



**SCHEME OF EXAMINATION
&
DETAILED SYLLABUS**

MASTER OF SCIENCE (Computer Science)

2015

**COMPUTER SCIENCE & APPLICATION
DEPARTMENT**



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Vill-Mendua, Distt-Raisen(Madhya Pradesh), Ph:07480-295707
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Department of Computer Science & Application

Master of Science-Computer Science

Courses Offered

SEMESTER – I		
Subject Code	Subject Name	
IMCS101	Discrete Mathematic Structure	5(3-2-0)
IMCS102	Programming Language Using C	6(3-2-1)
IMCS103	Computer Organization & Architecture	5(3-2-0)
IMCS104	Windows & PC Software	6(3-2-1)
SEMESTER – II		
IMCS201	Data Structures & Algorithms	6(3-2-1)
IMCS202	Operating System	5(3-2-0)
IMCS203	Computer Networks with Windows NT	5(3-2-0)
IMCS204	Programming in JAVA	6(3-2-1)
SCIT 201	Web Development	3(1-0-2)
SSBI 201	Geography Information & Remote Sense	3(1-0-2)
SGMT 201	Entrepreneurship Development	3(1-0-2)
SCOM 201	Research Methodology	3(1-0-2)
SHAR 201	Tailoring & Designing	3(1-0-2)
SEMESTER – III		
IMCS301	RDBMS Concepts & Oracle	6(3-2-1)
IMCS302	Multimedia Tools & Application	5(3-2-0)
IMCS303	Software Engg.	5(3-2-0)
IMCS304	Advanced JAVA Prog.	6(3-2-1)
SCIT 301	Web Development	3(1-0-2)
SSBI 301	Geography Information & Remote Sense	3(1-0-2)
SGMT301	Entrepreneurship Development	3(1-0-2)
SCOM 301	Research Methodology	3(1-0-2)
SHAR 301	Tailoring & Designing	3(1-0-2)
SEMESTER – IV		
IMCS401	Unix & Linux	6(3-2-1)
IMCS402	Compiler Design	5(3-2-0)
IMCS403	ASP.Net & C#	6(3-2-1)
IMCS404	Data Warehousing & Mining	5(3-2-0)



Department of Computer Science & Applications

M.Sc. (Computer Science)

PROGRAM OBJECTIVES

The OBJECTIVE of the course is to develop skilled manpower in the various areas of information technology like:

1. To prepare graduates who will be successful professionals in industry, government, academia, research, entrepreneurial pursuit and consulting firms
2. To prepare graduates who will contribute to society as broadly educated, expressive, ethical and responsible citizens with proven expertise
3. To prepare graduates who will achieve peer-recognition; as an individual or in a team; through demonstration of good analytical, design and implementation skills
4. To prepare graduates who will thrive to pursue life-long learning to fulfill their goals

PROGRAM OUTCOMES

M.Sc. programme has been designed to prepare graduates for attaining the following program outcomes:

1. An ability to apply knowledge of mathematics, computer science and management in practice
2. An ability to identify, critically analyze, formulate and develop computer applications
3. An ability to select modern computing tools and techniques and use them with dexterity
4. An ability to design a computing system to meet desired needs within realistic constraints such as safety, security and applicability
5. An ability to devise and conduct experiments, interpret data and provide well informed conclusions
6. An ability to understand the impact of system solutions in a contemporary, global, economical, environmental, and societal context for sustainable development
7. An ability to function professionally with ethical responsibility as an individual as well as in multidisciplinary teams with positive attitude
8. An ability to communicate effectively
9. An ability to appreciate the importance of goal setting and to recognize the need for life-long learning

COURSE STRUCTURE OF MSC(CS) I SEMESTER												
Subject Details			Main Examinations				Sessionals ***		Credit Distribution			Allotted Credits
Subject Code	Subject Name	Total Marks	Major		Minor		Max Marks	Min Marks	L	T	P	Subject wise Distribution
			Max Marks	Min Marks	Max Marks	Min Marks						
Theory Group												
IMMA101	Discrete Mathematic Structure	100	50	17	20	7	30	12	3	2	-	5
IMCS101	Programming Language Using C	100	50	17	20	7	30	12	3	2	-	5
IMCS102	Computer Organization & Architecture	100	50	17	20	7	30	12	3	2	-	5
IMCS103	Windows & PC Software	100	50	17	20	7	30	12	3	2	-	5
Practical Group			Term End Practical Exam				Lab Performance					
IMCS101	Programming Language Using C	50	25		8		25	8	-	-	1	1
IMCS103	Windows & PC Software	50	25		8		25	8	-	-	1	1
Grand Total		500										22

Minimum Passing Marks are equivalent to Grade D

L- Lectures T- Tutorials P- Practicals

***Sessional Weightage- Attendance 50%, Four Class Test/Assignments 50%

COURSE STRUCTURE OF MSC(CS) II SEMESTER

Subject Details			Main Examinations				Sessionals ***		Credit Distribution			Allocated Credits
Subject Code	Subject Name	Total Marks	Major		Minor		Max Marks	Min Marks	L	T	P	Subject wise Distribution
			Max Marks	Min Marks	Max Marks	Min Marks						
Theory Group												
IMCS201	Data Structures & Algorithms	100	50	17	20	7	30	12	3	2	-	5
IMCS202	Operating System	100	50	17	20	7	30	12	3	2	-	5
IMCS203	Computer Networks with Windows NT	100	50	17	20	7	30	12	3	2	-	5
IMCS204	Programming in JAVA	100	50	17	20	7	30	12	3	2	-	5
*	Elective I(s)	50	25	8	10	4	15	5	1	-	-	1
Practical Group			Term End Practical Exam				Lab Performance					
IMCS201	Data Structures & Algorithms	50	25		8		25	8	-	-	1	1
IMCS204	Programming in JAVA	50	25		8		25	8	-	-	1	1
*	Elective I(s)	100	50		17		50	17	-	-	2	2
Grand Total		650										25

Minimum Passing Marks are equivalent to Grade D

L- Lectures T- Tutorials P- Practicals

*Elective I (Skill) – Choose any one from the following list is attached.

***Sessional Weightage- Attendance 50%, Four Class Test/Assignments 50%

COURSE STRUCTURE OF MSC(CS) III SEMESTER

Subject Details			Main Examinations				Sessionals ***		Credit Distribution			Allotted Credits
Subject Code	Subject Name	Total Marks	Major		Minor		Max Marks	Min Marks	L	T	P	Subject wise Distribution
			Max Marks	Min Marks	Max Marks	Min Marks						
Theory Group												
IMCS301	RDBMS Concepts & Oracle	100	50	17	20	7	30	12	3	2	-	5
IMCS302	Multimedia Tools & Application	100	50	17	20	7	30	12	3	2	-	5
IMCS303	Software Engg.	100	50	17	20	7	30	12	3	2	-	5
IMCS304	Advanced JAVA Prog.	100	50	17	20	7	30	12	3	2	-	5
*	Elective I(s)	50	25	8	10	4	15	5	1	-	-	1
Practical Group			Term End Practical Exam				Lab Performance					
IMCS301	RDBMS Concepts & Oracle	50	25		8		25	8	-	-	1	1
IMCS304	Advanced JAVA Prog.	50	25		8		25	8	-	-	1	1
*	Elective I(s)	100	50		17		50	17	-	-	2	2
Grand Total		650										25

Minimum Passing Marks are equivalent to Grade D

L- Lectures T- Tutorials P- Practicals

***Elective I (Skill) – Choose any one from the following list is attached.**

***Sessional Weightage- Attendance 50%, Four Class Test/Assignments 50%

COURSE STRUCTURE OF MSC(CS) IV SEMESTER

Subject Details			Main Examinations				Sessionals ***		Credit Distribution			Allocated Credits	
Subject Code	Subject Name	Total Marks	Major		Minor		Max Marks	Min Marks	L	T	P	Subject wise Distribution	
			Max Marks	Min Marks	Max Marks	Min Marks							
Theory Group													
IMCS401	Unix & Linux	100	50	17	20	7	30	12	3	2	-	5	
IMCS402	Compiler Design	100	50	17	20	7	30	12	3	2	-	5	
IMCS403	ASP.Net & C#	100	50	17	20	7	30	12	3	2	-	5	
IMCS404	Data Warehousing & Mining	100	50	17	20	7	30	12	3	2	-	5	
Practical Group			Term End Practical Exam				Lab Performance						
IMCS401	Unix & Linux	50	25		8		25	8	-	-	1	1	
IMCS403	ASP.Net & C#	50	25		8		25	8	-	-	1	1	
Grand Total		500										22	

Minimum Passing Marks are equivalent to Grade D

L- Lectures T- Tutorials P- Practicals

***Sessional Weightage- Attendance 50%, Four Class Test/Assignments 50%

SEMESTER-I
AISECT UNIVERSITY, Bhopal, (M.P.)

Scheme of Examination

Department: CSA

Subject Code	Subject Name	Credits	Maximum marks Allotted						Duration of Exam.	
			Theory			Practical		Total	Theory	Practical
			End Sem	Mid Sem	Sessional	End Sem	Term work			
IMMA101	Discrete Mathematic Structure	5(3-2-0)	50	20	30	-	-	100	3 hr	-

Objective-This course introduces the applications of discrete mathematics in the field of computer science. It covers sets, logic, proving techniques, combinatory, functions, relations, Graph theory and algebraic structures. These basic concepts of sets, logic functions and graph theory are applied to Boolean Algebra and logic networks while the advanced concepts of functions and algebraic structures are applied to finite state machines and coding theory.

Syllabus

THEORY

UNIT-I

MATHEMATICAL LOGICS:

Introduction. statements and notations, connective, normal forms, the theory of inference for the statement calculus, the predicate calculus.

UNIT-II

SCT THEORY:

Basic concepts, representation of discrete structure. relation & ordering, functions, natural numbers, recursion. recursion in mechanical theorem proving.

UNIT-III

ALGEBRAIC STRUCTURES:

Introduction, algebraic system, semi groups and monoids, grammars & languages, polish expressions and their compilation.

UNIT-IV:

LATTICES AND BOOLEAN ALGEBRA:

Introduction, lattices as partially ordered sets, Boolean function, representation and minimization of Boolean algebra.

UNIT-V:

GRAPH THEORY:

Introduction, basic concepts, storage representation and manipulation of graphs, simple precedence grammars.

Outcome:-

After this completion student will be familiar with relational algebra, Functions and graph theory

Outcome:-

After this completion student will be familiar with relational algebra, Functions and graph theory

TEXT BOOKS:

1. Discrete Mathematics- John Truss.
 2. Discrete Mathematical Structures with applications to Computer Science
Tremblay & Manohar (TMH)
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AISECT UNIVERSITY, Bhopal, (M.P.)

Scheme of Examination

Department: CSA

Subject Code	Subject Name	Credits	Maximum marks Allotted						Duration of Exam.	
			Theory			Practical		Total	Theory	Practical
			End Sem	Mid Sem	Sessional	End Sem	Term work			
IMCS101	Programming Language Using C	6(3-2-1)	50	20	30	25	25	150	3 hr	2 hr

Objective – Student will be able

1. To understand the basic knowledge of programming concepts.
- 2 To understand the C language & its concepts.

Syllabus

THEORY:

UNIT-I

Overview of C, Feature of C, Structure of Program, Variables, Expression. Identifiers. Keywords, Data Types, Constants, Operators: Arithmetic, Logical, Relational, Conditional and Bitwise Operators, Precedence and Associativity of Operators, Types Conversion in Expression.

UNIT-II

Basic Input/output and Library Functions Single Character Input/output i.e. Getch(), Getchar(), Getche(), Put char(), Formatted Input/output i.e. Printf() and Scanf(), Library Functions- Concepts, Mathematical and Character Functions.

Control Structures- If Statement, If Else Statement, Nesting of If.....Else Statement, Else If Ladder, ? : Operator. Switch Statement, Compound Statement, and Loop Controls- For While, Do- While Loops, Break Continue, Exit, Goto Statement.

UNIT-III

The Need of a Function, User Defined and Library Function, Prototype of a Function, Function Argument, Return Values and Nesting of Function, Main(), Command Line Argument, Recursion, Calling of Functions, Array as Function Argument, Scope and Life of Variables- Local and Global Variable, Storage Class Specifier-Auto, Extern, Static, Register, Preprocessor Directive.

UNIT-IV

Arrays- Single and Multidimensional Arrays, Array Declaration and Initialization of Arrays, String: Declaration, Initialization, String Functions. Structure and Union-Defining Structure, Declaration of Structure Variable, Accessing Structure Members, Nested Structures, Array of Structures, Structure

Assignment, Structure as Function Argument, Function That Return Structure, Union.

UNIT-V

Pointers- The & And * Operators, Pointers Expressions, Pointers VIS Arrays, Pointer to Functions, Functioning Returning Pointers. Dynamic Memory Allocation: Introduction, Malloc, Calloc, Size of, Free, Ralloc Functions, Bitwise Operator.

Out Comes – After study this student will be able to know about and concepts of Fundamentals of Computers & Information Technology (hardware, software, networking, security, Internet/Web, and applications).

Practicals:

1. Write a program to swap the contents of two variables with & without using temporary variable.
2. Write a program to print the Fibonacci series up to a given numbers of terms.
3. Write a program to invert 3 x 3 matrixes.
4. Write a program multiply two matrices.
5. Write a program to create an odd magic square.
6. Write a program to find all capital letters in string.
7. Write a program to convert upper case letters to lower case & vice versa in a sentence of mixed cases.
8. Write a program to search a number in an array using the algorithm like sequential search etc.
9. Write a program to check whether a string is a palindrome or not.
10. Write a program to calculate factorial of a no through recursion.
11. Write a program to calculate roots to a quadratic equation.

TEXT BOOKS:

1. Let us C -- Yashwant Kanitkar
2. Schaum's Series – C Programming
3. Text your skills in C – S. Thamarai Selvi & R Murugse(TMh)

REFERENCE:

1. Programming in C – E. Balaguruswami (TMh)
 2. The Complete Reference in C/C++ -- Herbert Schildt (TMh)
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AISECT UNIVERSITY, Bhopal, (M.P.)

Scheme of Examination

Department: CSA

Subject Code	Subject Name	Credits	Maximum marks Allotted						Duration of Exam.	
			Theory			Practical		Total	Theory	Practical
			End Sem	Mid Sem	Sessional	End Sem	Term work			
IMCS102	Computer Organization & Architecture	5(3-2-0)	50	20	30	-	-	100	3 hr	-

Objective – Student will be able

1. To introduce basics of digital logic circuits design and Computer Organization.
- 2 To understand the Input-Output Organizations.
- 3 To understand the Memory Organization.

Syllabus

THEORY

UNIT-I

Digital Logic Circuits: Digital Computers. Logic Gates, Boolean Algebra, Map Simplification, Combination Circuits (i.e. Half-Adder). Flip-Flops (i.e. SR Flip Flops, D Flip-Flops, JK Flip-Flops, T Flip-Flops, Edge Triggered Flip-Flops, Execution Table), Sequential Circuits.

UNIT-II

Data Representation: Data Type (i.e. Number System. Octal and Hexadecimal Number, Decimal Representation, and Alphanumeric Representation), Complements, Fix Point Representation. Floating-Point Representation.

UNIT-III

Basic Computer Organization and Design: Instruction Codes. Computer Registers, Computer Instructions, Timing and Control, Instruction Cycle, Memory Reference Instruction, Input-Output and Interrupt, Complete Computer Description Design of Basic Computer.

UNIT-IV

Central Processing Unit: Introduction, General Register, Organization, Stock Organization, Instruction Formats, Addressing Modes, Data Transfer and Manipulation, Program Control Reduced Instruction Set Computer (RISC).

UNIT-V

Input-Output Organization: Peripheral Devices (ASCII alphanumeric Characters), Input-Output Interface, Asynchronous Data Transfer, Modes of Transfer, Priority Interrupt, Direct Access (DMA), Input-Output Processor (IOP).

Out Comes – After Study This Student Will Be Able To Know About digital logic circuits design and Computer Organization .

TEXT BOOK:

1. Computer System Design & Architecture- Heuring Jordan(A.W.L.)
 2. Computer System Architecture- M.Morris Mano, P.H.I.
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AISECT UNIVERSITY, Bhopal, (M.P.)
Scheme of Examination

Department: CSA

Subject Code	Subject Name	Credits	Maximum marks Allotted					Duration of Exam.		
			Theory			Practical		Total	Theory	Practical
			End Sem	Mid Sem	Sessional	End Sem	Term work			
IMCS103	Windows & PC Software	6(3-2-1)	50	20	30	25	25	150	3 hr	2 hr

Objective – Student will be able

1. To understand the basic knowledge of MS Windows.
2. To understand the Office Packages.
3. To understand the MS Excel.
4. To understand the MS PowerPoint & Outlook Express.

Syllabus

THEORY:

UNIT-I

INTRODUCTION TO MS-DOS:

History and Versions of DOS, Fundamentals of DOS, Booting Process. Internal and External DOS Commands, Creating and Executing Batch Files.

UNIT-II

INTRODUCTION FOR WINDOWS:

Features of Windows. Hardware Requirement for Running Version of Windows. New Installation & Up gradation, Origin of Windows, Part of Windows Screen, Types and Anatomy of Windows, Using Program Manager, Creating and Using Groups, Using File Manager, Accessories.

UNIT-III

INTRODUCTION TO WORD PROCESSING (MS WORD):

Advantages of Word Processing, Introduction & Installation Editing a File, Using Paragraph Styles Newspaper. Style Column, Using Macros. Advanced Word Processing, Header & Footer, Formatting Text Setting Up Printer Mail Merge and Other Applications Mathematical Calculations, Table Handling.

UNIT-IV

INTRODUCTION TO SPREAD SHEET (MS EXCEL):

Definition and Advantages of Electronic Worksheet Working on Spreadsheet, Range and Related Operations, Setting Saving and Retrieving Worksheet File, Insetting, Deleting, Copying and Moving of Data Cells, Inserting and Deleting Rows and Columns, Protecting Cells, Printing a Worksheet, Erasing a Worksheet, Graphs Creation: Types of Graphs, Creating a Chart on Chart Sheet, 3D Column Charts, Moving and Changing the Size of Chart, Printing the Chart.

UNIT-V

INTRODUCTION OF MS POWER POINT:

Element of Power Point, Exploring Menus of Power Point, working with Dialog Boxes Adding File Text and Art and Picture to Slide Printing Slides, View Slide, Outline, Slide Sorter Notes and Slides Show View, Slide Setup Formatting and Enlarging Text Slides with Graphs.

Out Comes – After studying this student will be able to know about terms and concepts of Microsoft suite completely.(like MS-word,power-point-exel sheets,outlook express)

Practicals:

1. Introduction of Microsoft windows.
2. Creation of file and folder in MS Windows.
3. Introduction of MS Word.
4. Inserting Number, Bullets, Footer and Header.
5. Creating text, document and table in MS Word.
6. Write steps for mail merge.
7. Introduction of Microsoft excel.
8. Write steps to inserting formula in MS Excel.
9. Creating text, row and Column in MS Excel.
10. Introduction of Microsoft Power Point.
11. Write steps how to using graphics in power point.
12. Introduction and theory of Microsoft Outlook.

TEXT BOOKS

1. PC Software for Windows and Made Simple by Taxali (TMH)
 2. Computer Awareness and Application by Malhotra.
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SEMESTER-II
AISECT UNIVERSITY, Bhopal, (M.P.)

Scheme of Examination

Department: CSA

Subject Code	Subject Name	Credits	Maximum marks Allotted						Duration of Exam.	
			Theory			Practical		Total	Theory	Practical
			End Sem	Mid Sem	Sessional	End Sem	Term work			
IMCS201	Data Structures & Algorithms	6(3-2-1)	50	20	30	25	25	150	3 hr	2 hr

Objectives

Data structures play a central role in modern computer science. In addition, data structures are essential building blocks in obtaining efficient algorithms. The objective of the course is to teach students how to design, write, and analyze the performance of programs that handle structured data and perform more complex tasks, typical of larger software projects. Students should acquire skills in using generic principles for data representation & manipulation with a view for efficiency, maintainability, and code reuse. Another goal of the course is to teach advance data structures concepts, which allow one to store collections of data with fast updates and queries.

Syllabus

THEORY:

UNIT-I

Data Representation: Introduction. Linear List. Formula Based Representation. Linked In directing Addressing. Simulating Pointers. A Comparison. Applications. Convex Hull. Arrays and Matrices: Arrays, Matrices, Special Matrices- Sparse Matrices.

UNIT-II

Stacks: The Abstract Data Type, Derived Class and Inheritance, Formula Based Representation, Linked Representation, Applications.

Queues: The Abstract Data Type, Formula Based Representation, Linked Representation, Application.

Binary and Other Trees: Trees, Binary Trees, Properties, Representation, Common Binary Tree Operation, Binary Tree Traversal, the ADT Binary Tree, The Class Binary Tree, ADT And Class Extensions, Applications.

UNIT-III

Priority Queues: Introduction, Linear List, Applications.

Tournament Trees: Introduction, The ADT Winner Tree, The Class Winner Tree, Loser Tree Applications.

Search Trees: Binary Search Tree, AVL Trees, Red-Black Tree, B- Tree Applications.

UNIT-IV

Graphs: Definitions, Applications, Properties, The ADTs Graph and Digraph, Representation of Network, Class Definition: Graph Iterators, Language Features, Graph Search Methods, Applications.

The Greedy Method: Optimization Problem, The Greedy Method, Applications.

Divide And Conquer: The Method, Application.

UNIT-V

Dynamic Programming: The Method, Applications.

Backtracking: The Method, Applications.

Branch and Bound: The Method, Applications.

Outcome:-

After Study This Student Will Be Able To Know About And Concepts Of Data Structure Using C++ Language, List & Its Operations Concept Of Tree, Algorithm & Graphs Design.

Practicals:

1. Write a program to Traversal of an Array.
2. Write a program to Insert Item into Sorted Array.
3. Write a program to Delete Item from Array.
4. Write a program to Insert Item at the Specific Node.
5. Write a program to Implement Stack using Array.
6. Write a program to Implement Queue using Linked List.
7. Write a program to Traversing of binary tree (IN-Order, Pre-Order, Post-Order).
8. Write a program to Sort an Array using BUBBLE SORT.
9. Write a program to Sort an Array using SELECTION SORT.
10. Write a program to Sort an Array using INSERTION SORT.
11. Write a program to Traversal of graph (BFS, DFS).

TEXT BOOKS

1. Weiss- Data Structures & Algorithm Analysis in C++ (A.W.L.)

2. Data Structures, algorithms and Applications in C++ by Sahni (Mc Graw Hill)
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AISECT UNIVERSITY, Bhopal, (M.P.)

Scheme of Examination

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			Theory			Practical		Total	Theory	Practical
			End Sem	Mid Sem	Sessional	End Sem	Term work			
IMCS202	Operating System	5(3-2-0)	50	20	30	-	-	100	3 hr	-

Objective – Student will be able

1. To develop the understanding of functioning of Operating System.
- 2 To understand the Process Concepts, process state & process control
- 3 To understand the Critical Section Problem
- 4 To understand the Contiguous Allocating, Paging
- 5 To understand the Disk Scheduling, Disk Management

Syllabus

THEORY:

UNIT-I

Overview of the operating system: Evaluation of operating system. Classification of Operating System: Batch OS, Multiprogramming, Time Sharing, Real Time, Combination, Distributed OS .Different Views of Operating System: Operating System as a Processor Manager, Memory manager, File Manager, Device Manager etc. System Services. System Calls. Hierarchical & Extended Machine View. Design and

Implementation of OS. Functional Requirements. Implementation.

UNIT-II

File management: file concept, file types. File based system, disk based system, blocking file operations, creating, writing, reading ,deleting, file access methods, file allocation methods- contiguous, dynamic, linked and indexed allocation performance of allocation methods under various size of files directory system single level two level structured, file protection mechanism layered file system.

UNIT-III

Processor management process views, structure, state, process, control block multiprogramming levels of schedulers and scheduling algorithms, evaluation of various scheduling algorithms, multiple processor scheduling, process synchronization, synchronization mechanism, virtual processors, Interrupt mechanism, future trends in processor management.

UNIT-IV

Memory management: memory management schemes, contiguous allocation, single & partitioned (static & dynamic) segmentation, non-contiguous allocation, paging, virtual memory concepts, demand paging, performing page fault, page replacement algorithms, segmentation and paging ,future trends in memory management, large main memories, storage hierarchies, hardware support of memory management.

UNIT-V

Technique for device management, dedicated devices, shared devices, virtual devices, sequential access, direct access devices, channel and control unit, independent devices, operation, buffering, multiple paths, block multiplexing ,device allocation consideration, i/o traffic controller, i/o scheduler, i/o device handlers, virtual devices, spooling system.

Out Comes – After Study This Student Will Be Able To Know About functioning of Operating System. To make students able to learn different types of operating systems along with concept of file systems and CPU scheduling algorithms used in operating system.

To provide students knowledge of memory management and deadlock handling algorithms.

At the end of the course, students will be able to implement various algorithms required for management, scheduling, allocation and communication used in operating system.

TEXT BOOK

1. Operating System: Gary Nutt
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			Theory			Practical		Total	Theory	Practical
			End Sem	Mid Sem	Sessional	End Sem	Term work			
IMCS203	Computer Networks with Windows NT	5(3-2-0)	50	20	30	-	-	100	3 hr	-

Objective – Student will be able

1. To understand the fundamental concepts of computer networking.
2. To understand the with the basic taxonomy and terminology of the computer networking area.
3. To understand the advanced networking concepts, preparing the student for entry Advanced courses in computer networking.
4. To understand the various transition method.

Syllabus

THEORY:

UNIT-I

Analog & digital signal. electronic spectrum, asynchronous & synchronous transmission. Ideal channel, band rate, baseband, broadband channel, multiplexer FDM. TDM , STDM, carrier modulation. AM, FM, PCM. PWM, SWM, encoding schemes, the needs and importance of networking, type of networks, server based , peer based, hybrid, layered architecture, LAN topology, network adopted card, logical topology, modem.

UNIT-II

Switching technique, message switching. circuit switching. Packet switching. Virtual circuit. Transmission media. OSI reference model. IEEE standards. 802.3, 802.4, 802.5 ALOHA, SLOTTED ALLOHA, CSMA. CSMA/CD Bitmap CCITTX.25, CCITT x11, token ring, token bus.

UNIT-III

Fast Ethernet, FDDI token ring, wireless LAN, ATM network, principles of internetworking , internetworking devices, bridge, routers ,gateways, repeater, routing algorithms, distance vector routing, shortest path routing, broadcast routing, multicast routing, ICP/IP protocol, IPV6 addressing, congestion control, traffic shaping.

UNIT-IV

TELNET, FTP, SMTP, MINE,SNMP,UDP,URL(Uniform Resource Locator) THTTP source routing bridge, transport bridge, ISDN channel, ISDN services, base band ISDN, broadband ISDN. Different switches, PBX network, network securing application of cryptography to security, data encryption transposition cipher, substitution cipher, PSA algorithms.

UNIT-V

Introduction to Windows NT, various features, differences with other windows environment and other OS, Windows NT workstations versus server. Kernel and its subsystems.

Security Models: system level restrictions, server application security, domain group access.

Outcomes- After study this student will be able to know about

1. Independently understand basic computer network technology.
2. Understand and explain Data Communications System and its components.
3. Identify the different types of network topologies and protocols.
4. Enumerate the layers of the OSI model and TCP/IP. Explain the function(s) of each layer.

TEXT & REFERENCE BOOKS

- James Chellis Charles Perkins, Matthew Strebe “Networking Essentials: Study Guide MCSE”, Second Edition, BPB Publications.
- S.K.Basandra & S. Jaiswal, “Local Area Networks”, Galgotia Publications

- MCSE Windows 2000 Network Infrastructure Design
 - Andrew & Tanenbaum, "Computer Network "
 - William Stallings, "Data and Computer Communication"
 - Prakash C Gupta, "Data Communication"
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AISECT UNIVERSITY, Bhopal, (M.P.)

Scheme of Examination

Department: CSA

Subject Code	Subject Name	Credits	Maximum marks Allotted						Duration of Exam.	
			Theory			Practical		Total	Theory	Practical
			End Sem	Mid Sem	Sessional	End Sem	Term work			
IMCS204	Programming in JAVA	6(3-2-1)	50	20	30	25	25	150	3 hr	2 hr

Objective: To introduce and understand students to programming concepts and techniques using the Java language and programming environment, class, objects, also learn about lifetime, scope and the initialization mechanism of variables and improve the ability general problem solving abilities in programming. Be able to use the Java SDK environment to create, debug and run simple Java program.

Syllabus

THEORY

UNIT I

History and design features of JAVA. how Java works. Basics of JAVA. Application and Applets. using the tools in JDK, javadoc, Java, jdb etc.

Applets Programming - Creating and executing Java applets. Inserting applets in a web page. Java security.

UNIT-II

JAVA Language- keywords. Constants, Variables and Data types. Operators and statements: Break, continue, and return. Array. String and String Buffer Classes, Wrapper Classes.

Classes, Objects and Methods: Defining a class, adding variables and methods, creating Objects, constructors, class inheritance.

UNIT-III:

Inheritance, basic types, using super, multi level hierarchy, abstract and final classes, object class, packages and interfaces, packages.

Exception Handling, Fundamentals, exception types, uncaught exceptions, throws, throw, try -catch, final, built in exceptions, creating your own exceptions.

UNIT-IV

Multithreading Fundamentals, Java Thread model: priorities, synchronization, messaging, thread class, Runnable interface, Interthread communication, suspending, resuming and stopping threads.

Input/output- Basics - Streams, Byte and Character Streams, predefined streams, Reading and writing from console and files using standard Java Packages Java Package (lang, util, io).

Networking-Basics, networking classes and interfaces, using java.net package, doing TCP/IP and Datagram Programming.

UNIT-V

AWT Classes, Event Handling and swing classes, AWT Programming, Working with windows, Graphics and text, Using AWT controls, Layout managers and menus, Handling image, animation, sound and video.

Event Handling-Different mechanism, the Delegation Event Model, Event Classes, Event Listener interfaces, Adapter and Inner Classes.

Java swing applet, icons and labels, text fields, buttons, combo boxes, tabbed and scroll panes, trees, and tables.

Out Comes –

Students will complete software projects comprised of an object-oriented design, implementation, and test plan.

- Designs will demonstrate the use of good object-oriented design principles including encapsulation and information hiding.
- The implementation will demonstrate the use of a variety of basic control structures including selection and repetition; classes and objects in a tiered architecture (user interface, controller, and application logic layers); primitive and reference data types including composition; basic AWT components; file-based I/O; and one-dimensional arrays.
- Test plans will include test cases demonstrating both black box and glass box testing strategies.

Practicals:

1. Write a Java Program to Display message on computer screen.
2. Write a Java Program to develop a class for Rational numbers
3. Design a Date class in Java
4. Write a Java Program to design an interface for Stack ADT and implement Stack ADT using both Array and Linked List.
5. To develop a vehicle class hierarchy in Java to demonstrate the concept of polymorphism
6. Design a Date class in Java.
7. To write a Java Program to randomly generate objects and write them into a file using concept of Object Serialization
8. Develop a scientific calculator using even-driven programming paradigm of Java.
9. To write a multi-threaded Java program to print all numbers below 100,000 that is both prime and Fibonacci number
10. To develop a Java Program that supports multithreaded echo server and a GUI client.
11. To implement a calculator using GUI Environment with the help of javax.swing package.

Reference Book

1. Programming with Java by E. Balaguruswamy.
2. Java - the complete reference by Patrick Naughton and Herbert Schildt

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AISECT UNIVERSITY, Bhopal, (M.P.)

Scheme of Examination

Department: CSA

Subject Code	Subject Name	Credits	Maximum marks Allotted					Duration of Exam.		
			Theory			Practical		Total	Theory	Practical
			End Sem	Mid Sem	Sessional	End Sem	Term work			
SCIT 201	Web Development	3(1-0-2)	25	10	15	50	50	150	3 hrs.	2 hrs.

Pattern:

The question paper will consist of five questions. Each question carry 10 marks each, one from each of the five units of the syllabus and may have internal choice. These five questions will have two parts A & B, preferably one theoretical and other numerical/short notes. Questions should test the concepts, knowledge & applications. Candidates are required to answer all questions

SYLLABUS

THEORY:

UNIT I: Introduction and Web Development Strategies

History of Web, Protocols governing Web, Creating Websites for individual and Corporate World, Cyber Laws, Web Applications, Writing Web Projects, Identification of Objects, Target Users, Web Team, Planning and Process Development.

UNIT II: HTML, XML and Scripting

List, Tables, Images, Forms, Frames, CSS Document type definition, XML schemes, Object Models, Presenting XML, Using XML Processors: DOM and SAX, Introduction to Java Script, Object in Java Script, Dynamic HTML with Java Script.

UNIT III: Java Beans and Web Servers

Introduction to Java Beans, Advantage, Properties, SDK, Introduction to EJB, Java Beans API Introduction to Servlets, Lifecycle, JSDK, Servlet API, Servlet Packages: HTTP

package, Working with Http request and response, Security Issues.

UNIT IV: JSP Introduction to JSP, JSP processing, JSP Application Design, Tomcat Server, Implicit JSP objects, Conditional Processing, Declaring variables and methods, Error Handling and Debugging, Sharing data between JSP pages- Sharing Session and Application Data.

UNIT V: Database Connectivity, Database Programming using JDBC, Studying Javax.sql.*package, accessing a database from a JSP page, Application-specific Database Action, Developing Java Beans in a JSP page, introduction to Struts framework

1 Implements Basic HTML Tags

2 Implementation of Table Tag

3 Implementation of FRAMES

4 Design A FORM In HTML (Yahoo registration form)

5 Validation of FORM Using Java Script.

6 Program for exception handling using multiple catch statements and also create your Own exception.

7 Program to create an applet of a moving banner.

8 Program to create a chatting application

9 Program to create a servlet in which user enters a name in edit box, after pressing submit Button the name will be displayed on the next page

10 Program to create your own resume by using HTML

11 Install a database (Mysql or Oracle).

Create a table which should contain at least the following fields: name, Password, email-id, phone number (these should hold the data from the registration form)

Practice 'JDBC' connectivity. Write a java program/servlet/JSP to connect to that database

And extract data from the tables and display them. Experiment with various SQL queries.

Insert the details of the users who register with the web site, whenever a new user clicks the

Submit button in the registration page (week2).

12. Write a JSP which does the following job: Insert the details of the 3 or 4 users who register

with the web site (week9) by using registration form. Authenticate the user when he submits the login form using the user name and password from the database

Reference Books:-

- Internet & Web Design by A. Mansoor, Pragya Publications.
- Learn HTML in a weekend by Steven E. Callihan, PHI
- Using HTML By Lee Anne Phillips, PHI
- SAMS Teach Yourself Javascript in 24 Hrs. By Michael Moncur, TechMedia

- E. Balaguruswamy, "Programming In Java", 2nd Edition, TMH Publications ISBN 0-07-463542-5
 - Peter Norton, "Peter Norton Guide To Java Programming", Techmedia Publications ISBN 81-87105-61-5
 - JAVA, How to Program, Deitel & Deitel, PHI, Pearson
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SEMESTER-III
AISECT UNIVERSITY, Bhopal, (M.P.)
Scheme of Examination

Department: CSA

Subject Code	Subject Name	Credits	Maximum marks Allotted						Duration of Exam.	
			Theory			Practical		Total	Theory	Practical
			End Sem	Mid Sem	Sessional	End Sem	Term work			
IMCS301	RDBMS Concepts & Oracle	6(3-2-1)	50	20	30	25	25	150	3 hr	2 hr

Objective – Student will be able

1. To Identify the advantages of the database approach over the file-based data storage system
2. To understand the architecture of a DBMS and functions of the database system components
3. To understand the features of distributed and object-oriented databases
4. To understand the various operations of PL\SQL

Syllabus

THEORY:

UNIT-I

Relational model: storage organizations for relations, relational algebra, relational calculus, functional dependencies, multivalued dependencies, and normalization. Relational query language.

Functional Dependencies, Good & Bad Decomposition, Anomalies as a database: A consequences of bad design, Universal Relation, Normalization: 1NF, 2NF, 3NF, BCNF, 4NF 5NF. Relational Algebra, Structured query language (SQL), Using MS Access, Implementing SQL Functions, Integrity, Indexing, View Using MS

Access.

UNIT-II

Degree Of Data Abstraction, The Database Life Cycle (DBLC): Initial Study Of The Database, Database Design, Implementation and Loading, Testing And Evaluation, Operation, Maintain Ace And Evaluation.

UNIT-III

Centralized Verses Decentralized Design, What Is A Transaction? Concurrency Control (Locking Methods, Time Stamping Method, Optimistic Method) DDBMS Distributed Database Management Systems) Advantage And Disadvantages. Homogeneous and Heterogeneous DBMS, Distributed Database Transparency Features. Level Of Data And Process Distribution: SPSD (Single-Site Processing, Single-Site Data), MPSD (Multiple-Site Processing, Single Site Data), MPMD (Multiple -Site Processing, Multiple-Site Data)

UNIT-IV

Systems, Client / Server: Architecture and Implementation Issues. Client / Server Systems, What Is Client / Server? The Forces That Drive Client /Server

UNIT-V

(DSS) Decision Support Systems: Operational Data vs. Decision Support Data, The DSS Database Requirements. The Data Warehouse: The Evaluation Of The Data Warehouse, Rules For Data Warehouse. Online Analytical Processing (OLAP): OLAP Architecture Relational, OLAP and Comparison, Data Mining.

Outcomes- After study this student will be able to know about the core database administration tasks and tools. Restore databases from backups, Import and export data. Monitor SQL Server.

Practicals:

1. Write a query to implement Different types of DDL statements in SQL.
2. Write a query to implement Different types of DML statements in SQL.
3. Write a query to implement Different types of DQL statements in SQL.
4. Write a query to implement Different types of DCL statements in SQL.
5. Write a query to explore 'select' clause using where, order by, between, like, group-by, having etc.
6. Write a query to implement the concept of Joins in SQL.
7. Write a query to implement the concept of Indexes and views.
8. Write a query to implement the restrictions on the table.
9. Write a query to implement the concept of SubQuestionries.
10. Write a query to implement the structure of the table.

TEXT AND REFERENCE BOOKS:

1. An Introduction to Database Systems (Sixth Edition) By C. J. Date.
2. Data Base Systems (3rd Edition) Galgotia Publications (P) Ltd. By Peter Rob Carlos Coronel.
3. An Introduction to Database Systems By Bipin C. Desai.

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AISECT UNIVERSITY, Bhopal, (M.P.)

Scheme of Examination

Department: CSA

Subject Code	Subject Name	Credits	Maximum marks Allotted						Duration of Exam.	
			Theory			Practical		Total	Theory	Practical
			End Sem	Mid Sem	Sessional	End Sem	Term work			
IMCS302	Multimedia Tools & Application	5(3-2-0)	50	20	30	-	-	100	3 hr	-

Objective – Student will be able-

To learn the multimedia communication standards and compression techniques. • To provide the foundation knowledge of multimedia computing, e.g. media characteristics, compression standards, multimedia representation, data formats, multimedia technology development. • To provide programming training in multimedia computing, multimedia system design and implementations. To learn the Multimedia communication across the networks.

Syllabus

THEORY:

UNIT-

Multimedia: Needs and areas of use, Development platforms for multimedia–DOS, Windows, Linux. Identifying Multimedia elements – Text, Images, Sound, Animation and Video, Making simple multimedia with PowerPoint.

Text – Concepts of plain & formatted text, RTF & HTML texts, using common text preparation tools, Conversion to and from of various text formats, using standard software, Object Linking and Embedding concept, Basics of font design, overview of some fonts editing and designing tools, Understanding & using various text effects.

Images – importance of graphics in multimedia, Vector and Raster graphics, image capturing methods – scanner, digital camera etc. various attributes of Images – size, color, depth etc, Various Image file format – BMP, DIB, EPS, CIF, PEX, PIC, JPG, TGA, PNG and TIF format – their features and IIMCSations, graphic file formats conversions, processing images with common software tools such as Photoshop, Paint Shop pro, Corel draw etc..

UNIT-II

Sound: Sound and its Attributes, Mono V/s Stereo sound, Sound channels, Sound and its effect in multimedia, Analog V/s Digital sound, Basics of digital sounds–Sampling, Frequency, Sound Depth, Channels, Sound on PC, Sound standards on PC, Capturing and Editing sound on PC, Overview and using some sound recording, editing software. Overview of various sound file formats on PC – WAV, MP3, MP4, Ogg Vorbise etc.

Animation: Basics of animation, Principle and use of animation in multimedia, Effect of resolutions, pixel depth, Images size on quality and storage. Overview of 2-D and 3-D animation techniques and software–animation pro, 3D studio & Paint Shop pro animator Animation on the Web – features and IIMCSations, creating simple animations for the Web using GIF Animator and Flash.

UNIT-III

Video: Basics of Video – Analog and Digital Video, How to use video on PC. Introduction to graphics accelerator cards, DirectX Introduction to AV/DV and IEEE1394 cards , Digitization of analog video to digital video, Interlacing and non-interlacing, Brief note on various video standards – NTSC, PAL, SECAM, HDTV, Introduction to video capturing Media & instrument – Videodisk, DVCAM, Camcorder, Introduction to digital video compression techniques and various file formats – AVI, MPEG, MOV, Real Video.

Brief Introduction to video editing and movie making tools – Quick time, video for windows & Adobe premier.

UNIT-IV

Authoring tools for CD Based Multimedia: Type of multimedia authoring tools, key factors of selecting CD based multimedia authoring tools, Planning and distribution of a multimedia project. Multimedia development team & skills requirement, Stages in designing & producing multimedia products for CD, Testing of product, distribution of multimedia product, various formats of CD's and DVD's.

UNIT - V

Multimedia on the Web: Bandwidth relationship, broadband technologies, Text in the web – Dynamic and embedded font technology, Audio on the Web – Real Audio and MP3/MP4, Audio support in HTML, Graphics–HTML safe color palate, Interlaced V/s Non interlaced model, Graphics support in HTML, Image Map, Video on the Web – Streaming video, Real Video, MPEG and SMIL, Virtual Reality on the Web.

Out Comes –

- To understand about various latest interactive multimedia devices, the basic concepts about images and image formats.
 - To understand about data compression techniques, image compression techniques like JPEG, video compression techniques like MPEG, and the basic concepts about animation.
- To develop an interactive multimedia presentation by using multimedia devices and identify

theoretical and practical aspects in designing multimedia applications surrounding the emergence of multimedia technology.

TEXT AND REFERENCE BOOKS:

1. Multimedia: Making It Work (4th Edition) – by Tay Vaughan, Tata McGraw Hills.
2. Multimedia In Action – James E Shuman – Vikas Publishing House.
3. Multimedia Basics – Volume – 1 Technology, Andreas Holzinger, Firewall Media(Laxmi Publications Pvt. Ltd) New Delhi.

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AISECT UNIVERSITY, Bhopal, (M.P.)

Scheme of Examination

Department: CSA

Subject Code	Subject Name	Credits	Maximum marks Allotted						Duration of Exam.	
			Theory			Practical		Total	Theory	Practical
			End Sem	Mid Sem	Sessi onal	End Sem	Term work			
IMCS303	Software Engg.	5(3-2-0)	50	20	30	-	-	100	3 hr	-

Objective – Student will be able-

This course introduces the concepts and methods required for the construction of large software intensive systems. It aims to develop a broad understanding of the discipline of

software engineering. • It seeks to complement this with a detailed knowledge of techniques for the analysis and design of complex software intensive systems. It aims to set these techniques in an appropriate engineering and management context. • It provides a brief account of associated professional and legal issues

Syllabus

THEORY:

UNIT-I

The Software problem, Software Engineering problem, Software Engineering approach-phased development process, project management and matrices. Software processes – Processes, Projects, Components, and Characteristics. Software Development process – process step specification, waterfall model, prototyping, iterative enhancement, spiral model.

UNIT-II

Software Requirement Analysis and Specification-Software Requirements, Problem Analysis, Requirement Specification, Validation, Metrics.

UNIT-III

Planning a Software project – Cost Estimation, Project Scheduling, Staffing and personnel planning, Software Configuration management plans, Quality Assurance plans, Project Monitoring Plans, Risk Management.

UNIT-IV

Software Design – Design Principles, Module level concepts, Design Notation and Specification, Structured Design Methodology, Verification. Coding - Programming Practice, Verification and Metrics.

UNIT- V

Software Testing – Testing fundamentals, Functional testing, Structural testing, Testing process.

Software Quality Assurance (SQA): Software Reviews, Software Quality factors, SQA activities, Formal Technical Reviews, SQA Approach. Software Configuration Management – Configuration Identification, Change Control, Status Accounting and Auditing.

Out Comes –

- Carry out an evaluation and selection of projects against strategic, technical and economic criteria and use a variety of cost benefit evaluation techniques for choosing among competing project proposals. Approach project planning in an organized step by step manner and select an appropriate process model produce an activity plan for a project.
- Identify project risks, monitor and track project deadlines and produce a work plan and resource schedule.

Plan the evaluation of a proposal or a product and manage people in software environments. Understand the importance of teamwork and quality management in software project management. Apply these project management tools and techniques in a diversity of fields such as new product and process development, construction, information technology, health care, and applied research.

BOOKS RECOMMENDED:

- Software Engineering by Pankaj Jalote

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Scheme of Examination

Department: CSA

Subject Code	Subject Name	Credits	Maximum marks Allotted					Duration of Exam.		
			Theory			Practical		Total	Theory	Practical
			End Sem	Mid Sem	Sessional	End Sem	Term work			
IMCS304	Advanced JAVA Prog.	6(3-2-1)	50	20	30	25	25	150	3 hr	2 hr

Objective – Student will be able

1. To understand the general concepts pertaining to the Internet and World Wide Web.
2. To have a good working knowledge of HTML, CSS and JavaScript and the principles of website Design.
3. To know different Web Designing Tools, how web hosting and publishing done
4. To understand JavaScript, Electronic Commerce, Electronic Payment System and Electronic Security

Syllabus

THEORY:

UNIT-I

JAVA BASICS REVIEW Java streaming - Networking - Event handling - Multithreading – Byte code Interpretation - Customizing application - Data Structures - Collection classes.

UNIT-II

DISTRIBUTED COMPUTING Custom sockets - Remote Method Invocation - Activation - Object serialization -Distributed garbage collection - RMI - IIOP - Interface definition language – CORBA - JINI overview.

UNIT-III

JAVA BEANS AND SWING Bean concepts - Events in bean box - Bean customization - Persistence - Application - deployment using swing - Advanced swing techniques - JAR file handling.

UNIT-IV

JAVA ENTERPRISE APPLICATIONS JNI - Servlets - Java Server Pages - JDBC - Session beans - Entity beans - Programming and deploying enterprise Java Beans - Java transactions.

RELATED JAVA TECHNIQUES

UNIT-V

Graphics Java Media Frame work - 3D graphics - Internationalization - Case study - Deploying n-tier application, E- commerce applications.

Outcomes- After study this student will be able to know about programs based upon Html and html concepts, create animation & events based upon java script concepts, connect an application with database.

Practicals:

1. Write a Java Program to Display message on computer screen.
2. Write a Java Program to develop a class for Rational numbers
3. Design a Date class in Java
4. Write a Java Program to design an interface for Stack ADT and implement Stack ADT using both Array and Linked List.
5. To develop a vehicle class hierarchy in Java to demonstrate the concept of polymorphism
6. Design a Date class in Java .
7. To write a Java Program to randomly generate objects and write them into a file using concept of Object Serialization
8. Develop a scientific calculator using even-driven programming paradigm of Java.
9. To write a multi-threaded Java program to print all numbers below 100,000 that are both prime and Fibonacci number
10. To develop a Java Program that supports multithreaded echo server and a GUI client.
11. To implement a calculator using GUI Environment with the help of javax.swing package.

TEXT & REFERENCE BOOKS:

- Programming Java 2nd Edition by E. balagurusvamy, TMH Publications.
 - Peter Norton Quid E To Java Programming by Peter Norton, Techmedia Publications.
 - Java Programming by Kamal Prakashan
 - Deitel & Deitel, "Java How to program", Prentice Hall, 4 th Edition, 2000.
 - Gary Cornell and Cay S. Horstmann, "Core Java Vol 1 and Vol 2", Sun Microsystems Press, 1999.
 - Stephen Asbury, Scott R. Weiner, Wiley, "Developing Java Enterprise Applications", 1998.
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AISECT UNIVERSITY, Bhopal, (M.P.)

Scheme of Examination

Department: CSA

Subject Code	Subject Name	Credits	Maximum marks Allotted						Duration of Exam.	
			Theory			Practical		Total	Theory	Practical
			End Sem	Mid Sem	Sessional	End Sem	Term work			
SCIT301	Web Development	3(1-0-2)	25	10	15	50	50	150	3 hrs.	2 hrs.

Pattern:

The question paper will consist of five questions. Each question carry 10 marks each, one from each of the five units of the syllabus and may have internal choice. These five questions will have two parts A & B, preferably one theoretical and other numerical/short notes. Questions should test the concepts, knowledge & applications. Candidates are required to answer all questions

Syllabus

THEORY:

UNIT I: Introduction and Web Development Strategies

History of Web, Protocols governing Web, Creating Websites for individual and Corporate World, Cyber Laws, Web Applications, Writing Web Projects, Identification of Objects, Target Users, Web Team, Planning and Process Development.

UNIT II: HTML, XML and Scripting

List, Tables, Images, Forms, Frames, CSS Document type definition, XML schemes, Object Models, Presenting XML, Using XML Processors: DOM and SAX, Introduction to Java Script, Object in Java Script, Dynamic HTML with Java Script.

UNIT III: Java Beans and Web Servers

Introduction to Java Beans, Advantage, Properties, JDK, Introduction to EJB, Java Beans API Introduction to Servlets, Lifecycle, JSDK, Servlet API, Servlet Packages: HTTP package, Working with Http request and response, Security Issues.

UNIT IV: JSP Introduction to JSP, JSP processing, JSP Application Design, Tomcat Server, Implicit JSP objects, Conditional Processing, Declaring variables and methods, Error Handling and Debugging, Sharing data between JSP pages- Sharing Session and Application Data.

UNIT V: Database Connectivity, Database Programming using JDBC, Studying Javax.sql.*package, accessing a database from a JSP page, Application-specific Database

Action, Developing Java Beans in a JSP page, introduction to Struts framework

Practicals:

- 1 Implements Basic HTML Tags
- 2 Implementation of Table Tag
- 3 Implementation of FRAMES
- 4 Design A FORM In HTML (Yahoo registration form)
- 5 Validation of FORM Using Java Script.
- 6 Program for exception handling using multiple catch statements and also create your Own exception.
- 7 Program to create an applet of a moving banner.
- 8 Program to create a chatting application
- 9 Program to create a servlet in which user enters a name in edit box, after pressing submit Button the name will be displayed on the next page
- 10 Program to create your own resume by using HTML
- 11 Install a database (Mysql or Oracle).
Create a table which should contain at least the following fields: name, Password, Email-id, phone number (these should hold the data from the registration form)
Practice 'JDBC' connectivity. Write a java program/servlet/JSP to connect to that database and extract data from the tables and display them. Experiment with various SQL queries. Insert the details of the users who register with the web site, whenever a new user clicks the Submit button in the registration page (week2).
12. Write a JSP which does the following job: Insert the details of the 3 or 4 users who register with the web site (week9) by using registration form. Authenticate the user when he submits the login form using the user name and password from the database

Reference Books:-

- Internet & Web Design by A. Mansoor, Pragya Publications.
- Learn HTML in a weekend by Steven E. Callihan, PHI
- Using HTML By Lee Anne Phillips, PHI
- SAMS Teach Yourself Javascript in 24 Hrs. By Michael Moncur, TechMedia
- E. Balaguruswamy, "Programming In Java", 2nd Edition, TMH Publications ISBN 0-07-463542-5
- Peter Norton, "Peter Norton Guide To Java Programming", Techmedia Publications ISBN 81-87105-61-5
- JAVA, How to Program, Deitel & Deitel, PHI, Pearson

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AISECT UNIVERSITY, Bhopal, (M.P.)

Scheme of Examination

Department: CSA

Subject Code	Subject Name	Credits	Maximum marks Allotted					Duration of Exam.		
			Theory			Practical		Total	Theory	Practical
			End Sem	Mid Sem	Sessional	End Sem	Term work			
IMCS401	Unix & Linux	6(3-2-1)	50	20	30	25	25	150	3 hr	2 hr

Objective – Student will be able

- 1 To introduce the internals of Linux Operating System.
- 2 To develop, debug and implement Shell Programme.
- 3 To understand System administration.
- 4 To understand configuration of Proxy Server
- 5 To Installation, configuration and managing a simple LAN within an organization using Linux.

Syllabus

THEORY:

UNIT I

Introduction to the kernel:- Architecture of the Unix, the buffer cache, Internal representation of files:- inode, accessing blocks, releasing blocks, structure of regular files, conversion of path name to an inode, inode assignment to new file, allocation of disk-block.

UNIT II

System calls for the file systems:- OPEN, READ, WRITE, CLOSE, PIPES:- the pipe system call opening a named pipes, reading and writing pipes, closing pipes, DUP, LINK, UNLINK, system call for TIME and CLOCK.

UNIT III

The structure of processes:- process states and transitions. Layout of system memory, the context of a process, saving the context of the process. Manipulation of the process address space.

Process Control: - Process creation, signals, Process termination, awaiting process termination, the user id of a process, changing the size of the process,

UNIT IV

Shell Programming:- Study of different types of Shell like C Shell, Bourne Shell etc. Shell variable, Shell Script. Shell Command. Looping and Making choices:- For Loop, While and Until, passing Arguments to Scripts. Programming in different shells.

UNIT V

LINUX File systems Hierarchy, editors, common Linux command, Mounting & Un-mounting CD- ROM, Floppy Disk, Different access permission, Backup & Restoring, Network Configuration command Ipconfig, hostname, Telnet.

Out Comes - After Study This Student Will Be Able To Know About Basic Features, Different flavors of Linux. Advantages, Installing. Student will know about Processes in Linux, Shell programming & Gnome graphical interfaces.

Practicals:

1. Write a shell script to find factorial of a given integer.
2. Write a shell script to list all of the directory files in a directory.
3. Write a shell script that accepts a list of file names as its arguments, counts and reports the occurrence of each word that is present in the first argument file on other argument files.
4. Write a shell script that displays a list of all the files in the current directory to which the user has read, write and execute permissions.
5. Write a shell script that deletes all lines containing a specified word in one or more files supplied as arguments to it.
6. Shell script to display the period for which a given user has been working in the system.
7. Aim to compute gross salary of an employee, accordingly to rule given below.

If basic salary is <15000 then HRA =10% of basic and DA =90% of basic

If basic salary is >=15000 then HRA =500 and DA =98% of basic.

8. Write an awk script to find out total number of books sold in each discipline as well as total book sold using associate array down table as given

electrical 34	electrical 80
mechanical 67	computers 43
mechanical 65	civil 198
computers 64.	

9. Create a script file called file properties that reads a file name entered and output its properties
10. Write a shell script using expr command to read in a string and display a suitable message if it does not have at least 10 characters.
11. Write a shell script that reports the logging in of a specified user within one minute after he/she logs in. The script automatically terminates if the specified user does not login during a specified period of time.

TEXT BOOK :-

1. The Design of Unix Operating system by Maurice Bach
2. Advanced Unix- A Programmer Guide by Stephen Prata.
3. Linux Bible by Christopher Negus

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AISECT UNIVERSITY, Bhopal, (M.P.)

Scheme of Examination

Department: CSA

Subject Code	Subject Name	Credits	Maximum marks Allotted						Duration of Exam.	
			Theory			Practical		Total	Theory	Practical
			End Sem	Mid Sem	Sessional	End Sem	Term work			
IMCS402	Compiler Design	5(3-2-0)	50	20	30	-	-	100	3 hr	-

Objective – Student will be able

1. To understand the general concepts pertaining to the Compiler Design
2. To have a good working knowledge of Parsers.

Syllabus

THEORY:

UNIT - I

Automata Introduction to Finite Automata, Structure Representation, Automata and Complexity, Alphabets, String, Language Informal Picture of Finite Automata, Deterministic Finite Automata, Nondeterministic Finite Automata, An Application.

UNIT - II

Introduction To Compiler, Overview of Compilation, Process, Typical Compiler Structure, Implementing A Compiler. Programming Language Grammars, Elements of A Formal Language Grammar, Derivation, Reduction & Syntax Trees, Ambiguity Regular Grammar & Regular Expression – Context Free Grammar.

UNIT - III

Scanning & Parsing Techniques – The Scanner, Regular Grammar and Fsa, Top Down Parsing, Parsing Algorithm, Top Down Parsing Without Backtracking, Predictive Parsers, Bottom Up Parsing, Parsing, Lr Parsers, Shift Reduce Parsing .

UNIT - IV

Symbol Table Organization, Memory Allocation – Static & Dynamic Memory Allocation, Compilation Control Transfer, Procedure Calls, Conditional Execution, Iteration Control Construct.

UNIT - V

Lexical Syntax Errors, Semantic, Major Issues In Optimization, Optimizing, Transformations, Local Optimization, Program Flow Analysis, Global Optimization.

TEXTS & REFERENCE BOOKS:

1. Introduction To Automata Theory, Language And Comutation - John E - Hopcoft, Rajeev Motwani, Jeffery D. Ullman 2nd Edition
2. Compiler Construction Principles & Practice – D.M. Dhamdhare 2nd Edition
3. Principles Of Compiler Design – Affred V. Aho, Jeffery D. Ullmancompilers Principles, Techniques And Tools – Affred V. Aho Ravi Sethi, Jeffery D. Ullman

Chairman
(Board of Studies)

Dean(Faculty)

(Registrar)

AISECT UNIVERSITY, Bhopal, (M.P.)

Scheme of Examination

Department: CSA

Subject Code	Subject Name	Credits	Maximum marks Allotted					Duration of Exam.		
			Theory			Practical		Total	Theory	Practical
			End Sem	Mid Sem	Sessional	End Sem	Term work			
IMCS403	ASP.Net & C#	6(3-2-1)	50	20	30	25	25	150	3 hr	2 hr

Objective – Student will be able-

- The aim of the course is for the student to aim knowledge in the basic concepts of object-oriented programming and build skills to develop modern software programs using the language Visual Basic. The course is also suitable for students with prior programming experience who wish to strengthen their knowledge in the area of object-oriented design and programming with Windows.
- Analyze program requirements
- Design/develop programs with GUI interfaces
- Code programs and develop interface using Visual Basic .Net
- Perform tests, resolve defects and revise existing code

Syllabus

THEORY:

UNIT – I

Overview of ASP.NET framework, Understanding ASP.NET Controls, Applications Web servers, installation of IIS. Web forms, web form controls -server controls, client controls, web forms & HTML, Adding controls to a web form ,Buttons, Text Box , Labels, Checkbox, Radio Buttons, List Box, etc. Running a web Application, creating a multiform web project.

UNIT-II

Form Validation: Client side validation, server Side validation, Validation Controls: Required Field Comparison Range. Calendar control, Ad rotator Control, Internet Explorer Control. State management-View state, Session state, Application state,

UNIT-III

Architecture of ADO.NET, Connected and Disconnected Database, Create Connection using ADO.NET Object Model, Connection Class, Command Class, Data Adapter Class, Dataset Class. Display data on data bound Controls and Data Grid. Database Accessing on web applications: Data Binding concept with web, creating data grid, Binding standard web server controls. Display data on web form using Data bound controls.

UNIT-IV

Writing datasets to XML, Reading datasets with XML.Web services: Introduction, Remote method call using XML, SOAP, web service description language, building & consuming a web service, Web Application deployment.

UNIT-V

Overview of C#, C# and .NET, similarities & differences from JAVA, Structure of C# program. Language

features: Type system, boxing and unboxing, flow controls, classes, interfaces, Serialization, Delegates, and Reflection.

Out Comes –

After the completion of the course, students are expected to:

- have gained a good understanding of the basic concepts of object orientation
- have a good understanding of the Visual Basic language structure and language syntax
- have developed the ability to design and develop interactive applications using the object-oriented principals, encapsulation, inheritance and to some extents polymorphism
- be able to effectively develop applications with full functionality and a graphical user interface using the language Visual Basic
- have the capability of analysing and finding suitable and effective solutions to Windows based applications using classes and objects

Practicals:

1. Working with call backs and delegates in C#.
2. Program to display the addition using the windows application.
3. Creating a Windows Service with C#
4. Using Reflection in C#
5. Sending Mail and SMTP Mail and C#
6. Write a program working with Page using ASP.Net.
7. Write a program working with forms using ASP.NET.
8. Write a program using RequiredFieldValidator in ASP.NET.
9. Write a program using Login Form in ASP.NET.
10. Write a program using Checkbox List in ASP.NET.

TEXT BOOKS AND REFERENCE BOOKS

1. VB.NET Black Book by steven holzner –dreamtech
2. ASP.NET Unleashed
3. C# programming – Wrox publication
4. C# programming Black Book by Matt telles

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AISECT UNIVERSITY, Bhopal, (M.P.)
Scheme of Examination

Department: CSA

Subject Code	Subject Name	Credits	Maximum marks Allotted					Duration of Exam.		
			Theory			Practical		Total	Theory	Practical
			End Sem	Mid Sem	Sessional	End Sem	Term work			
IMCS404	Data Warehousing & Mining	5(3-2-0)	50	20	30	-	-	100	3 hr	-

Objective – Students will be able

1. To understand the scope and necessity of Data Mining & Warehousing for the society.
2. To understand the designing of Data Warehousing so that it can be able to solve the root problems.
3. To understand various tools of Data Mining and their techniques to solve the real time problems.
4. To develop ability to design various algorithms based on data mining tools

Syllabus

THEORY:

UNIT – I

Need for strategic information, Decision support system, Knowledge discovery & decision making, need for data warehouse, definitions of Data warehousing and data mining, common characteristics of Data warehouse, Data Marts, Metadata, Operational versus analytical databases, trends and planning of Data warehousing.

UNIT – II

Defining business requirements, Data modeling strategy, Fact tables, dimensions, Star schema and other schemas, Multi dimensional data models, Data Cube presentation of fact tables, using the Data warehouse, Designing tools for Data warehouse, OLAP models and operations.

UNIT – III

Architectural components, Infrastructure: Operational & Physical, Extraction, Transformation and Loading, Components of an Oracle Data warehouse, Data Transformation Functions, DBA responsibilities, Capacity Planning.

UNIT – IV

Implementation of Data warehouse, Physical design: steps, considerations, physical storage, indexing, Performance Optimization, Data warehouse deployment activities, Data security, backup and recovery concepts, Data warehouse Maintenance.

UNIT – V

Basics of data mining, related concepts, Data mining techniques, Data Mining Algorithms - Classification, Clustering, and Association rules, Knowledge Discovery in databases (KDD) Process, Introduction to Web Mining.

Outcomes- After study this student will be able to know about the

1. Process raw data to make it suitable for various data mining algorithms.
2. Discover and measure interesting patterns from different kinds of databases.
3. Apply the techniques of clustering, classification, association finding, feature selection and visualization to real world data.

REFERENCE BOOKS:

1. Data Warehousing Fundamentals, by Paulraj Ponnian, John Wiley.
 2. Data warehousing with oracle by Sima Yazdani – Shirley s. Wong
 3. Data Mining Concepts and Techniques, Han Kamber, Morgan Kaufmann
 4. Introduction to Business Intelligence and Data Warehousing, PHI
 5. The Data Warehouse Lifecycle toolkit, Ralph Kimball, John Wiley.
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