DR. BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY

CIRCULAR NO.ACAD/NP/Mgt.Sci./M.B.A. & M.C.A./Syllabus/12/2013

It is hereby notified for information of all concerned that, on the recommendation of the Faculty of Management Science, the ***Academic Council at its meeting held on 29-06-2013 has accepted the Revised Syllabi of [1] "Master of Business Administration" [M.B.A.] and [2] "Master of Computer Application" [M.C.A.] Semester-I & II"*** under the Faculty of Management Science **as per Appendix-"A" & "B" respective.**

This is effective from the **Academic Year 2013-2014** and onwards.

All concerned are requested to note the contents of this circular and bring the notice to the students, teachers and staff for their information and necessary action.

University Campus,
Aurangabad-431 004.
REF.NO.ACAD/NP/MGT.SCI./SYLL./
M.B.A./M.C.A./2013/25091-190

A.C.M.A.I.No.32.

Date:- 26-07-2013.

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Director,
Board of College and University Development.

Copy forwarded with compliments to :-

1] The Principals, affiliated concerned Colleges, Dr. Babasaheb Ambedkar Marathwada University.

2] The Director, University Network & Information Centre, UNIC, with **a request to upload the above Syllabi on University Website [www.bamu.ac.in].**

Copy to :-

1] The Controller of Examinations,
2] The Superintendent, [Professional Unit],
3] The Superintendent, [Co-Ordination],
4] The Programmer [Computer Unit-1] Examinations,
5] The Programmer [Computer Unit-2] Examinations,
6] The Director, [E-Suvidha Kendra], in-front of Registrar's Quarter, Dr. Babasaheb Ambedkar Marathwada University,
7] The Record Keeper,
Dr. Babasaheb Ambedkar Marathwada University.

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S*/-2600713/-

Dr. Babasaheb Ambedkar Marathwada University, Aurangabad.

Revised Syllabus of

"Master of Computer Application"

(M.C.A.)

Semester-I & II

Effective from the Academic Year 2013 – 14 & onwards

MASTER OF COMPUTER APPLICATION (MCA)

(EFFECTIVE FROM JUNE 2013)

0.576."A candidate seeking admission to Master of Computer Application (MCA) should have passed Bachelor's Degree examination of any faculty with atleast 50% of marks, of Dr. Babasaheb Ambedkar Marathwada University or any other degree equivalent thereto and have Mathematics/Statistics as one of the subject at Degree level or HSC. level. However in case of students belonging to Backward Classes, a relaxation of 5% shall be available for admission."

O.577. The Master of Computer Application (MCA) shall be conferred on a candidate who has passed a regular course of study consisting of three years(Six Semesters) in the relevant subjects as prescribed and has appeared at and passed in all the examinations prescribed for Master of Computer Applications.

R-794. The maximum number of students admitted for a theory calss shall be as approved by Govt. and University, AICTE and the number of students in a batch of practicals will depend upon the facilities available at the Centre. The student computer ratio for practical should be 1:1.

R- 795. The course of study for the Master of Computer Application will be of three Years duration (six semester).

R-796- The following shall be the scheme of examination

MASTER OF COMPUTER APPLICATION (MCA)

FIRST SEMESTER

Paper No	Title	Weekly Th Pr	Credit Th Pr	Marks Theory	Marks Sessional or Practical S Pr	Total Marks	Duration Theory Exam
I	Elements of Internet and Web Designing	3 4	3 2	60	40	100	3 Hrs
II	Computer Organization & Architecture	5 -	5 -	60	40 -	100	3 Hrs
III	Programming in C and C++	3 4	3 2	60	- 40	100	3 Hrs
IV	Operating System	3 4	3 2	60	- 40	100	3 Hrs
V	Soft Skills Development	5 -	5 -	60	40 -	100	3 Hrs
	Total	19 12	19 + 6 = **25**	300	80 120	500	--

SECOND SEMESTER

Paper No	Title	Weekly Th Pr	Credit Th Pr	Marks Theory	Marks Sessional or Practical S Pr	Total Marks	Duration Theory Exam
VI	Core Java	3 4	3 2	60	- 40	100	3 Hrs
VII	Management Process & OB	5 -	5 -	60	40 -	100	3 Hrs
VIII	Data Structures	3 4	3 2	60	- 40	100	3 Hrs
IX	RDBMS using SQL	3 4	3 2	60	- 40	100	3 Hrs
X	Mathematical Foundation	5 -	5 -	60	40 -	100	3 Hrs
	Total	19 12	19 + 6 = **25**	300	80 120	500	--

R –797. There will be 5 lectures for theory subject and three lectures for practical based subject. The practical hours are 12 per week. There shall be 5 credit for each paper. The total credit for the MCA Degree shall be 140.

R- 798. In order to pass the examination of Master of Computer Application (MCA) a candidate must score atleast 40% marks in each sessional and project work and 50% in aggregate os all semester's marks.

R – 799 To clear a semester a student must have secured atleast 40% marks in each papers of theory and each sessional and project work.

R – 800 **a)** The sessional work shall be assessed by Institute/ College and marks will be forwarded to the university, as per the scheme of Sessional marks given along with this syllabus.

b) The university will appoint external examiner for assessment of the project. The project will be assessed by the external examiner and the guide separately on the basis of the following criteria:-

1. Preparation of report	100 Marks
2. Presentation	50 Marks
3. Viva Voce	50 Marks

R – 801. A student who secures atleast 40% marks in each individual theory papers and project work and secures 50% or more marks but less than 60% of marks in aggregate of all semesters will be declared to have passed in Second Division. There shall be no pass class.

R – 802.A student who has secured 40% of marks in each theory paper and each sessional and project work and 60% or more marks in aggregate of all semesters shall be declared to have passed in First Division.

R – 803. A student who have failed to secure atleast 40% marks in any one or more papers will be declared to have failed in that/those papers and such students will have to reappear for such paper/papers and secure minimum passing marks.

R – 804. If a student who has secured minimum 40% of marks in each paper but has failed to secure minimum of 50% of marks in aggregate for one or more semesters may choose to reappear for any one or more papers to secure 50% of aggregate marks in that/those semesters.

"R-805 To be eligible for promotion to second year (Third Semester) of the MCA Course, a student must successfully clear atleast 75% papers offered during the first year (First & Second Semester) of the programme. For promotion to Third Year (Fifth Semester) a student must successfully clear 75% of the total papers offered upto fourth semester and must have cleared all the papers of First and Second Semester.
However for promotion to Second, Fourth and Sixth Semesters, a mere appearance at the respective preceding semester exams is sufficient for promotion."

R – 806. Re-admission:

a) If a student fails to complete has project work before the closure of semester to which it belongs he will have to take fresh admission to the course and pay Rs.1000/- per semester as fee.

b) If a student fails in one or more subjects and desires to take a repeat course by taking regular admission, he must do so. In such a case he will be charged Rs. 500/- per theory course and per sessional work per semester.

R – 807. The following shall be the syllabus for the examination.

PAPER I: ELEMENTS OF INTERNET AND WEB DESIGNING

Theory 60
Sessional/ Practical 40

UNIT I : Introduction to Internet, Internet Services, WWW, Working of Internet, Internet Connection Concepts, Introduction to Intranet, DNS working, Configuring Internet Connection, Connecting LAN to Internet.

UNIT II : Single User, Multi User, Server, Workstation, Client-Server environment, Computer Network, Types of Computer Network: LAN, WAN, MAN; Network Topologies. Network Protocols, Windows and GUI. E-Mail Concepts – Configuring E-Mail Program, Sending and Receiving Files through E-Mail, Fighting Spam, Sorting Mail, and avoiding E-Mail viruses.

UNIT III : Web Browsers, Search Engines, Categories of Search Engines, Searching Criterion, Surfing the Net, Hypertext Transfer Protocol (HTTP), URL. Other Internet Tools. Online Chatting, Messaging, and Conferencing Concepts, E-Mail mailing lists, Usenet newsgroup concepts – Reading usenet newsgroups, Internet Relay Chat, Instant messaging, Web-Based chat rooms and discussion boards, Voice and Video conferencing. Streamlining Browsing, Keeping track of Favorite Web Sites, Web Security, Privacy, and Site-Blocking. Searching the Web – Audio and Video on the Web.

UNIT IV : HTML: Internet Language, Understanding HTML, Create a Web Page, Linking to other Web Pages, Publishing HTML Pages, Text Alignment and Lists, Text Formatting Fonts Control, E-mail Links and link within a Page, Creating HTML Forms.

UNIT V : Creating Web Page Graphics, Putting Graphics on a Web Page, Custom Backgrounds and Colors, Creating Animated Graphics. Web Page Design and layout, Advanced Layout with Tables, Using Style Sheets.

REFERENCES :

Books:

1. Dick Oliver: Tech Yourself HTML 4 in 24 Hours, Techmedia.
2. Satish Jain: "O" – Level Information Technology,
3. Craig Zacker: 10 minutes Guide to HTML Style Sheets, PHI.
4. V.K. Jain: "O" – Level Information Technology, BPB Publications.
5. Gill, Nasib Singh: Essentials of Computer and Network Technology, Khanna Books Publishing Co., New Delhi.
6. Margaret Levine Young: Internet – The Complete Reference
7. Monica J. Desouza – Web Publishing.

Web References:

http://www.webdesignref.com
http://www.webreference.com
http://www.amazon.com

E-Books: (Web References as on April 2013.)

http://webdesignledger.com/freebies/10-free-ebooks-for-web-designers

Practical Marks :

Test and Assignments : 20 Marks
Laboratory Assignment and Journal submission : 20 Marks

PAPER II - COMPUTER ORGANIZATION AND ARCHITECTURE.

Theory 60
Sessional/ Practical 40

UNIT I : Principles of Computer design – software, hardware interaction layers in computer architecture. Central processing unit. Machine language instructions, Addressing modes, instruction types, instruction set selection, Instruction cycle and execution cycle.

UNIT II : Control unit, Data path and control path design, Microprogramming Vs hardwired control RISC Vs CISC, Pipelining in CPU designee Superscalar processors.

UNIT III : Memory system, Storage technologies, Memory array organization, Memory hierarchy, interleaving, cache and virtual memories and architectural aids to implement these.

UNIT IV : Input- Output devices and characteristics. Input-output processing, bus interface, data transfer techniques, I/O interrupts, channels performance evaluation – SPEC marks, Transaction Processing benchmarks.

REFERENCES :

Books:

1. Mano, M," Computer System and Architecture" (3rd edition) Prentice Hall of India, New Delhi, 1994
2. Pal Chauduri, p., " Computer Organisation and Design", Prentice Hall of India, New Delhi, 1994.
3. Rajraman V., and Radhakrishnan, T., " Introduction to Digital Computer Designee" (4th edition), Prentice Hall of India, New Delhi, 1997.
4. Stalling, W., "Computer Organization and Architecture. (2nd edition) Prentice Hall of India, New Delhi.

Web References :

http://williamstallings.com/COA5e.html
http://williamstallings.com/COA6e.html

E-Books :

http://computerscienceebooks.wordpress.com/2011/12/05/computer-organization-architecture-free-ebook-covering-full-semester-syllabus/
http://ebookee.org/Computer-Organization-and-Architecture-by-William-Stallings_69948.html
(Web References as on April 2013.)

Sessional Marks:

Test and Assignment	20 Marks
Compilation of short report on Computer Architecture.	20 Marks

Paper No. III PROGRAMMING IN C AND C++

Theory 60
Sessional/ Practical 40

UNIT I : Overview of C Language : Tokens of C Language- Data Types- Operators and Expressions, Variables – **Branching and Decision Making in C :** If Statements Switch Statements- GOTO statements - **Looping Statements** : For Loop, While Loop, Do..While Loop, **Forms of C Functions**, Overview of Arrays, Structures, Unions and Pointers.

UNIT II : Introduction of OOPS, Features of OOPS : Classes, Object, Data Abstraction, Encapsulation, Inheritance, Polymorphism, Dynamic Binding. - C++ Program Structure- Basic Data Types, User-Defined Data Types- Symbolic Constant, Type Compatibility, Reference Variables, **Operators in C++** : Resolution Operator, Member De-referencing Operators, Memory Management Operators, Manipulators, Type Cast Operator. **Functions In C++ :** Main Function, Function Prototyping, Call by Reference, Call by Address, Call by Value, Return by Reference, Inline Function, Default Arguments, Const Arguments, Function Overloading.

UNIT III Classes & Object - C++ Program with class, Defining Member Functions, Memory Allocation for Objects - Static Data Members, Static functions- **Constructor & Destructor :** Parameterized Constructor Multiple Constructor in a Class, Constructors with Default Arguments, Dynamic Initialization of Objects, Copy Constructor, Dynamic Constructor, Const Object, Destructor

UNIT IV : Operator Overloading & Type Conversion- Defining operator Overloading, Overloading Unary Operator Overloading Binary Operator, Overloading Binary Operator, Operator Overloading using Friend function, Type Conversion, Rules for Overloading Operators. **Inheritance :** Defining Derived Classes, Single Inheritance, Making a Private Member Inheritable, Multilevel Inheritance, Hierarchical Inheritance, Multiple Inheritance, Hybrid Inheritance, Virtual Base Classes, Abstract Classes, Constructor in Derived Classes, Nesting of Classes

UNIT V : Types of Polymorphism : Pointer to Object, Pointer to Derived Class, Virtual Function, Pure Virtual Function, **C++ I/O system basics:** Working with Files – Classes for File Stream Operation. Opening & Closing Files, Detection of End of File, File Opening modes, File pointer & manipulator, Sequential Input & output Operation, Updating a File : Random Access, Command Line Arguments

UNIT VI : Introduction to Advanced Concepts : Namespaces, Templates - Generic Function Generic Function Restriction, Exception handling- the try throw and catch statements and Standard Template Library.

REFERENCES :

Books:

1.C++: The Complete Reference Herbert Schildt

2.Let us C++ Yeshwant Kanetkar

3.Object Oriented Programming with C++ E. Balagurusamy

5.C++ Programming Language Bjarne Stroustrup

6.C++ Programming Bible Al Stevens & Clayton Walnum.

Web Reference :

C Programming :

http://www.cprogramming.com/tutorial/c-tutorial.html

(Tutorials on C Programming)

C++ Programming : http://www.cplusplus.com/files/tutorial.pdf

(Study material available in pdf format)

E-Books:

https://en.wikibooks.org/wiki/C_Programming

http://www.ebook3000.com/C---Programming-Language--The--3rd-Edition-_4806.html

http://books.google.co.in/books/about/A_Complete_Guide_to_Programming_in_C++.html?id=-yhuY0Wg_QcC

(Web References as on April 2013.)

Practical Marks :

Test and Assignments : 20 Marks

Laboratory Assignment and Journal submission : 20 Marks

PAPER NO. IV: OPERATING SYSTEM

Theory 60
Sessional/ Practical 40

UNIT I : Operating System Introduction: views of Operating Systems, Structure of Operating System - Layered Structure Approach, Kernel Approach, Virtual Machine, Client-Server Model, Components of O.S., Operating System Services, System Calls and System Programs,

UNIT II : Process Scheduling - Process concepts and scheduling, Operation on processes, Threads - Types, Multi threading, Process Synchronization - Critical Section, race conditions, Mutual Exclusion conditions, Semaphores, Classical Problems of Synchronization - Producer-Consumer Problem, Readers-Writers Problem, Dining Philosophers Problem, Monitors. CPU Scheduling - types of scheduling, dispatcher, scheduling algorithms - FCFS, SJF, Priority, Round-Robin, Multiple level feedback Queue, (advantages & disadvantages of each algorithm)

UNIT III : Deadlocks - Necessary and Sufficient deadlock conditions, Methods for Handling Deadlocks - Deadlock Prevention, Deadlock Avoidance (Banker's Algorithm), Deadlock Detection and Recovery Schemes.

UNIT IV : Memory Management and Virtual Memory - Memory hierarchy, Memory allocation techniques, Logical versus Physical Address Space, Contiguous Allocation- Single Partition allocation, Multiple Partition allocation, fixed sized & variable sized partitions, (Advantages and disadvantages of each partition) Fragmentation, compaction, Swapping, Paging-page table, page fault, Demand Paging, protection and sharing, Segmentation, virtual memory, advantages and disadvantages, Page Replacement- FIFO algorithm.

UNIT V : File Management & Secondary Storage Structure - File, File Attributes, File operation, Access methods, Directory Structure, components of a file system, Symbolic file system, Logical file system, Physical file system, Allocation methods- Contiguous, Linked-list, Indexed allocation, Disk Structure, Disk Scheduling-FCFS, SSTF,SCAN,LOOK, advantages and disadvantages of each scheduling,

UNIT VI : Device Management - Techniques for device management, channel and control units, I/O Traffic Controller, I/O Scheduler and I/O Devices Handlers **Distributed Operating System** - distributed system, Distributed computing system models- minicomputer, workstation, Workstation-Server, Processor-Pool, Hybrid. Advantages of distributed computing systems. Network Operating System - Features, examples of NOS.

REFERENCES :

Books:

1. Operating System A Design Approach-Crowley,TMH.
2. Modern Operating Systems, Andrew S Tanenbaum 2nd edition Pearson/PHI
3. Operating Sytem - Harjeet Kaur, Aastha Sharma, Kalyani Publishers
4. Operating System Principles- Abraham Silberchatz, Peter B. Galvin, Greg Gagne 7th Edition, John Wiley
5. Operating Systems – Internals and Design Principles Stallings, Fifth Edition–2005, Pearson Education/PHI
6. Modern Operating Systems by Andrew S Tanenbaum, Prentice Hall India, 1992.
7. Operating Systems (3rd edition) by Gary Nutt, Nabendu Chaki, Sarmishtha Neogy, Pearson
8. Operating Systems Achyut S. Godbole Tata Mc Graw Hill
9. Operating Systems D.M.Dhardhere Tata Mc Graw Hill

Web References:

1. mu.ac.in/myweb.../MCA%20study%20material/OS%20-%20PDF.pdf
2. www.sharemca.com/mca-notes-semester-3.php
3. http://chythu.ucoz.com/OS_Lab_Manual.pdf

E-Books :

1. https://sites.google.com/site/uopops/ebooks
2. www.fadooengineers.com/threads/9773-operatingsystem.
3. www.booksource.blogspot.in/2009/co/operatingsystem.

PAPER V - SOFT SKILLS DEVELOPMENT

Theory	**60**
Sessional/ Practical	**40**

UNIT I : Self Development and Assessment, Self-Assessment- Self-Awareness, Perception and Attitudes, Values and Belief System, Personal Goal Setting, Career Planning, Self-Esteem, Building of Self-Confidence Components of communication, Principles of communication, barriers, listening skills, Verbal Communication, Includes Planning, Preparation, Delivery, Feedback and Assessment of activities like Public speaking Group Discussion, Oral Presentation skills, Perfect Interview

UNIT II : Listening and observation skills, Body language, Use of Presentation graphics, Use of Presentation aids, Study of communication. Written Communication, Technical Writing– Technical Reports.

UNIT III : Project Proposals, Brochures, Newsletters, Technical Articles Technical Manuals, Official/Business Correspondence- Business letters, Memos, Progress report, Minutes of meeting, Event reporting, Use of style, Grammar and Vocabulary for effective technical writing, Use of: Tools, Guidelines for technical writing.

UNIT IV : Publishing Ethics and Etiquettes, Business Ethics, Etiquettes in social as well as Office settings, Email etiquettes, Telephone Etiquettes, Engineering ethics and ethics as an IT professional, Civic Sense, Social networking etiquettes.

UNIT V : Other Skills- Managing time, Meditation, Understanding roles of Engineer and their Responsibility, Exposure to work environment And culture in today's job Places, Improving Personal Memory, Study skills that include Rapid reading, Notes taking, Complex problem solving, creativity.

REFERENCES :

Books:

1. You Can Win – Shiv Khera – Macmillan Books – 2003 Revised Edition
2. 7 Habits of Highly effective people – Stephen Covey
3. Business Communication? Asha Kaul
4. Business Communication - M. Balasubramanyam
5. John Collin, "Perfect Presentation", Video Arts MARSHAL
6. Jenny Rogers " Effective Interviews", Video Arts MARSHAL
7. Raman Sharma, " Technical Communications", OXFORD

8. Sharon Gerson, Steven Gerson "Technical writing process and product", Pearson Education Asia, LPE third edition.

9. R. Sharma, K. Mohan, Business correspondence and report writing", TAG McGraw Hill ISBN 0-07-044555-9

10. 6. Video for technical education catalog, National education and Information Films Ltd. Mumbai.

11. Management training and development catalog, National education and Information Films Ltd. Mumbai.

12. XEBEC, "Presentation Book 1,2,3", Tata McGraw-Hill, 2000,ISBN 0-40221-3

13. Tim Hindle, "Reducing Stress", Essential Manager series Dk Publishing

14. Sheila Cameron, "Business student Handbook", Pitman Publishing

15. Dr. R. L. Bhatia, " Managing time for competitive edge"

16. Lorayne Lucas "Memory Book"

17. Robert Heller, "Effective leadership", Essential Manager series Dk Publishing

18. Newstrom Keith Davis," Organizational Behavior", Tata McGraw-Hill, 0-07-.

Web References :

http://www.managementstudyguide.com/powerpoint-presentations.htm

http://www.authorstream.com/Presentation/6644sarwansingh-1373308-importance-of-soft-skills-in-our-life/

E-Books:

http://ebookbrowse.com/soft-skills-training-pdf-d44121490

http://www.gobookee.com/soft-skills/

http://www.gobookee.com/personality-development-and-soft-skills/

(Web references and e-books as on 15 April 2013)

Sessional Marks :

Test and assignment	: 20 Marks
Presentation Skills	: 10 Marks
Mock Interview	: 10 Marks.

Laboratory Work For First Semester

(Weekly 12 Hours and Total 6 Credits.)

Paper I: ELEMENTS OF INTERNET AND WEB DESIGNING :-

The practical lab sessions of above subject are to be carried out by the students by implementing the following programs and developing a mini web based project.

1. Study of Hyper Text Markup Language (HTML with any HTML editor):
2. Internet Language, Understanding HTML.
3. Create a Web Page and Linking to other Web Pages to form a web site of 4-5 pages.
4. Publishing HTML Pages by uploading on free web servers.
5. Design the Web page by Text Alignment and using Lists, Text Formatting Fonts Control,
6. Use of E-mail Links and link within a Page ans Creating HTML Forms.
7. Creating Web Page Graphics of any theme.
8. Putting Graphics on a Web Page with Custom Backgrounds and Colors,
9. Creating Animated Graphics for suitable themes.
10. Designing innovative Web Pages and layout with Advanced Layout with Tables and Using Style Sheets.

Paper III : PROGRAMMING IN C and C++ :-

1. Implementation of the various Data Types with modifiers and type conversion in C.
2. Demonstration of nested if and switch…case structure.
3. Implementation of various Control structures in C.
4. Implementation of arrays.
5. Implementation of multidimensional arrays.
6. Implementation of functions: call by value, call by schemes, passing of arrays.
7. Demonstration of recursion.
8. Demonstration of various string operations.
9. Implementation of the storage types.
10. Demonstration of pointer operations.
11. Demonstration of macro processing.
12. Implementation of structures and array of structures.
13. Implementation of Union.
14. Implementation of pointers to structures and unions.
15. Implement classes and objects.
16. Implement Constructors and Destructors with array of objects.
17. Implement Passing and returning parameters by reference.
18. Demonstrate Function Overloading.

19. Demonstrate overloading of different operators – incr & decr operators with post & pre forms, new, delete, [ ], ( ) and arithmetic operators.
20. Implement pointer sort operation.
21. Demonstrate friend functions and friend classes.
22. Implement different types of inheritances like Multiple, Multilevel and Hybird.
23. Demonstrate the use of Virtual Functions and use of abstract classes.
24. Demonstrate I/O streams and functions.
25. Overload <<and>> operators as a member and as a non-member operator functions.
26. Create a file to store some records and search for a particular record and display it.
27. Demonstrate Namespace and Volatile member functions.
28. Perform all possible Type Conversions.
29. Create function Templates and overload the function Templates.
30. Implement Exception Handling with minimum 5 exception classes including two built-in exceptions.

Paper IV: OPERATING SYSTEM :-

1. Demonstrating installation of Operating System
2. Demonstration of various functions of Operating System in terms of
   a) Processor Management b) Memory Management
   c) File Management d) Inter Process Communication.
3. Study of internal and external commands of Disk operating system. (MSDOS/UNIX)
4. Creation and Execution of Batch File.
5. To write a program to implement the following CPU scheduling Algorithm
   a) FCFS (First Come First Serve) b) SJF
   c) Priority d) Round Robin
6. To write a program to implement the following CPU scheduling Algorithm
   a) FCFS (First Come First Serve) b) SJF
   c) Priority d) Round Robin
7. To write a program that will simulate the following (Disk Scheduling) seek optimization
   a) FCFS b) SSTF c) SCAN d) LOOK
8. To write a shell script for different operations of Operating System.

PAPER VI : CORE JAVA

Theory	**60**
Sessional/ Practical	**40**

UNIT I : Java Introduction : The Java Environment - Overview Writing a Java Program , Obtaining The Java Environment, Creating a Class, The main() method, System.out.println(), Using the Java .Documentation **Java Basics:** Basic Java syntax, General Syntax Rules, Java Statements, Blocks of Code, Comments, Variables, Data Primitive, Data Types, Object Data Types, Literal Values, Constants and the final keyword, **Mathematics in Java** : Expressions, Operator Precedence, Multiple Assignments,, Order of Evaluation Bitwise Operators, Compound Operators, Expressions that Mix Data Types: Typecasting Creating and Using Methods, Creating Methods Variable Scope

UNIT II : Java Objects: Object-Oriented Languages Object-Oriented Programs, Encapsulation, Creating and Using an Instance of an Object, References, Defining a Class, Constructors, Method Overloading, The this Keyword, static Elements, Garbage Collection Java Packages, Dealing with Keyboard Input,String, StringBuffer, and StringBuilder, Creating Documentation Comments and Using javadoc, Javadoc Comments **Comparisons And Flow Control Structures** Controlling Program Flow Boolean-Valued Expressions, Complex boolean Expressions, Simple Branching, Two Mutually Exclusive Branches, Nested if... else Statements, The switch Statement, Comparing Objects, Conditional Expression, while and do. . .while Loops, for Loops, break and continue, CLASSPATH, Code Libraries, and Jar files.

UNIT III :Arrays and Vectors: Defining and Declaring Arrays, Instantiating Arrays, Initializing Arrays, Working With Arrays, Array Variables, Copying Arrays, Array of Objects, the For-Each Loop, Multi-Dimensional Arrays, Defining and Using Vectors. **Inheritance** Derived Class Objects, **Polymorphism** : Inheritance and References, Dynamic Method Invocation, **Creating a Derived Class** : Inheritance and Access, Inheritance and Constructors - the super Keyword, Derived Class Methods that Override Base Class Methods, Inheritance and Default Base Class Constructors, The Instantiation Process at Runtime. **Typecasting with Object References** : Typecasting, Polymorphism, and Dynamic Method Invocation, More on Overriding, Object Typecasting Example, Checking an Object's Type: Using instanceof, Typecasting with Arrays of Objects **Other Inheritance-Related Keywords** : abstract and final, Methods Inherited from Object.

UNIT IV : Packages and Interfaces Creating an Interface Definition, **Implementing Interfaces** : Reference variables and Interfaces, Calling an Interface method, Interfaces and Inheritance, Interface and Event-Handling, Interfaces and "Pluggable Components". **Packages:** Creating and using packages, Access. **Exceptions :** Handling Exceptions, Exception Objects : Attempting Risky Code - try and catch, Guaranteeing Execution of Code - the finally Block, Letting an Exception be Thrown to the Method Caller, Throwing an Exception, Exceptions and Inheritance, Exception Class Constructors and Methods, Re-throwing Exceptions, Initializer Blocks, Static Initializer Blocks, Assertions.

UNIT V : Inner Classes Inner Classes, aka Nested Classes, Inner Class Syntax, Instantiating an Inner Class Instance from Within the Enclosing Class, Inner Classes Referenced from Outside the Enclosing Class, Working with Inner Classes.

REFERENCES :

Books:

1. Java 2 Complete Reference by Herbert Schieldt (Sixth Edition)
2. Core Java Vol 1: Sun Press
3. Core Java Vol 2: Sun Press

Web Reference

http://www.javapassion.com/javaintro/
Presentation Slides (Available in .ppt format)

E-book:

1. Java 2 Complete Reference by Herbert Schieldt (Fourth Edition)

(Web references and e-books as on 15 April 2013)

Practical Marks :

Test and Assignments	: 20 Marks
Laboratory assignment and journal submission	: 20 Marks

PAPER VII : MANAGEMENT PROCESS & ORGANISATIONAL BEHAVIOUR

Theory	**60**
Sessional/ Practical	**40**

UNIT I : Introduction of management , Evolution of management thought, Systems and contingency approach for understanding organizations.

UNIT II : Managerial processes, functions, skills and roles in an organization, Policy and characteristics of sound policy.

UNIT III : Social Responsibility of Business; Understanding and Managing Individual behavior-Personality, Perceptions, Values, Attitudes, Learning, Work motivation, Individual decision making and problem solving.

UNIT IV : Understanding and managing group processes-Interpersonal and group dynamics applications of emotional intelligence in organizations, communication, group decision making, Leadership and influence process; Understanding and Managing organizational system-Organizational design and structure, Work stress.

REFERENCES :

Books :

1. Koonz, H. and Weachirch, H. *Management*. 10th ed., New York, McGraw Hill, 1995.
2. Luthans, F. *Organizational Behaviour*, 7th ed., New York, McGraw Hill, 1995.
3. Robbins, S.P. *Management*, 5th ed., New Jersey, Englewood Cliffs, Prentice Hall Inc., 1996.
4. Robbins, S.P. *Organizational Behaviour*, 7th ed., New Delhi, Prentice hall of India, 1996
5. Singh, Dalip *Emotional Intelligence at work, Response Books*, Sage Publications, Delhi, 2001.
6. Staw, B.M. *Psychological Dimensions of Organizational Behaviour*.2nd Ed., Englowed Cliffs, New Jersey, Prentice Hall Inc. 1995.
   Stoner, J. etc. *Management* 6th Ed., New Delhi, Prentice Hall of India, 1996.

Web References :

http://www.slideshare.net/saransuriyan/organisational-behaviour-ppt

http://www.nvcc.edu/home/choran/PP%20slides/.../BUS201PPch1.ppt

E-Books :

http://books.google.co.in/books/about/Management_Process_And_Organisational_Be.html?id=lYAjQqVgDngC

http://outexs.fav.cc/management-process-and-organizational-behavior-ebook.html

(Web references and E-books as on April 2013)

Sessional Marks :

Test and Assignment	: 20 Marks
Seminar Presentation	: 10 Marks
Case Study Report	: 10 Marks.

PAPER VIII : DATA STRUCTURES

Theory	**60**
Sessional/ Practical	**40**

UNIT-I : Introduction to Algorithm Design and Data Structures: Design and analysis of algorithm: Algorithm definition, comparison of algorithms. Top down and bottom up approaches to Algorithm design. Analysis of Algorithm; Frequency count, Complexity measures in terms of time and space. Structured approach to programming.

UNIT-II : Arrays: single and multidimensional arrays. Address calculation using column and row major ordering. Various operations on Arrays. Vectors. Application of arrays: Matrix multiplication, Sparse polynomial representation and addition, Stacks and Queues: Representation of stacks and queues using arrays and linked-list. Circular queues, Priority Queue and D-Queue. Applications of stacks: Conversion from infix to postfix and prefix expressions, Evaluation of postfix expression using stacks.

UNIT-III : Linked list: Singly linked list; operations on list, Linked stacks and queues. Polynomial representation and manipulation using linked lists. Circular linked lists, Doubly linked lists. Binary tree traversal methods: Preorder, In-order, Post-ordered traversal. Recursive Algorithms. Traversal methods. Representation of trees and its applications: Binary tree representation of a general tree. Conversion of forest into tree. Threaded binary trees. Binary search tree: Height balanced (AVL) tree, B-trees.

UNIT-IV: Sorting: Selection sort, Insertion sort, Bubble sort, Quick sort, merge sort, Heap sort, Radix sort and their complexity, Searching: Sequential search, Binary Search, Binary Search Tree, ASVL trees, B trees, Searching , sorting and complexity, Searching: Sequential and binary searches, Indexed search, Hashing Schemes. Comparison of time complexity.

UNIT-V : Graph representation: Adjacency matrix, Adjacency lists, Traversal schemes: Depth first search, Breadth first search. Spanning tree: Definition, Minimal spanning tree algorithms. Shortest Path algorithms (Prim's and Kruskal's).

REFERENCES :

Books :

1. Hubbard JR: Schaum's outline of Data Structures with C++, TMH.
2. R. Sedgewick: Algorithms in C++, Pearson Education Asia.
3. Y.Langsam, M.J.Augenstein and A.M.Tanenbaum: Data Structures Using C and C++, Prentice Hall of India.
4. R.Kruse, C.L.Tonodo and B.Leung: Data Structures and Program Design in C, Pearson Education.
5. S.Chottopadhyay, D.Ghoshdastidar & M.Chottopadhyay: Data Structures Through 'C' Language, BPB Publication.
6. G.L. Heileman: Data Structutes, Algorithms and Object Oriented Programming, Tata McGraw Hill.
7. E. Horowitz, Sahni and D. Mehta: Fundamentals of Data Structures in C++Galgotia Publiction.

Web References:

http://academicearth.org/courses/data-structures
http://en.wikipedia.org/wiki/Dictionary_of_Algorithms_and_Data_Structures
http://www.cse.unr.edu/~bebis/CS308/

E-Books:

http://techbits.co.in/forum/3rd-semester/data-structure-ebooks/
http://www.e-booksdirectory.com/details.php?ebook=8105
http://www.e-booksdirectory.com/details.php?ebook=7308

(Web references and e-books as on April 2013)

Practical Marks :

Test and Assignments	: 20 Marks
Laboratory Assignment and Journal submission	: 20 Marks

PAPER IX: RDBMS using SQL

Theory 60
Sessional/ Practical 40

UNIT I : Database Management System- Basic concepts, Data base & Database users, Characteristics of Database, Database systems, concepts and architecture, Date Models, Schemas & Instances DBMS Architecture & data independence , Data base languages & Interfaces, Data modeling using the entity-relationship approach

UNIT II Relational Database Management System: Relational Model, Languages & Systems, Relational data model & Relational Algebra, Relational Model Concepts, Constraints, SQL – A Relational Data base language , Date Definition , View & queries in SQL, Specifying constraints & indexes in SQL, Specifying constraints & indexes in SQL, A relational database management systems ORACLE Introduction to SQL, Features, Characteristics, advantages, SQL data types & literals, symbolic constant, date & Time constants, expressions, Built-in functions-arithmetic, character and date, Types of SQL-Interactive SQL & Embedded SQL.

UNIT III : Data definition Language : Create the objects like Database, Tables, Indexes, Views, , Table and its creation rule, column definitions, Creating Table from an existing table, Role of Constraints to achieve data integrity, Types of integrity Constraints, Displaying Table Structure (DESC command), Modifying structure of a table, Deleting the Objects like Database, Tables, Indexes, Views, Renaming of tables-RENAME command. **Data Manipulation Language**- INSERT command with single Row, through parameter substitution, NULL values and Multi-Row INSERT command. UPDATE, DELETE TRUNCATE command, Delete Vs Truncate command and SELECT command,

UNIT IV : Data Control Languages : SET TRANSACTION, -GRANT command, Column Privileges, GRANT OPTION, REVOKE command. **Transaction Control Language (TCL)**- Making Data Manipulation Permanent (COMMIT), Undo Data Manipulation Changes (ROLLBACK), SAVEPOINT, Locks-table level & row level. **Data Retrieval & Queries :** SELECT statement clauses-FROM, WHERE clause -Distinct clause, Concatenation Operator (||), limiting rows/filtered data-arithmetic operators, search conditions , Compound Search Condition(AND,OR, NOT), Special Operators- within range(BETWEEN) , Set membership Test (IN,LIKE), Wildcard Characters, Column Concatenation, NULL value Test, Grouping data with GROUP BY, HAVING, ORDER BY-Sorting in Ascending/Descending Order,Aggregate Functions- Set Operators-UNION, INTERSECT, MINUS, joins, types of join-Equi join, Cartesian join, Outer join, Self join, views, indexes.

UNIT V : Backup & Recovery: Database Backups, Type of Backups-Immediate Backup & Archival Backup, Backup Tools, Database Recovery, Causes of failures, Recovery techniques-recovery using backups, Mirroring, Transaction logs, shadow paging,

REFERENCES :

Books:

1. Elmasri & Navathe, "Fundamental of Database Systems", 4th Edition, Pearson Education.
2. Desai, B. "An introduction to database concepts", Galgotia publications, New Dehli
3. Date, C.J., "An Introduction to Database Systems", Narosa Publishing House. New Delhi.
4. Data Base Management Design by C.S.V. Murthy, Himalaya Publishing House(Mumbai)
5. Simplified Approach to ORACLE by Parteek Bhatia, Sanjiv Datta, Ranjit Singh Kalyani Publication,
6. Informatics Practices by Sumita Arora, Dhanpati Rai & Co.
7. SQL: Th Cmlete Reference by James R. Groff and Paul N. Weinberg ISBN: 0072118458
8. Understanding SQL Martin Gruber, BPB publication
9. SQL, PL/SQL the programming language of Oracle by Ivan Bayross
10. Ullamn, J.D. "principles of database systems", Galgotia publications, New Dehli

Web Reference:

1. http://www.dbschema.com/
2. www.msuniv.ac.in/RDBMSConceptsandOracle8i.pdf
3. http://sirpabs.ilahas.com/ebooks/Computer%20&%20Technology/Database%20Mgmt/SQL%20The%20complete%20reference.pdf
4. http://www.mamcet.com/it/e-learning/4sem/dbmslabmanual.pdf

(Web references and E-books as on April 2013)

Practical Marks :

Test and Assignments	: 20 Marks
Laboratory Assignment and Journal submission	: 20 Marks

PAPER X : MATHEMATICAL FOUNDATIONS

Theory 60
Sessional/ Practical 40

UNIT - I: Mathematical Logic Propositions Logical Connectivity, Compound Statements form truth tables, tautology and fallacy, implication and equivalence of statements forms, logical identities, normal forms, methods of proof, quantifiers.

UNIT - II:Relations and Functions Definition of relation, Complement of relation converse relation, matrix representation and its properties, Graphical representation of relation, diagraphs, properties of binary relation, equivalence relation, equivalence classes, partial ordering relation, manipulation of relations, functions and its types.

UNIT - III: Algebraic Structures Binary operations on a set, types of binary operations, cayley's Composition table, Groupoid, Semi-group, Monoid, Invertible element, cancellation laws, sub semi-group and sub monoid isomorphism and homomorphism, modulo system.

UNIT - IV: Graph Theory Basic terminology, Multi graphs and weighted graphs, Paths and circuit, shortest path in weighted graph, Hamiltonian and Eulerian paths and circuit and planner graph also matrix representation of graphs.

UNIT - V: Trees Trees, rooted trees, Path length in rooted trees, Prefix codes, binary search tree, spanning trees and cut set, Minimal spanning trees, Kruskal's and Prim's algorithms for minimal spanning tree.

UNIT - VI : Groups and Coding Coding of binary information and error detection Hamming distance, properties of distance functions, group codes, decoding and error correction.

REFERENCES :

Books:

1. Kolman B and Busby Robert, "Discrete Mathematical Structure" Prentice Hall of India, 1998.
2. P. K. Mittal, "Discrete Structure Paragon International Publisher", 2007.
3. Swapan Kumar Sarkar, "A Text Book of Discrete Mathematics", S. Chand and Company Ltd., 2003.
4. Dr . Latha, Dr. Neeta, "Discrete Structures", Nirali Prakashan, 2010.
5. C. L. Liu, "Discrete Mathematics", Tata Mc Graw Hill Publishing House, 2000.
6. Tremblary and Manohar, "Discrete Mathematical Structure with Application to Computer Science", Tata Mc Graw Hill, 1997.

Web References :

www.freebookcentre.net

www.wowebook.com

E-book:

McGraw Hill, "Discrete Mathematics and Its Application", 7th Edition, June 2011.

(Web references and e-books as on April 2013)

Sessional Marks :

Test and Assignments : 20 Marks

Method Implementation : 20 Marks

Note: For method implementation a student has to write the program for implementation of mathematical equation and concepts learned in the course by using any programming language.

Laboratory Work For Second Semester

(Weekly 12 Hours and Total 6 Credits.)

Paper VI : CORE JAVA :-

1. Programs demonstrating Declare, Initialize, print variables, Conditional Operators, Control Structure and Looping Statements.
2. Programs implementing Boolean class, various types of data types, Date class, Math class, System class and Runtime class.
3. Programs creating instance of class using new keyword, static variable and methods.
4. Programs demonstrating overloading, constructors, "this" reference and Access modifiers.
5. Implementing class path, abstract class, interface as Type, multiple interfaces.
6. Implementing constructors calling chain, super keyword, final class and final method.
7. Running java application using inner classes, exceptional handling and custom exceptions.
8. Demonstration of Polymorphic behavior via abstract class, method overriding and java interface.

Paper VIII : DATA STRUCTURES :-

Algorithms and programs of Incretion, deletion and traversing of linear and nonlinear data structure, Searching and sorting algorithms to be implemented in java.

Case studies of use of various data structures in applications such as

1. Sorting,
2. Searching ,
3. String manipulation and
4. list manipulation.
5. Implementation of algorithms of Traversing,
6. Insertion, Deletion on different data structures (arrays, metrics, queues, stacks, sorting) using JAVA.

PAPER IX : RDBMS using SQL:-

1. Execution of various Data Definition language commands.
2. Illustrations of various type of Integrity Constraints.
3. Execution of various types of Data Manipulation commands.
4. Demonstration of SELECT command with different clauses.
5. Demonstration of SINGLE ROW functions (character, numeric, Data functions).
6. Demonstration of GROUP functions (avg, count, max, min,Sum).
7. Demonstration of ORDER BY clause
8. Demonstration of various type of SET OPERATORS (Union, Intersect, Minus).
9. Demonstration of Various types of JOINS.
10. Demonstration of Lossless join and Decomposition.
11. Execution of Data Control Language commands.
12. Execution of TCL statements.
13. Demonstration of Views and Indices.
14. Demonstration of Backup / Recovery tools.

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