexity of previous learned sorting methods using divide and conquer and few problems using greedy method.
3. Apply dynamic programming.
4. Use back tracking and branch and bound in solving n queens, travelling sales person and knapsack problems.
5. Describe the nondeterministic algorithms and deduce reducibility of problems.

Course Contents:

UNIT -I

Introduction: Algorithm Specification, Performance analysis. Space Complexity, Time Complexity, Asymptotic Notation (O, Omega, Theta), Practical Complexities, Performance Measurement, review of elementary data structure – Heap and Heap Sort, Hashing, set representation. UNION FIND.

UNIT –II

Divide and Conquer: The General Method, Finding Maximum Minimum, Merge Sort, Quick Sort and Selection.

Greedy Method: Knapsack Problem, Optimal Storage On Tapes, Job Sequencing With Deadlines, Optimal Merge Patterns, Minimum Spanning Trees.

UNIT – III

Dynamic Programming: Multistage Graphs, All Pairs Shortest Path. Optimal Binary Search Trees, 0/1 Knapsack, Reliability Design, Traveling Salesperson Problem,
Traversal Techniques: Bi-Connected Components, BFS and DFS.

UNIT -IV

Backtracking: 8- Queens Problem, Graph Coloring, Hamiltonian Cycles, 0/1 Knapsack Problems,
Branch and Bound: 0/1 Knapsack Problems, Traveling Salesperson Problem, Lower-Bound Theory.

UNIT -V

NP-Hard and NP – Complete Problems: Basic Concepts, Statement of Cook's Theorem and its importance, NP-Hard Graph Problems and Scheduling Problems, NP-Hard Code Generation Problems.

LEARNING RESOURCES:

Prescribed Textbook:

1. Ellis Horowitz, Sartaj Sahni, Sanguthevar Rajasekaran, "Fundamentals of Computer Algorithms", Second Edition, University Press, 2007.

References Books:

1. Th Cormen: CE Leiserson, RL. Rivest, C.Stein. "Introduction to Algorithms" 3rd ed., PHI, 2010
2. Anany Levitin, "Introduction to the Design & Analysis of Algorithms", Pearson education, 2000.
3. Aho, Hopcroft, Ulman, "The Design and Analysis of Computer Algorithm", Pearson Education, 2000.
4. Parag H. Dave, Himanshu B. Dave "Design and Analysis of Algorithms" Pearson Education, 2008.

MCA II Year I-Semester

CS 6050

SOFTWARE TESTING

Lecture	: 4 Hrs/Week	**Internal Assessment**	: 30
Tutorial	: 1 Hrs/Week	**End Sem Exam**	: 70
Practical	: -	**Credits**	: 03

Course Objectives:

The course will enable the learners to:

1. Testing Techniques like Functional Testing, Structural Testing, and Object-Oriented Software testing.
2. Test generation from requirements and Finite State Machine
3. Understand millennium testing techniques

Course Out Comes:

At the end of the course the learners should be able to:

1. Know functional testing techniques and test case designing using BVA, Equivalence class testing, Decision table based testing methods
2. Know structural testing techniques like basis path testing method, loop testing, Data flow testing method
3. Know the levels of testing, integration testing techniques like decomposition-based integration, call graph- based integration, path-based integration and system testing in terms of threads and forms of interaction
4. Know testing tactics for O-O software and GUI based applications
5. Exposed to the recent initiatives in software testing like MDD, TDD, All pairs testing and Know best testing practices. And also have an overview of Automated testing.

Course contents:

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.

Software Testing Automation: What is Test Automation, Skills needed for Automation, What to Automate, Scope of Automation. Design & Architecture for Automation, Generic Requirements for Test Tool / Framework, Process Model for Automation, Challenges in Automation.

LEARNING RESOURCES:

Prescribed Textbook:

1. Paul C. Jorgensen, Software Testing: A Craftsman's Approach, 3rd Edition, CRC Press, 2007.
2. Srinivasan Desikan, Gopalaswamy Ramesh, "Software Testing Principles & Practices", Pearson Publications.

MCA II Year I-Semester

HS 6060

FINISHING SCHOOL - I

Lecture	: 2 Hrs/Week	**Internal Assessment**	: 15
Tutorial	: -	**End Sem Exam**	: 35
Practical	: -	**Credits**	: 01

COURSE OBJECTIVES:

The Course will enable the learners to:

1. Define the elements of basic grammar for learning and practicing at workplace.
2. Adapt the usage of functional grammar for business purpose.
3. Learn the etiquette for developing conversational skills while interacting with professionals.
4. Use the essential factors related to written communication for professional purposes.

COURSE OUTCOMES:

At the end of the course the learners should be able to:

1. Adapt the usage of grammar for professional purposes.
2. Demonstrate the skills in oral communication through practice in the areas related to developing conversational skills.
3. Apply skills for enhancing reading comprehension and sentence formation.
4. Acquire and practice the professional etiquette on agreements and disagreements, apologizing and appreciating and persuading and convincing.
5. Practice skills related to written communication in the areas of email writing, essay writing, and article writing.

COURSE CONTENTS:

UNIT – I: Fundamentals of communication
Delightful Descriptions (Past, Present and Future)-Developing conversational skills: Exchanging pleasantries and complimentary closing etc.- Contextual conversations- Developing Etiquette – showing agreement and disagreement-ask and give information, apologizing and appreciating – persuasive skills.

Unit – II: Reading
Reading Comprehension: Methods, do's and don'ts, Rearrangement of sentences---Practice sessions.

Unit – III: Advanced Communication
Group discussion, debates, public speaking.

Unit – IV: Vocabulary
Synonyms and Antonyms, Idioms and Phrasal verbs, Errors in prepositions and tenses.

Unit – V: Written communication
Email etiquette, essay writing, article writing, Resume writing and covering letter – Report writing.

LEARNING RESOURCES:

Speak Well: JayshreeMohanraj, KandulaNirupa Rani and Indira Babbellapati - Orient BlackSwan

Dr. P. Hemagiri Rao | Dr. Rajeev Wankar | Mr. S. Rambabu

Mr. S. Bala Krishna | Mr. Oruganti Prasad

MCA II Year I-Semester

CA 6315

MINI PROJECT - I

Lecture	: -	**Internal Assessment**	: 25
Tutorial	: -	**End Sem Exam**	: -
Practical	: 2 Hrs/Week	**Credits**	: 01

Course Objectives:

The course will enable the learners to:

1. Understand the Project development cycle through mini project.

Course Outcomes:

At the end of the course the learners should be able to:

1. Plan, analyze, design, implement and test a software project.
2. Prepare a technical report and documentation; deliver a technical seminar based on the mini project work carried out.

Course Contents:

1. The students are required to carry out mini project in any of the areas such as Database Management Systems, Operations Research, Operating Systems, Design and Analysis of Algorithms, Software Testing but not limited to.
2. Mini Project topics can be chosen by the students and a synopsis to be submitted by the end of 4th week of semester. The synopsis should consist of definition of the problem, scope of the problem, SRS and plan of action.
3. Students are required to present First Mini Project Seminar on the aspects of project idea and SRS for 10 marks and second Mini Project Seminar on implementation of the Mini project work for 10 marks.

   Students are required to submit a report on the mini project for 05 marks.
4. The Mini project seminar presentation should include the following components of the Mini project:
   - Problem definition and specification.
   - Literature survey
   - Broad knowledge of available techniques to solve a particular problem.
   - Planning of the work, preparation of bar(activity) charts
   - Presentation-oral and written.
5. The Sessional marks will be awarded to the students by Mini project coordinators on the basis of an oral and written presentation as well as their involvement in the discussion.

Dr. P. Hemagiri Rao

Dr. Rajeev Wankar 11/03/16

Mr. S. Rambabu

Mr. S. Bala Krishna 11/3/16

Mr. Oruganti Prasad

MCA II Year I-Semester

CA 6321

PROGRAMMING LAB - V
(Database Management Systems Lab)

Lecture	: -	**Internal Assessment**	: 25
Tutorial	: -	**End Sem Exam**	: 50
Practical	: 3 Hrs/Week	**Credits**	: 02

Course Objectives

The course will enable the learners to:

1. Demonstrate competence with the fundamental tasks involved with designing and implementing a RDBMS.

Course Outcomes

At the end of the course the learners should be able to:

1. Implement DDL, DML and DCL Commands.
2. Demonstrate PL/SQL Programming concepts.
3. Design Oracle Forms and Reports.

Course Contents:

1. SQL
   a. Creating Database (Exercising commands like DDL, DML, DCL and TCL)
   b. Exercising all types of joins
   c. Creating tables in I Normal, II Normal, III Normal and BCNF Form.
   d. Creating table using combination of constraints.
   e. Ranking and Analytic Functions.
   f. Exercising Simple to Complex Queries
   g. Usage of Stored Functions.
   h. Creating Password and Security features for an Application.
   i. Usage of File Locking Table Locking facilities in an Application.

2. PL/SQL
   a. Demonstration of Blocks, Cursors, Procedures, Functions and Packages.
   b. Demonstration Exception Handling
   c. Usage of Triggers to perform operation on single and Multiple Tables.
   d. PL/SQL Procedures for data validation

3. FORMS
   Creation of forms for Inventory system, College Information system, Library Information System Recruitment Cell, Retail Mart, Pharma Management System.

4. REPORTS
   a. Creation of Reports based on different queries.
   b. Creation of small full fledged Database Application spread over 3 sessions.

LEARNING RESOURCES:

Prescribed Textbook:

1. Evan Bayross – SQL, PL/SQL.

Web Resources:

1. http://nptel.ac.in
2. W3schools.com

MCA II Year I-Semester

CA 6321

PROGRAMMING LAB - VI
(Operating Systems Lab)

Lecture	: -	**Internal Assessment**	: 25
Tutorial	: -	**End Sem Exam**	: 50
Practical	: 3 Hrs/Week	**Credits**	: 02

Course Objectives

The course will enable the learners to:

1. Understand and learn process, signal and thread related system calls
2. Learn CPU scheduling algorithms
3. Understand page replacement algorithms
4. Understand inter process communication and process synchronization concepts using pipes, messages and shared memory
5. Learn file flags, file types for the specified file descriptor
6. Learn OPERATING linux basic commands and shell scripts

Course Outcomes

At the end of the course the learners should be able to:

1. Implement process, thread and signal related system calls
2. Implement CPU scheduling algorithms and page replacement algorithms
3. Implement echo server programs and process synchronization concepts using pipes, message passing, semaphores and shared memory
4. Implement file locking , file flags, counting file types programs
5. Write and execute linux shell script programs

Course Contents:

1. Program using process related system calls
2. Implement process scheduling algorithms
   a) FCFS b) SJF c) Round Robin
3. Program to create threads
4. Program using signals
5. Implement page replacement algorithms a) FIFO b) LRU
6. Printing file flags for specified file descriptor
7. Printing type of file for each command line arguments
8. Recursively descends a directory hierarchy counting file types
9. Echo server using pipes
10. Echo server using messages
11. Producer and Consumer problem using semaphores and shared memory
12. Producer and Consumer problem using message passing
13. Dining philosopher's problem using semaphores
14. Readers and Writers problem using message passing.
15. Program using File locking
16. Programs using linux shell script(Note 2 shell programs covering the salient features of shell)

LEARNING RESOURCES:

Prescribed Textbook:

1. W. Richard Stevens, UNIX network programming Prentice Hall / Pearson Education 2009.

Reference TextBooks:

1. Maurice J Bach , "Design of the Unix Operating System" Prentice / Hall International, Inc.
2. B.M. Harwani, Unix and shell programming Oxford University press.
3. Uresh Vahalia , Unix Internals :The New Frontiers , Pearson Education India, 2008

Web Resource:

1. linuxcommand.org

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS), HYDERABAD-31

DEPARTMENT OF COMPUTER APPLICATIONS

SCHEME OF INSTRUCTION & EXAMINATION

MCA II YEAR II-Semester

Sl. No.	Syllabus Ref. No.	SUBJECT	Scheme of Instruction			Scheme of Examination			
			Periods per week			End Sem Exam hrs	Maximum Marks		Credits
Theory			**L**	**T**	**P**		**End Sem Exam**	**Sessionals**	
1	CA 6510	Data Mining	4	1	-	3	70	30	3
2	CA 6520	Web Programming and Services	4	1	-	3	70	30	3
3	CA 6530	Network Programming and Scripting Languages	4	1	-	3	70	30	3
4	CA 6540	Mobile Communications	4	1	-	3	70	30	3
5	CA	Elective – I	4	1	-	3	70	30	3
6	MA 6550	Finishing School – II	2	-	-	1 ½	35	15	1
Practical									
7	CA 6815	Mini Project – II	-	-	2	-	-	25	1
8	CA 6821	Programming Lab – VII (WPS Lab)	-	-	6	3	50	25	2
9	CA 6831	Programming Lab – VIII (NPSL Lab)	-	-	6	3	50	25	2
TOTAL			**22**	**05**	**14**	**22 ½**	**485**	**240**	**21**

Elective – I :

1. CA 6560 Enterprise Application Development using Java
2. CA 6570 Distributed Systems
3. CA 6580 Software Project Management
4. CA 6590 Artificial Intelligence

Dr. P. Hemagiri Rao

Dr. Rajeev Wankar 11/03/16

Mr. S. Rambabu

Mr. S. Bala Krishna 17/3/16

Mr. Oruganti Prasad

MCA II YEAR II-Semester

CA 6510

DATA MINING

Lecture	: 4 Hrs/Week	**Internal Assessment**	: 30
Tutorial	: 1 Hrs/Week	**End Sem Exam**	: 70
Practical	: -	**Credits**	: 03

Course Objectives:

The course will enable the learners to:

1. Describe the basics of Data Mining and Data Warehouse.
2. Apply different data preprocessing techniques and formulate association rules.
3. Explain the Classification and Clustering techniques.

Course Outcomes:

At the end of the course the learners should be able to:

1. Describe the applications of Data Mining, Types of Data and Methods of Preprocessing.
2. Explain the modeling techniques of a Data Warehouse.
3. Discuss and illustrate the methods of Association Analysis.
4. Illustrate various Classification methods.
5. Illustrate various Clustering methods and discuss latest trends in data mining.

Course Contents:

UNIT – I

Introduction: Fundamentals of Data Mining, Kinds of Patterns can be mined, Technologies Used, Applications and Issues in Data Mining.

Types of Data: Attribute types, Basic Statistical descriptions of Data, Measuring data Similarity and Dissimilarity.

Data Processing: Need of Preprocessing, Data cleaning, Data Integration, Data Reduction, Data Transformation.

UNIT – II

Data Warehouse and OLAP: Date Warehouse, Data Warehouse Modeling, Data Warehouse Design and Usage, Data Warehouse Implementation, Data Generalization by Attribute-oriented induction.

UNIT – III

Mining Frequent Patterns, Associations and Correlations: Basic Concepts, Frequent Item set mining methods, Pattern Evaluation methods, Constraint based Frequent pattern mining, Mining Multilevel and Multidimensional patterns.

UNIT – IV

Classification: Basic Concepts, Classification by Decision Tree Induction, Bayes Classification methods, Model Evaluation and selection, Bayesian Belief Networks, Classification by Backpropogation, Classification using Frequent patterns, Lazy learners, Other Classification methods.

UNIT – V

Cluster Analysis: Basic Clustering methods, Partitioning methods, Density – Based Methods, Grid-based methods, and Evaluation of Clustering, Outliner analysis and detection Methods.

Data Mining Trends and Research Frontiers: Mining Complex Data Types, Data Mining Applications, Data Mining Trends.

LEARNING RESOURCES:

Prescribed Textbook:

1. Data Mining – Concepts and Techniques – Jiawei Han & Micheline Kamber ad Jain Pei, 3rd Ed, India.

Reference Books:

1. Vikram Pudi P. Radha Krishna, Data Mining, oxford University Press, 2009.
2. Data Mining Introductory and Advanced topics – Margaret H Dunham, Pearson Education, 2006.
3. Data Mining Techniques – Arun K Pujari, Univeristy Press, 2001.
4. Pang-Ning Tan, Michael Steinbach, Vipin Kumar, Introduction to Data Mining, Pearson Education, 2008.
5. The Data Warehouse Life Cycle tool Kit – Ralph Kimball Wiley student edition, 2007.

MCA II YEAR II-Semester

CA 6520

Web Programming and Services

Lecture	: 4 Hrs/Week	**Internal Assessment**	: 30
Tutorial	: 1 Hrs/Week	**End Sem Exam**	: 70
Practical	: -	**Credits**	: 03

COURSE OBJECTIVES:

The Course will enable the learners:

1. To present students with a comprehensive introduction to web programming technologies like HTML, DHTML, Java Script, VBScript, XML.
2. To learn the developments in Web page and Web site creation.
3. To identify and learn the key technologies of XML.
4. To learn the key technologies in various Web Services.
5. To understand the Security concerns of XML and Web Services.

COURSE OUTCOMES:

At the end of the course the learners should be able to:

1. Design web pages using HTML and DHTML.
2. Able to develop Web pages using Java Script, VBScript, and installations of Web servers.
3. Able to utilize XML and its technologies to develop Web Services.
4. Use of SOAP in Web Services development with XML technologies.
5. Able to tackle the security issues while developing Web Services with XML technologies.

COURSE CONTENTS:

UNIT – I

Introduction to XHTML, HTML tags, Frames, Forms, Cascading Style sheets: In Line Styles, Embedded Style Sheets, External Style Sheets.
Dynamic HTML: Object Model and Collections: Object referencing, Collections All & Children, Filters and Transitions.

UNIT – II

Java Script: Introduction to Scripting, Data types and Control structures, functions, Arrays, Java Script Objects: math, string, Boolean and number, Event Model: ONCLIC, ONLOAD, ONBLUR etc.
VB Script: Client side Scripting with VB Script, Data types and Control structures, functions, Arrays, String Manipulations, Classes and Objects, Web Servers: IIS and Apache.

UNIT – III

XML:Introduction to XML, Role Of XML, XML and The Web, XML Language Basics,Revolutions Of XML, XML Document Structure, Name Spaces,Structuring With Schemas and DTD, XML Parsers, Presentation Techniques, Transformations, JSON(Java Script Object Navigation) overview.

UNIT - IV

SOAP: Overview Of SOAP, HTTP, XML-RPC, SOAP: Protocol - Message Structure, Intermediaries, Actors,SOAP with Attachments. REST: Overview of REST, SOAP Vs REST.WEB Services: Overview, Architecture, Key Technologies, UDDI, WSDL, ebXML.

UNIT – V

XML Security: Security Overview, Canonicalization, XML Security Framework, XML Encryption, XML Digital Signature, XKMS Structure, Guidelines for Signing XML Documents.

LEARNING RESOURCES:

Prescribed Textbook:

1. Deitel, Deitel& Nieto, "Internet& World Wide Web- How to Program", Pearson Education, Third Edition, 2004.
2. Frank. P. Coyel, "XML, Web Services and The Data Revolution", Pearson Education, 2002.

Reference Books:

1. Steven Holzner, "HTML Black Book- Comprehensive Problem Server", Dream Tech Press, 2000.
2. Sandeep Chatterrjee, James Webber, Developing Enterprise Web Services, Pearson Education, 2004.

Web References:

1. www.w3schools.com

MCA II YEAR II-Semester

CA 6530

Network Programming and Scripting Languages

Lecture	: 4 Hrs/Week	**Internal Assessment**	: 30
Tutorial	: 1 Hrs/Week	**End Sem Exam**	: 70
Practical	: -	**Credits**	: 03

Course Objectives:

The Course will enable the learners:

1. To learn the fundamentals of some UNIX utilities and Communication Protocols
2. To understand the concepts of sockets and socket programming
3. To understand the syntax and semantics of PHP.
4. To learn about form handling and Database Connectivity with PHP
5. To learn basic constructs of Python programming

Course Outcomes:

At the end of the course the students will be able to

1. To use utilities like sed and awk, and, differentiate communication protocols
2. To implement connection oriented and connectionless communication using socket programming
3. To implement simple web applications using PHP
4. To implement form handling and database connectivity using PHP
5. To implement simple applications using Python.

Course Contents:

Unit – I

Unix: Commands, File system, security and file permission, regular expression and grep, awk, sed, daemon process,
Communication Protocols – Introduction, TCP/IP-the internet protocol, XNS-Xerox Network Systems, Protocol Comparisons.

Unit – II

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.

Unit – III

Introduction to PHP: Overview, Syntactic characteristics, primitives, operations and expressions, output, control statements, arrays, functions. Pattern matching

Unit – IV

PHP forms: form handling files, cookies and session tracking. **Database Access with PHP and MySql.**

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.

LEARNING RESOURCES:

Prescribed Textbook:

1. W. Richard Stevens, "Unix Network Programming", Pearson Education 2009.
2. Robert W. Sebesta, "Programming the World Wide Web", Pearson Education, 2008
3. Wesley J. Chun, "Core Phython Programming", Prentice Hall.

Reference Books:

1. Behrouz A. Forouzan and Richard F. Gilbarg, "Unix and Shell Programming: a text book" Cengage Learning, 2008.
2. Sumitabha Das, "Unix concepts& Applications", Fourth ed, Tata McGrawhill, 2006.

MCA II YEAR II-Semester

CA 6540

MOBILE COMMUNICATIONS

Lecture	: 4 Hrs/Week	**Internal Assessment**	: 30
Tutorial	: 1 Hrs/Week	**End Sem Exam**	: 70
Practical	: -	**Credits**	: 03

Course Objectives:

The course will enable the learners to:

1. Provide the basic understanding of mobile communications.
2. Describe the various telecommunication systems.
3. Explain the Wireless LAN technologies.
4. Explain Issues related to IP and Transport layer in wireless mode.
5. Describe various mobile OS and support needed for Mobility.

Course Outcomes:

At the end of the course the learners should be able to:

1. Comprehend the characteristics, applications and limitations of mobile communications.
2. Describe the various telecom systems, Satellite and broadcast systems.
3. Compare and contrast the Wireless LAN technologies.
4. Analyze and explain problems associated to Mobile IP and TCP.
5. Analyze and list the support needed for the mobility of a given Application

Course Contents:

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, UMTS & IMT-2000.
Satellite systems: Applications, Basics, routing, localization, Handover.
Broadcast systems: Cyclic representation of data, Digital audio Broad casting, 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.

LEARNING RESOURCES:

Prescribed Textbook:

1. Jochen M.Schiller, Mobile Communications, 2nd edition, Pearson Education, India 2003.

Reference Books:

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

MCA II YEAR II-Semester

CA 6560

Enterprise Application Development using Java

Lecture	: 4 Hrs/Week	**Internal Assessment**	: 30
Tutorial	: 1 Hrs/Week	**End Sem Exam**	: 70
Practical	: -	**Credits**	: 03

Course Objectives:

The course will enable the learners to:

1. To learn about an Enterprise, its architecture and distributed computing through RMI
2. To learn the fundamental concepts of JDBC, drivers and its packages
3. To learn the fundamentals of Servlet Programming and JSP
4. To learn the basics of Enterprise Java Beans, types of EJBs and their applications
5. To learn about the design considerations of Enterprise applications.

Course Outcomes:

At the end of the course the students will be able to

1. To list J2EE technologies and write a simple distributed application using RMI
2. To implement JDBC drivers to connect to a database and store and retrieve data
3. To develop a simple application using Servlets and JSP
4. To implement simple applications using Session and Entity EJBs
5. To design a simple enterprise application

Course Contents:

Unit-I

J2EE Platform – Programming for the Enterprise – The Enterprise today, Enterprise Architecture Styles, The J2EE Platform, J2EE Architecture – Containers, J2EE Technologies, Developing J2EE Applications.

Distributed Computing using RMI – The RMI Architecture, Locating Remote Objects, RMI Exceptions, Developing Applications with RMI, The RMI Security Manager, Parameter Passing in RMI, The Distributed Garbage Collector, Dynamically Loading Classes.

Unit-II

Database Programming with JDBC – Database Drivers, The java.sql package, The javx.sql package, JDBC Data sources, Connection Pooling, RowSet Objects

Unit-III

Servlet Programming – Overview of the Java Servlet API, Servlet Implementation, Servlet Configuration, Servlet Exceptions, The Servlet Lifecycle, Requests and Responses, Servlet Context

JSP Basics and Architecture – Introducing JSP, The Nuts and Bolts, JSP Design Strategies

JSP Tag Extensions – A Simple Tag, Anatomy of a Tag Extension, Writing Tag Extensions. Introduction to AJAX.

Unit-IV

EJB Architecture and Design – What are EJBs, The EJB Container and its Services, Working with EJBs, EJB Components on the Web, Client Tier Access to EJBs, Design of the EJB Tier, **Session Beans and Business Logic** – Session Beans and state, **Entity Beans and Persistence** – Why not use Session Beans, Container vs. Bean-Managed Persistence, **EJB Container Services** – Transactions, Exceptions, Communication

Unit-V

Design Considerations for J2EE Applications – Architecture and Design, Elaborating the requirements, Elaborating the Context, Applying Patterns, Start at the Beginning, Adding the Middle-Tier

LEARNING RESOURCES:

Prescribed Textbook:

1. Professional Java Server Programming, J2EE 1.3 Edition by Subrahmanyam Allamaraju and Cedric Buest, Dreamtech Press

Reference Books:

1. J2EE – The Complete Reference, by Jim Keogh

Web Resources:

1. www.oracle.com
2. www.w3schools.com

MCA II YEAR II-Semester

CA 6570

DISTRIBUTED SYSTEMS

Lecture	: 4 Hrs/Week	**Internal Assessment**	: 30
Tutorial	: 1 Hrs/Week	**End Sem Exam**	: 70
Practical	: -	**Credits**	: 03

Course objectives:

The course will enable the learners to:

1. To provide an introduction to the fundamentals of distributed computer systems and processes.
2. To Provide concepts in Naming entities and synchronization
3. To provide the understanding of various consistency models and issues in Fault Tolerance.
4. To provide understanding of various object based systems and Distributed File systems.
5. To understand various design issues in distributed shared memory and distributed scheduling.

Course Outcomes:

At the end of the course, the learners will be able to:

1. Describe the basics of distributed systems and processes.
2. Compare various Naming systems and describe issues in Synchronization
3. Recommend appropriate consistency models to the desired applications.
4. List and compare various object based systems and distributed file systems
5. Apply the knowledge of distributed shared memory and distributed scheduling to desired applications.

Course Contents:

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.

LEARNING RESOURCES:

Prescribed Textbook:

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.

MCA II YEAR II-Semester

CA 6580

SOFTWARE PROJECT MANAGEMENT

Lecture	: 4 Hrs/Week	**Internal Assessment**	: 30
Tutorial	: 1 Hrs/Week	**End Sem Exam**	: 70
Practical	: -	**Credits**	: 03

Course Objectives:

The course will enable the learners to:

1. To understand Software Management and its evolution
2. To understand the process framework of Software Management
3. To learn about the various disciplines of Software Management
4. To learn about the modern trends in project profiles and process
5. To learn about the standards in improving the quality of software process

Course Outcomes:

At the end of the course the students will be able to

1. To differentiate between old and new methods of software management
2. To list life-cycle phases, artifacts, workflows and checkpoints of software process
3. To explain Iterative Process planning, project responsibilities, automation, etc.
4. To compare the modern project profiles, and process transitions with older ones.
5. To map process improvement with the standards like CMM.

Course Contents:

UNIT-I

Software Management Renaissance - Conventional Software Management, Evolution of Software Economics, Improving Software Economics, Old Way & New.

UNIT-II

A Software Management Process Framework - Life–Cycle phases, Artifacts of the process, Model Based Software Architectures, Workflows of the Process, Checkpoints of the process.

UNIT-III

Software Management Disciplines - Iterative Process Planning, Project Organizations & Responsibilities, Process Automation, Project Control of Process Instrumentation, Tailoring the Process.

UNIT-IV

Looking Forward - Modern Project profiles, Next Generation Software Economics, Modern process Transitions, Managing Contacts, Managing People & Organizing Terms.

UNIT-V

Process improvement & mapping to the CMM, ISO 12207 – an overview, programme management.

LEARNING RESOURCES:

Prescribed Textbook:

1. Walker Royce, "Software Project Management – A Unified frame work", Pearson Education, Addision, 1998.
2. Bob Hughes, Mike Cotterell "Software Project Management" , Tata Mc Graw Hill 3rd Edition, 2010.

Reference Books:

1. Watt.S. Humphery, "Managing Software Process ", Addison - Wesley, 2008.

MCA II YEAR II-Semester

CA 6590

ARTIFICIAL INTELLIGENCE

Lecture	: 4 Hrs/Week	**Internal Assessment**	: 30
Tutorial	: 1 Hrs/Week	**End Sem Exam**	: 70
Practical	: -	**Credits**	: 03

Course Objectives:

1. To understand the basics of Artificial Intelligence, AI problems, problem spaces and Search.
2. To understand Heuristic Search techniques and predicate logic.
3. To understand how to represent knowledge using rules and Nonmonotonic reasoning.
4. To understand Statistical Reasoning, and Slot-and-Filler Structures.
5. To understand Game playing and planning techniques.

Course Outcomes:

1. Able to define Artificial Intelligence, problem, and Production system.
2. Able to use Heuristic search techniques, and Predicate logic.
3. Able to differentiate between procedural and declarative knowledge, forward and backward reasoning, and gain knowledge on Nonmonotonic reasoning.
4. Able to know Statistical Reasoning, Weak and Strong Filler Structures.
5. Able to know the technique of Game playing and various Planning techniques.

Course Contents:

UNIT – I

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

LEARNING RESOURCES:

Prescribed Textbook:

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

MCA II Year II-Semester

MA 6550

FINISHING SCHOOL – II

Lecture	: 2 periods/Week	**Internal Assessment**	: 15 M
Tutorial	: -	**End Sem. Exam**	: 35 M
Practical	: -	**End Sem. Exam Duration**	: 90 minutes
		Credits	: 01

COURSE OBJECTIVES:

The Course will enable the learners to:

1. Define the elements of quantitative and reasoning aptitude
2. Adapt the usage of Numeric Puzzles, Ratios and Proportions and Speed Maths
3. Learn the techniques involved with Permutations and Combinations, Syllogisms, Percentages and Cubes
4. Use the essential factors related to Data Interpretation, Venn Diagrams, Number Series and Probability.

COURSE OUTCOMES:

At the end of the course the learners should be able to:

1. Adapt the usage of Numeric Puzzles, Ratios and Proportions
2. Demonstrate the skills in solving problems involving Speed Maths
3. Apply skills for solving problems on Permutations and Combinations, Syllogisms, percentages and Cubes
4. Apply skills for solving problems on Data Interpretation, Venn Diagrams, number Series and Probability

COURSE CONTENTS:

UNIT – I
Aptitude and Numerical Ability: Introduction to Aptitude Exams and test Areas, Numeric Puzzles and games, Speed Maths.

Unit – II
Applications of Ratios, Time and Distance: Ratio, Proportion, Variations and its applications in Time & Work, Time Speed & Distance and other general applications.

Unit – III
Applications of Permutations and Combinations: Linear Permutations, Permutations of things including identical items, Circular arrangements, Combinations and Probability

Unit – IV
Percentages: Percentages and its applications and Introduction to various Question Types in Data Interpretation

Unit – V
Logic and Reasoning: Syllogisms, Cubes, Venn Diagrams and Set Theory, Clocks and calendars, Number series

Prescribed Books:

1. Text Book of Quickest Mathematical Quantitative Aptitude and Numerical Ability by Kiran Prakasham
2. Advanced Approach to Data Interpretation by Aggarwal.
3. IQ and Aptitude Tests – Assess your Verbal Numerical and Spatial Reasoning Skills by Phillip Cartes.

Dr. P. Hemagiri Rao

Dr. Rajeev Wankar

Mr. S. Rambabu

Mr. S. Bala Krishna

Mr. Orugant Prasad

MCA II Year II-Semester

CA 6815

MINI PROJECT - II

Lecture	: -	**Internal Assessment**	: 25
Tutorial	: -	**End Sem Exam**	: -
Practical	: 2 Hrs/Week	**Credits**	: 01

Course Objectives:

The course will enable the learners to:

1. Understand the Project development cycle through mini project.

Course Outcomes:

At the end of the course the learners should be able to:

1. Plan, analyze, design, implement and test a software project.
2. Prepare a technical report and documentation; deliver a technical seminar based on the mini project work carried out.

Course Contents:

1. The students are required to carry out mini project in any of the areas such as Database Management Systems, Operations Research, Operating Systems, Design and Analysis of Algorithms, Software Testing but not limited to.
2. Mini Project topics can be chosen by the students and a synopsis to be submitted by the end of 4th week of semester. The synopsis should consist of definition of the problem, scope of the problem, SRS and plan of action.
3. Students are required to present First Mini Project Seminar on the aspects of project idea and SRS for 10 marks and second Mini Project Seminar on implementation of the Mini project work for 10 marks. Students are required to submit a report on the mini project for 05 marks.
4. The Mini project seminar presentation should include the following components of the Mini project:
    - Problem definition and specification.
    - Literature survey
    - Broad knowledge of available techniques to solve a particular problem.
    - Planning of the work, preparation of bar(activity) charts
    - Presentation-oral and written.
5. The Sessional marks will be awarded to the students by Mini project coordinators on the basis of an oral and written presentation as well as their involvement in the discussion.

Dr. P. Hemagiri Rao

11/03/16

Dr. Rajeev Wankar

Mr. S. Rambabu

11/7/16

Mr. S. Bala Krishna

Mr. Oruganti Prasad

MCA II YEAR II-Semester

CA 6821

Web Programming and Services Lab
(Programming Lab – VII)

Lecture	: -	**Internal Assessment**	: 25
Tutorial	: -	**End Sem Exam**	: 50
Practical	: 6 Hrs/Week	**Credits**	: 02

COURSE OBJECTIVES:

The course will enable the learners to:

1. To Understand & learn the Different Web Technologies.
2. To present students with a comprehensive introduction to web programming technologies, like HTML, DHTML, JAVA SCRIPT, VB SCRIPT, XML etc.
3. To ensure that students can able to create Web pages.
4. To identify and learn the key techniques in various web programming languages in Web sites creation.
5. To build multiple webpages and implement at least one major website design that interacts with a database.

COURSE OUTCOMES:

After completion of this course, the learners would be able to:

1. Understand the key techniques in various web programming languages.
2. Integrate Different Web technologies HTML, DHTML, JAVA SCRIPT, VB SCRIPT, XML etc.
3. Create their own Web pages.
4. Design, develop, implement and maintain dynamic websites enhanced with server-side scripts and databases.
5. Understand the Techniques in Web sites creation.

Lab work/Programs:

1. Create HTML pages to demonstrate the following.
   a. Tables.
   b. Frames.
   c. Forms.
2. Create HTML pages to demonstrate Cascading Style sheets.
3. Create HTML pages to demonstrate object hierarchy using collection All and children.
4. Create HTML pages to demonstrate Filters &Transitions.
5. Use JAVA Script to create the following programs
   a. Examination results.
   b. Use of Date and Time objects.
   c. Event handling.
6. Create programs using VB Script.
7. Installation of Web Server (IIS).
8. Create programs to manipulate XML/JSON documents.
9. Create programs on Java Web Services using SOAP and REST (to publish and to Access the Web Services).

LEARNING RESOURCES:

Prescribed Textbook:

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.

Web References:

1. www.w3schools.com.

MCA II YEAR II-Semester

CA 6831

Network Programming and Scripting Languages Lab
(PROGRAMMING LAB – VIII)

Lecture	: -	**Internal Assessment**	: 25
Tutorial	: -	**End Sem Exam**	: 50
Practical	: 3 Hrs/Week	**Credits**	: 02

Course Objectives:

The course will enable the learners to:

1. To learn the fundamentals awk scripting
2. To understand the concepts of sockets and socket programming
3. To understand the syntax and semantics of PHP
4. To learn from handling and database connectivity using PHP
5. To learn fundamentals of Python and write simple programs using Python.

Course Outcomes:

At the end of the course the learners should be able to:

1. To implement simple awk scripts
2. To implement simple connection oriented and connectionless communication using, socket programming
3. To write simple web applications using PHP
4. To implement form handling and Database connectivity to MySQL, using PHP
5. To write and implement simple applications using Python.

Course Contents:

1. awk scripts like script for counting the number of words and lines in a file, adding data into a file, merging two files, etc.
2. Iterative echo sever using connection-Oriented (TCP) service
3. Iterative echo server using connectionless (UDP) service
4. Concurrent echo sever using connection-Oriented (TCP) service
5. Concurrent echo server using connectionless (UDP) service
6. Implementation of time of the day server using connection oriented (TCP).
7. PHP programs using form handling using cookies.
8. PHP script that collects data from the form and writes into file.
9. PHP script for Database access using MYSQL.
10. Python programs based on object oriented design.
    - Program for a simple calculator
    - Program to display calendar
    - Program for Fibonacci series using Recursion
    - Program to transpose a matrix
    - Program to sort words in an alphabetical order
    - Program to merge two files

Learning Resources:

Prescribed Textbook:

1. W. Richard Stevens, "Unix Network Programming", Pearson Education 2009.
2. Robert W. Sebesta, "Programming the World Wide Web", Pearson Education, 2008
3. Wesley J. Chun, "Core Phython Programming", Prentice Hall.

Web References:

1. www.w3schools.com

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)
DEPARTMENT OF COMPUTER APPLICATIONS

Guidelines for paper setting for Finishing School Course

Semester End Exam: 35 marks **Sessional: 15 marks**

Examination	Soft Skills
End Semester Examination	35 Marks Duration : 90 mins.
Internal Examination	15 Marks Duration : 45 Mins.
Internal Examination Question paper Pattern (15 Marks)	Part-A(5 Marks) Five questions of each 1 mark, one question from each unit. Part-B (10 Marks) Answer *any two questions* out of given three questions. Each question caries 5 marks. Each question may contain sub questions as (a) and (b)
Semester Examination Question paper Pattern (35 Marks)	Part-A (10 Marks) Five questions of each 2 mark Part-B (25 Marks) Answer *any five questions* out of given seven questions. Each question caries 5 marks. Each question may contain sub questions as (a) and (b). One question of each unit of the syllabus (5 questions). Sixth question shall be from unit-I and unit-II whereas seventh question shall be drawn from last three units with (a), (b) and (c)

Dr. P. Hemagiri Rao

Dr. Rajeev Wankar 11/03/16

Mr. S. Rambabu

Mr. S. Bala Krishna 11/3/16

Mr. Oruganti Prasad