MADHYANCHAL
PROFESSIONAL UNIVERSITY

Draft Rules and Syllabus
for
Bachelor of Computer Application (BCA)

MADHYANCHAL PROFESSIONAL UNIVERSITY, Bhopal, (M.P.)

SEMESTER –I

S. No.	Subject Code	Subject Name & Title	Maximum Marks Allotted								Hours per weeks.			Total Credits	Remarks
			Theory				Practical								
			End Sem	Mid Sem. MST	Quiz, Assignment	Total Marks	Lab Work	Assignment /Quiz/Term paper	End Sem	Total Marks	L	T	P		One credit refers to one hour teaching in theory, Tutorial
1	BCA101	Fundamentals of Computers & Information Technology	60	20	20	100					3	1		4	
2	BCA102	Programming Methodology and C Programming	60	20	20	100	20	10	20	50	3	1	2	6	
3	BCA103	PC Packages (Word, Excel and PowerPoint)	60	20	20	100	20	10	20	50	3	1	2	6	
4	BCA104	Discrete Mathematics	60	20	20	100	-	-	-	-	4	-	-	4	
5	BCA105	Communicative English-I	60	20	20	100					4	-	-	4	
	Total		300	100	100	**500**	40	20	40	**100**	17	3	4	24	**600**

MADHYANCHAL PROFESSIONAL UNIVERSITY, Bhopal, (M.P.)

SEMESTER –II

S. No.	Subject Code	Subject Name & Title	Maximum Marks Allotted								Hours per weeks.			Total Credits	Remarks
			Theory				Practical								
			End Sem	Mid Sem. MST	Quiz, Assignment	Total Marks	Lab Work	Assignment /Quiz/Term paper	End Sem	Total Marks	L	T	P		One credit refers to one hour teaching in theory, Tutorial
1	BCA201	Digital Electronics	60	20	20	100					3	1	-	4	
2	BCA202	Data Base Management System	60	20	20	100					3	1	-	4	
3	BCA203	Advanced Programming in C	60	20	20	100	20	10	20	50	3	1	2	6	
4	BCA204	Desk Top Publishing & Designing	60	20	20	100	20	10	20	50	3	1	2	6	
5	BCA205	Communicative Hindi	60	20	20	100					4	-	-	4	
	Total		300	100	100	**500**	40	20	40	**100**	16	4	4	24	**600**

MADHYANCHAL PROFESSIONAL UNIVERSITY, Bhopal, (M.P.)

Semester-III

S.No.	Subject Code	Subject Name & Title	Maximum Marks Allotted								Hours per week			Total Credits	Remarks
			Theory				Practical								
			End Sem	Mid Sem. MST	Quiz, Assignment	Total Marks	Lab Work	Assignment /Quiz/Term paper	End Sem	Total Marks	L	T	P		One credit refers to one hour teaching in theory, Tutorial
1	BCA301	Object Oriented Programming With C++	60	20	20	100	20	10	20	50	4	0	2	6	
2	BCA302	Data Structure	60	20	20	100	20	10	20	50	4	0	2	6	
3	BCA303	Operating System	60	20	20	100	20	10	20	50	4	0	2	6	
4	BCA304	Elementary Mathematics	60	20	20	100	-	-	-	-	3	1	-	4	
5	BCA305	Leadership Education	60	20	20	100	-	-	-	-	3	1		4	
	Total		300	100	100	500	60	30	60	150	18	2	6	26	650

MADHYANCHAL PROFESSIONAL UNIVERSITY, Bhopal, (M.P.)

Semester-IV

S. No.	Subject Code	Subject Name & Title	Maximum Marks Allotted								Hours per week			Total Credits	Remarks
			Theory				Practical								
			End Sem	Mid Sem. MST	Quiz, Assignment	Total Marks	Lab Work	Assignment /Quiz/Term paper	End Sem	Total Marks	L	T	P		One credit refers to one hour teaching in theory, Tutorial
1	BCA401	Java Programming	60	20	20	100	20	10	20	50	4	0	2	6	
2	BCA402	RDBMS Practice With Oracle / MS SQL Server Express Edition	60	20	20	100	20	10	20	50	4	0	2	6	
3	BCA403	Linux & Shell Programming	60	20	20	100	20	10	20	50	4	0	2	6	
4	BCA404	Software Engineering	60	20	20	100	-	-	-	-	3	1	-	4	
5	BCA405	Communication and Soft Skills	60	20	20	100	-	-	-	-	3	1	-	4	
	Total		300	100	100	500	60	30	60	150	18	2	6	26	650

MADHYANCHAL PROFESSIONAL UNIVERSITY, Bhopal, (M.P.)

Semester-V

S.No.	Subject Code	Subject Name & Title	Maximum Marks Allotted								Hours per week			Total Credits	Remarks
			Theory				Practical								
			End Sem	Mid Sem. MST	Quiz, Assignment	Total Marks	Lab Work	Assignment /Quiz/Term paper	End Sem	Total Marks	L	T	P		One credit refers to one hour teaching in theory, Tutorial
1	BCA501	Theory Of Computation	60	20	20	100	20	10	20	50	4	0	0	4	
2	BCA502	Data Communication & Network	60	20	20	100	20	10	20	50	4	0	2	6	
3	BCA503	VB. Net	60	20	20	100	20	10	20	50	4	0	2	6	
4	BCA504	Marketing Management	60	20	20	100	-	-	-	-	3	1	-	4	
5	BCA505	Operation Research and Optimization Techniques	60	20	20	100	-	-	-	-	3	1		4	
	Total		300	100	100	500	60	30	60	150	18	2	4	24	650

MADHYANCHAL PROFESSIONAL UNIVERSITY, Bhopal, (M.P.)

Semester-VI

S.No.	Subject Code	Subject Name & Title	Maximum Marks Allotted								Hours per week			Total Credits	Remarks
			Theory				Practical								
			End Sem	Mid Sem. MST	Quiz, Assignment	Total Marks	Lab Work	Assignment /Quiz/Term paper	End Sem	Total Marks	L	T	P		One credit refers to one hour teaching in theory, Tutorial
1	BCA601	Web Development	60	20	20	100	20	10	20	50	4	0	2	6	
2	BCA602	Compiler Design	60	20	20	100	20	10	20	50	4	0	2	6	
3	BCA603	Organizational Behaviour	60	20	20	100	20	10	20	50	4	0	0	4	
4	BCA604	CGMM	60	20	20	100	-	-	-	-	4	0	2	6	
5	BCA605	Project Work	60	20	20	100	-	-	-	-	3	1	-	4	
	Total		300	100	100	500	60	30	60	150	19	1	6	26	650

MADHYANCHAL PROFESSIONAL UNIVERSITY, Bhopal, (M.P.)
Scheme of Examination

BCA 101 Fundamentals of computers and Information Technology

Subject Code	Subject Name & Title	Maximum Marks Allotted								Credit			Total Credits
		Theory				Practical							
		End Sem	Mid Sem. MST	Quiz, Assignment	Total Marks	Lab Work	Assignment /Quiz/Term paper	End Sem	Total Marks	L	T	P	
BCA101	Fundamentals of Computers and Information technology	60	20	20	100	20	10	20	50	4	0	0	4

OBJECTIVE: To Study Basic fundamentals of Computers and Information Technology and Hardware Devices

UNITS	SYLLABUS
UNIT- I	Brief History of Development of Computers, Computer System Concepts, Computer System Characteristics, Capabilities and Limitations, Types of Computers, Basic Components of a Computer System - Control Unit, ALU, Input/output Functions and Characteristics, Memory RAM, ROM, EPROM, PROM and other types of Memory.
UNIT- II	Input/ Output & Storage Units - Keyboard, Mouse, Trackball, Joystick, Digitizing tablet, Scanners, Digital Camera, MICR, OCR, OMR, Barcode Reader, Voice Recognition, Light pen, Touch Screen, Monitors - Characteristics and types of monitor , Size, Resolution, Refresh, Dot Pitch, Video Standard - VGA, SVGA, XGA.
UNIT-III	Printers and its Types - Dot Matrix, Inkjet, Laser, Plotter, Sound Card and Speakers, Storage Fundamentals - Primary Vs Secondary data Storage, Various Storage Devices - Hard Disk Drives, Floppy Disks ,Optical Disks, Flash Drives.
UNIT-IV	Use of Communication and IT, Communication Process, Communication Types- Simplex, Half Duplex, Full Duplex, Serial and Parallel Communication, Types of Network - LAN, WAN, MAN , Internet, Topologies of LAN - Ring, Bus, Star, Mesh and Tree Topologies, World Wide Web and its Applications and Internet Services
UNIT-V	Software and its Need, Types of Software - System Software, Application Software, System Software - Operating System, Utility Program, Programming Languages, Assemblers, Compilers and Interpreter, Programming Languages-Machine, Assembly, High Level, 4GL.

COURSE OUTCOME: After studying this Course students will able to learn history of computers ,use of communication types of software And hardware devices

MADHYANCHAL PROFESSIONAL UNIVERSITY, Bhopal, (M.P.)
Scheme of Examination

TEXT & REFERENCE BOOKS:

- COMPUTERS TODAY, BY S.K BASANDRA, GALGOTIA PUBLICATIONS.
- FUNDAMENTALS OF INFORMATION TECHNOLOGY ALEXIS LEON & MATHEWS LEON, , VIKAS PUBLISHING
- DOS QUICK REFERENCE RAJEEV MATHUR, GALGOTIA PUBLICATIONS

MADHYANCHAL PROFESSIONAL UNIVERSITY, Bhopal, (M.P.)
Scheme of Examination

BCA 102 Programming methodology And C Programming

Subject Code	Subject Name & Title	Maximum Marks Allotted								Credit			Total Credits
		Theory				Practical							
		End Sem	Mid Sem.	Quiz, Assignment	Total Marks	Lab Work	Assignment /Quiz	End Sem	Total Marks	L	T	P	
BCA102	Programming methodology And C Programming	60	20	20	100	20	10	20	50	4	0	2	6

OBJECTIVE: To Study Basic structure of C programming, language standards, C functions

UNITS	SYLLABUS
UNIT- I	Program Concept, Characteristics of Programming, Various Stages in Program Development, Algorithms, Flow Charts, Programming Techniques – Top Down, Bottom Up, Modular, Structured, Features, Merits, Demerits and Their Comparative Study. Programming Logic - Simple, Branching, Looping, Recursion, Programming Testing & Debugging.
UNIT- II	Introduction to C Language, C Language Standards, Features of C, Structure of C Program, Introduction to C Compilers, Creating and Compiling C Programs, IDE, Features of Turbo C Compiler. Keywords, Identifiers, Variables, Constants,Scope and Life of Variables, Local and Global Variable, Data Types, Expressions. Operators - Arithmetic, Logical, Relational, Conditional and Bit Wise Operators, Precedence and Associativity of Operators, Type Conversion. Basic Input/Output Library Functions ,Character Input/Output getch(), getchar(). getche(), putchar(). Formatted Input/Outputprintf() and scanf(), Mathematical &Character Functions.
UNIT-III	Declaration Statement, Conditional Statement - if Statement, if else Statement,Nesting of if... .else Statement, else if Ladder, The ?: Operator, switch Statement. Iteration Statements - for Loop, whileLoop, do-while Loop. Jump Statements: break, continue, goto, exit(). Arrays - Concept of Single and Multi DimensionalArrays Strings : Declaration, Initialization, Functions
UNIT-IV	The Need of C Functions, User Defined and Library Function, Prototype of Functions, Prototype of main() Function, Calling of Functions, FunctionArguments, Argument Passing: Call By Value and Call By Reference, Return Values. Nesting of Function, Recursion, Array as Function Argument, Command Line Arguments, Storage Class Specifier - Auto, Extern, Static, Register.
UNIT-V	Defining Structure, Declaration of Structure Variable,Type def,Accessing Structure Members, Nested Structures, Array of Structure, Structure Assignment, Structure as Function Argument, Function that Return Structure, Union.

COURSE OUTCOME: After studying this Course students will able to learn C programming in detail with structure and functions

TEXT & REFERENCE BOOKS:

• Balaguruswamy, "programmingin c ", tmh publications

• gottfried schaums outline series, "programming with c ", tmh publications

• mahapatra, " thinking in c ", (phi)publications

• anurag seetha, "introduction to computers and information technology", rain prasad & sons, bhopal

• s.k. Basandra, "computers today", galgotia publications.

• peter juliff "program design" phi publications

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BCA 102 Programming Methodology and C Programming

Practical

Subject Code	Subject Name & Title	Maximum Marks Allotted								Credit			Total Credits
		Theory				Practical							
		End Sem	Mid Sem.	Quiz, Assignment	Total Marks	Lab Work	Assignment /Quiz	End Sem	Total Marks	L	T	P	
BCA102	Programming methodology And C Programming					20	10	20	50	4	0	2	6

1. WAP to perform arithmetic operations (Addition, Subtraction, Multiplication, Division) on two numbers.
2. WAP to calculate gross salary of an employee [using formula: gross_sal = basic_sal+hra+da].
3. WAP to calculate area of circle.
4. WAP to calculate circumference of circle.
5. WAP to calculate Simple Interest
6. WAP to print Marksheet of student
7. WAP to find out even or odd from given no.
8. WAP to calculate compound Interest
9. WAP to calculate greatest of three nos
10. WAP to find factorial of any no.

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Scheme of Examination

BCA 103 PC PACKAGES (WORD, EXCEL AND POWERPOINT)

Subject Code	Subject Name	Credits	Maximum marks Allotted						Duration of Exam.	
			Theory			Practical			Theory	Practical
			End Sem	Mid Sem	Assign.	Lab Work	Assignment /Quiz/Term paper	End Sem		
BCA 103	PC PACKAGES (WORD, EXCEL AND POWERPOINT)	20	10	20	50	4	0	2	6	20

OBJECTIVE: TO STUDY BASIC KNOWLEDGE OF WORD, EXCEL AND POWER POINT AND THEIR FEATURES

UNITS	SYLLABUS
UNIT- I	MS Windows: Introduction to MS Windows, Features of Windows, Various versions of Windows & its use, Working with Windows, My Computer &Recycle bin , Desktop, Icons and Windows Explorer, Screen description & working styles of Windows, Dialog Boxes & Toolbars, Working with Files & Folders, Operations on Files and Folders, Shortcuts & Auto starts, Accessories and Windows Settings, Using Control Panel- Setting common devices using control panel, creating users, internet settings, Start button & Program lists, Installing and Uninstalling new Hardware & Software program on your computer.
UNIT- II	Office Packages: Office activates and their software requirements, Word- processing, Spreadsheet, Presentation graphics, Database, introduction and comparison of various office suites like MS-Office, Lotus-Office, Star-Office, Open-Office, MS Word Basics-Features &area of use. Working with MS Word, Menus & Commands, Toolbars &Buttons, Shortcut Menus, Wizards & Templates, Creating a New Document, Different Page Views and layouts, Applying various Text Enhancements, Working with Styles, Text Attributes, Paragraph and Page Formatting, Text Editing using various features , Bullets, Numbering, Auto formatting, Printing & various print options
UNIT-III	Advanced Features of MS Word, Spell Check, Thesaurus, Find & Replace; Headers & Footers, Inserting Page Numbers, Pictures, Files, Auto texts, Symbols, Working with Columns, Tabs & Indents, Creation & Working with Tables including conversion to and from text, Margins & Space management in Document, Adding References and Graphics, Mail Merge, Envelops & Mailing Labels. Importing and exporting to and from various formats.
UNIT-IV	MS Excel - Introduction and area of use, Working with MS Excel, concepts of Workbook & Worksheets, Using Wizards, Various Data Types, Using different features with Data, Cell and Texts, Inserting, Removing & Resizing of Columns &Rows, Working with Data & Ranges, Different Views of Worksheets, Column Freezing, Labels, Hiding, Splitting etc., Using different features with Data and Text; Use of Formulas, Calculations &

	Functions, Cell Formatting including Borders & Shading, Working with Different Chart Types; Printing of Workbook &Worksheets with various options.
UNIT-V	MS PowerPoint - Introduction & area of use, Working with MS PowerPoint, Creating a New Presentation, Working with Presentation, Using Wizards, Slides &it's different views, Inserting, Deleting and Copying of Slides, Working with Notes, Handouts, Columns & Lists, Adding Graphics, Sounds and Movies to a Slide, Working with PowerPoint Objects, Designing & Presentation of a Slide Show, Printing Presentations, Notes, Handouts with print options. Outlook Express, Features and uses, Configuration and using Outlook Express for accessing e-mails in office.

COURSE OUTCOME : AFTER STUDYING THIS COURSE STUDENTS WILL ABLE TO LEARN HOW TO WORK IN MS WORD , EXCEL AND POWER POINT

TEXT & REFERENCE BOOKS:

• Windows xp complete reference. bpb publications
• Ms office xp complete bpb publication
• Ms windows xp home edition complete, bpb publication.
• Joe habraken, microsoft office 2000, by prentice hall of india
• I.t tools and applications, by a. mansoor, pragya publications,

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BCA 103 PC PACKAGES (WORD, EXCEL AND POWERPOINT)

PRACTICAL

Subject Code	Subject Name & Title	Maximum Marks Allotted								Credit			Total Credits
		Theory				Practical							
		End Sem	Mid Sem.	Quiz, Assignment	Total Marks	Lab Work	Assignment /Quiz	End Sem	Total Marks	L	T	P	
BCA 103	PC PACKAGES (WORD, EXCEL AND POWERPOINT)	60	20	20	100	20	10	20	50	4	0	2	6

List Of Experiments

1. To show mail merge
2. To show marksheet in excel
3. To build Resume in word
4. To make power point slides
5. To print result of students
6. To explore various function of excel
7. To explore various function of PPT
8. To explore various function of word
9. To apply filter in excel
10. To apply header and footers

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BCA 104 Discrete Mathematics

Subject Code	Subject Name & Title	Maximum Marks Allotted								Credit			Total Credits
		Theory				Practical							
		End Sem	Mid Sem. MST	Quiz, Assignment	Total Marks	Lab Work	Assignment /Quiz/Term paper	End Sem	Total Marks	L	T	P	
BCA104	Discrete Mathematics	60	20	20	100	20	10	20	50	4	0	2	6

OBJECTIVE : To Study Basic Methodology Of Graph Theory And Differential Equation

UNITS	SYLLABUS
UNIT- I	Methods of Proof, Mathematical induction Fundamentals – Sets and subsets, Operations on sets, Sequences, Division in the integers, Mathematical Structures. Logic – Propositions and logical operations, Conditional Statements.
UNIT- II	Counting – Permutation, Combinations, Pigeon hole principal. Relation and Digraphs – Product sets and partitions , relations and digraphs, Paths in relations and digraphs, Properties of relations , Equivalence relations, Computer representation of relation and digraphs, Manipulation of relations , Transitive closure and Warshall's algorithm. Functions – Function for computer science, Permutation functions growth of function.
UNIT-III	Graphs Theory – Graphs, Euler Paths and circuits, Hamiltonian paths and circuit coloring Graphs .Orders Relations and Structure – Partially ordered sets External elements of Partially ordered sets , Lattices , Finite Boolean Algebra ,Functions on Boolean Algebra.
UNIT-IV	Trees – Labled tress, Tree searching, Undirected trees, Minimal spanning trees. Semigroups and groups - Binary operations, Semigroups , Products and quotients of semigroups, Groups and products and quotients of groups, Groups and Coding.
UNIT-V	Languages and Finite State machines - Languages, representation of special languages and grammars, Finite state machines , Semi groups, machines and languages, machines and regular languages.Groups and coding- coding of binary information and error detection Decoding and error correction.

COURSE OUTCOME : **After Completing This Course Student Will Able To Learn Graph theory and Mathematical induction Fundamentals**

SUGGESTED BOOKS

1. Discrete Mathematics,Schaum Series
2. Discrete Mathematics with Application.Susanna S.Epp

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BCA 105 COMMUNICATIVE ENGLISH -I

Subject Code	Subject Name	Credits	Maximum marks Allotted						Duration of Exam.	
			Theory			Practical			Theory	Practical
			End Sem	Mid Sem	Assign.	**Lab Work**	**Assignment /Quiz/Term paper**	**End Sem**		
BCA105	COMMUNICATIVE ENGLISH -I	2	-	-	-	20	10	20		3 hr

OBJECTIVE : To Study Basic knowledge of sentences ,grammar and vocabulary

UNITS	SYLLABUS
UNIT- I	Sentences : Simple, Compound, Complex, Assertive, Interrogative, Imperative, Exclamatory.Clauses :Co-ordinate,Sub-ordinate, Relative,Adverb,Comparative (Adverb + Adjective) Articles : usage of 'A', 'An', 'THE' Preposition : Position of Prepositions, Place Relations Time Relations and other relations.
UNIT- II	Functional GrammarTenses : Simple Present, Progressive Perfect, Present Perfect Progressive along with Past Tense and indications of futurity. Reported speech Modals : Will, Shall Should, Would and others Voice - Active and Passive.
UNIT-III	Reading & Writing, Comprehension of Unseen Passage , Grasp Of General Language Skills, Issues with Reference Words & Usage Within Passages.
UNIT-IV	Paragraph Writing, Expansion of given ideas,Listening,Notetaking/Note making.
UNIT-V	Vocabulary : making sentences with idioms & phrases, Words Commonly Misspelled/confused, Words formation by prefix suffix.

COURSE OUTCOME: AFTER COMPLETING THIS COURSE STUDENT WILL ABLE TO LEARN PARAGRAPH WRITING, COMPREHENSION AND FUNCTIONAL GRAMMAR

TEXT & REFERENCE BOOKS:

- A practical english grammar by thomson and martinet
- english grammar by w.s.allen
- Intermediate english grammar by raymond williams
- Vocabulary by michael mc carthu and felicity o'dell

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BCA 201 Digital Electronics Design

Subject Code	Subject Name & Title	Maximum Marks Allotted								credit			Total Credits
		Theory				Practical							
		End Sem	Mid Sem. MST	Quiz, Assignment	Total Marks	Lab Work	Assignment /Quiz/Term paper	End Sem	Total Marks	L	T	P	
BCA201	Digital Electronics Design	60	20	20	100					3	1		4

OBJECTIVE : To Study Basic knowledge of logic gates and combination circuits and sequential logics

UNITS	SYLLABUS
UNIT- I	Data representation Data Types and Number Systems, Binary Number System, Octal & Hexa-Decimal Number System, Fixed Point Representation, 1's & 2's Complement, Binary, Arithmetic Operation on Binary Numbers, Overflow & Underflow, Floating Point Representation, Codes, ASCII, EBCDIC Codes, Gray Code, Excess-3 & BCD, Error Detection & Correcting Codes Binary Storage and Registers.
UNIT- II	Boolean algebra and digital logic circuits -Logic Gates, AND, OR, NOT,, NOR,NAND & XOR Gates and their Truth Tables, Boolean Algebra, Basic Definition and Properties, Basic Boolean Law's, Demorgan's Theorem, Minimization Techniques, K Map – Two, Three and More Variables maps, Sum of Product & Product of Sums, Don't care conditions.
UNIT-III	Combination Circuits - Half adder & Full adder, Full Subtractor, Full Subtractor and decimal adder, Code Conversion, Multilevel NAND and NOR Circuits,Decimal adder, decoders, Multiplexers and Demultiplexers.
UNIT-IV	Sequential logic- Flip-Flops - RS, D, JK & T Flip-Flop, Triggering in flip flops,Analysis of Clocked Sequential Circuits, State Reduction and Assignment, flip flop excitation tables, Design procedure and design of counters. Design with equations.
UNIT-V	Registers, Counters and the memory unit, Shift registers, Ripple counters and Synchronous counters, Inter-register Transfer, Arithmetic Logic and Shift Micro Operation, Conditional Control Statement, Instruction Codes, Processor organization, design of a simple computer.

COURSE OUTCOME: AFTER COMPLETING THIS COURSE STUDENT WILL ABLE TO LEARN BOOLEAN ALGEBRA AND DIGITAL LOGIC CIRCUITS

TEXT & REFERENCE BOOKS:

- Digital logic and computer design by morris mano
- Computer system architecture by morris mano

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BCA 202 DATA BASE MANGEMENT SYSTEM

Subject Code	Subject Name & Title	Maximum Marks Allotted								credit			Total Credits
		Theory				Practical							
		End Sem	Mid Sem. MST	Quiz, Assignment	Total Marks	Lab Work	Assignment /Quiz/Term paper	End Sem	Total Marks	L	T	P	
BCA 202	DATA BASE MANGEMENT SYSTEM	60	20	20	100					3	1		4

OBJECTIVE : To Study Basic knowledge of Database and its normalization

UNITS	SYLLABUS
UNIT- I	Introduction To Database Systems Purpose of Database System,View Of Data, Characteristics of Database Approach, Architecture for a Database System, Advantages and Disadvantages Of DBMS, Database Users and Administrator, Database Design and ER Model , Data Model Classification.
UNIT- II	Structure of Relational Database Database Schema, Key, Relational Operations Formal Relational Query Languages .
UNIT-III	Structures of Good Database Design, Universal Relation, Anomalies in A DatabaseAtomic Domain and 1NF ,Functional Dependency Theory, Decomposition Using Functional Dependency Algotithm for Decomposition, Decomposition Using Multivalue Dependency More Normal Forms, Database Design Process.
UNIT-IV	Basic Concepts Of Indexing and Hashing Query Processing , Measures Of Query Cost , Query Processing for Select, Sort Join Operations. Basics of Query Optimization, Transformation of Relational Expression Estimating Statistics of Expression, Choice of Evaluation Plan .
UNIT-V	Transaction Concepts, Features of Database Transaction. Concurrency Control in Database - Lock Base, Time Stamp Base, Validation Base Protocols Database Recovery System.

COURSE OUTCOME: AFTER COMPLETING THIS COURSE STUDENT WILL ABLE TO LEARN ER DIAGRAM AND QUERY PROCESSING

TEXT & REFERENCE BOOKS:

• Silverschatz korth and sudarshan-database system concepts, 6thed. tata mc-graw hill.
• Raghu rama krishnan-database management systems, 2nded. tata mc-graw hill
• Rajesh narang – database management system,2nd ed.phi

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BCA 203 Advanced Programming in C

Subject Code	Subject Name & Title	Maximum Marks Allotted								credits			Total Credits
		Theory				Practical							
		End Sem	Mid Sem. MST	Quiz, Assignment	Total Marks	Lab Work	Assignment /Quiz/Term paper	End Sem	Total Marks	L	T	P	
BCA203	Advanced programming in C	60	20	20	100	20	10	20	50	4	0	2	2

OBJECIVE : TO STUDY BASIC KNOWLEDGE OF C PROGRAMMING AND FILE HANDLING

UNITS	SYLLABUS
UNIT- I	Introduction To Database Systems Purpose of Database System,View Of Data, Characteristics of Database Approach, Architecture for a Database System, Advantages and Disadvantages Of DBMS, Database Users and Administrator, Database Design and ER Model , Data Model Classification.
UNIT- II	Introduction to File Handling, File Structure, File Types : Streams, Text, Binary; File System Basics, The File Pointer, Opening a File and Closing a File, Functions for File Handling : fopen(), fclose(), getc(),fgetc(), putc(), fputc(),feof(), gets(), puts(), fgets(), fputs(), getw(), putw(), fscanf(), fprintf(), fread(), fwrite(), Standard Streams in C, Flushing a Stream, Direct Access File and Random Access to File : fseek(), ftell(), rewind(); File Name as Command Line Argument.
UNIT-III	Preprocessor and its Advantages, Preprocessor Directives, Macros with and without Arguments, #Define, #Include; Creating Header Files, Include UserDefined Header Files, Conditional Compilation Directives: #if, #else, #elif and #ifdef & undef; Using defined, #error, #line, #pragma, The # & ## Preprocessor Operator.
UNIT-IV	Display adapter, Graphics Mode and Resolution, Header File “Graphics. h”. Various Functions of Graphics, Function initgraph() and its Arguments, Functions Used in Graphics - Drawing a Point on Screen, Drawing Lines, Rectangle,Circles, Arcs, Polygon. Functions to Fill Colors. Display Text in Graphics Mode, Justifying Text
UNIT-V	Working with ROM BIOS Routines, IVT, Registers for Passing Arguments to BIOS Routine. Function int86(), Finding Installed Memory Size and Clearing Screen using int86(), Working with Mouse and Keyboard, Working with DOS Routines, Function intdos(),Renaming File, Deleting File, Create Directory,Delete Directory using intdos()

COURSE OUTCOME: AFTER COMPLETING THIS SUBJECT STUDENT WILL ABLE TO LEARN ABOUT C PROGRAMMING AND BIOS ROUTINES

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TEXT & REFERENCE BOOKS:

- Herbert shield, "complete reference c"
- Y kanetkar, "pointers through c ".
- Y kanetkar, "tsr through c".
- R.S. salaria, "application programming in c"

BCA 203 Advanced Programming in C

Practical

Subject Code	Subject Name & Title	Maximum Marks Allotted								credits			Total Credits
		Theory				Practical							
		End Sem	Mid Sem. MST	Quiz, Assignment	Total Marks	Lab Work	Assignment /Quiz/Term paper	End Sem	Total Marks	L	T	P	
BCA203	Advanced programming in C	60	20	20	100	20	10	20	50	4	0	2	6

List Of Experiments :

1. Write a C program to print your name, date of birth. and mobile number
2. Write a C program to print the following characters in a reverse way
3. Write a C program to compute the perimeter and area of a circle with a radius of 6 inches
4. Write a C program to display multiple variables.
5. Write a C program to convert specified days into years, weeks and days.
6. Write a C program that accepts two integers from the user and calculate the sum of the two integers.
7. Write a C program that accepts two integers from the user and calculate the product of the two integers.
8. Write a C program that accepts two item’s weight (floating points' values) and number of purchase (floating points' values) and calculate the average value of the items.
9. Write a C program that accepts three integers and find the maximum of three.
10. Write a C program to calculate a bike’s average consumption from the given total distance

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BCA 204 DESKTOP PUBLISHING AND DESIGNING

Subject Code	Subject Name	Credits	Maximum marks Allotted						Duration of Exam.	
			Theory			Practical			Theory	Practical
			End Sem	Mid Sem	Assign.	**Lab Work**	**Assignment**	**End Sem**		
BCA204	Desktop Publishing & Designing	2	-	-	-	20	10	20		3 hr

OBJECTIVE : To Study Basic Knowledge of Desktop Publishing, Adobe Photoshop and Page Layout

UNITS	SYLLABUS
UNIT- I	D.T.P For Publications: Introductions to Printing, Types of Printing, Offset Printing, Working of offset Printing, Transparent Printout, Negative & Positives for Plate were making, Use of Desk Top Publishing in Publications, Importance of D.T.P in Publication, Advantage of D.T.P in Publication, Mixing of graphics & Image in a single page production, Laser printers - Use, Types, Advantage of lager printer in publication.
UNIT- II	Page Layout: Different page format / Layouts, News paper page format, Page orientations, Columns & Gutters, Printing in reduced sizes. Introductions To Page Maker:Page Maker Icon and help, Tool Box, Styles, Menus etc., Different screen Views, Importing text/Pictures, Auto Flow, Columns, Master Pages and Stories, Story Editor, Menu Commands and short-cut commands, Spell check, Find & Replace, Import Export etc., Fonts, Points Sizes, Spacing etc., Installing Printers, Scaling (Percentages), Printer setup.
UNIT-III	D.T.P, Use of D.T.P. in Advertisements, Books & Magazines, News Paper, Table Editor.
UNIT-IV	Introduction to Adobe Photoshop & Documents ,Various Graphic Files and Extensions Vector Image and Raster Images, Various Colour Modes and Models.
UNIT-V	Introduction to Screen and Work Area, Photoshop Tools & Palettes ,Use of Layers & Filters Working with Images.

.COURSE OUTCOME: AFTER COMPLETING THIS COURSE STUDENT WILL ABLE TO LEARN ABOUT PUBLISHING, PRINTING AND PHOTOSHOP

TEXT & REFERENCE BOOKS:

- page maker 4.0 & 5.0 by b.p.o. Publications.
- prakhar complete course for dtp (coreldraw, pagemaker, photoshop)

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BCA 204 DESKTOP PUBLISHING AND DESIGNING

PRACTICAL

Subject Code	Subject Name & Title	Maximum Marks Allotted								credits			Total Credits
		Theory				Practical							
		End Sem	Mid Sem. MST	Quiz, Assignment	Total Marks	Lab Work	Assignment /Quiz/Term paper	End Sem	Total Marks	L	T	P	
BCA204	Desktop Publishing & Designing					20	10	20	50	4	0	2	6

List Of Experiments :

1. Understand Adobe Page Maker Software.
2. Design Pages with precision
3. Understand Corel Draw Software features.
4. Apply available tools in oral draw software.
5. Prepare jobs on coral draw software
6. Introduction of Tools and their uses in Corel draw
7. Introduction of Menu with their options of Corel draw
8. Basic knowledge of Tools and their uses in Page maker

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BCA205 COMMUNICATIVE HINDI

Subject Code	Subject Name & Title	Maximum Marks Allotted								credits			Total Credits
		Theory				Practical							
		End Sem	Mid Sem.	Quiz, Assignment	Total Marks	Lab Work	Assignment	End Sem	Total Marks	L	T	P	
BCA 205	Communicative Hindi	60	20	20	100	20	10	20	50	4	0	2	2

Unit

यूनिट–1

हिन्दी भाषा का संक्षिप्त विकास, हिन्दी के लिपि एवं बोलियों का संक्षिप्त परिचय, शब्दकोश – उपयोग एवं महत्व , हिन्दी व्याकरण, शब्द रचना, वाक्य रचना, वाक्यों के प्रकार, उपवाक्य संधि समास, उपसर्ग, प्रत्यय, पर्यायवाची विलोमार्थी अनेकार्थक, समूहार्थक शब्द ।।

यूनिट–2

देवनागरी लिपि के मुख्य विशेषताऐं वर्तनी, शब्द शुद्धि एवं वाक्य शुद्धि के नियम, प्रमुख मुहावरो एवं लोकोक्तियों का प्रयोग, छंद एवं अलंकारों का उपयोग, विराम चिन्हों का उपयोग।

यूनिट–3

गद्य को विभिन्न शैलियॉं, साहित्य एवं समाचार पत्रों की भाषा शैली, वर्ण विभाग, स्वर व्यंजन , शब्द विभाग :– संज्ञा, सर्वनाम, विश्लेषण क्रिया, संबंध बोधक समुच्चय बोधक, विस्मयबोधक ।
वाक्य विभाग :– उद्देश्य और विधेय, काल और काल अभेद पुरूष, वचन, लिंग ।

यूनिट–4

अनुवाद का अर्थ और परिभाषा, अनुवाद के प्रकार, अनुवाद के उपकरण एवं समस्या, भाव तथा प्रभाव के आधार पर अनुवाद एवं लेख।

यूनिट–5

निबंध लेखन, रिपोर्ट लेखन, पत्र लेखन, अनुवाद, गोदान ,गबन . मुंशीप्रेमचंद।

TEXT & REFERENCE BOOKS:

- *अनुवाद विकास एवं संप्रेषण* :– *डॉ. हरिमोहन*
- *अनुवाद कला सिद्धांत और प्रयोग* :– *डॉ कैलाश भाटिया*
- *व्यवहारिक हिन्दी* :– *डॉ. माखेन्द्र पाठक*
- *परिष्कृत हिन्दी व्याकरण* :– *बदरीनाथ*

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BCA301 Object Oriented Programming With C++

Subject Code	Subject Name & Title	Maximum Marks Allotted								Credit			Total Credits
		Theory				Practical							
		End Sem	Mid Sem. MST	Quiz, Assignment	Total Marks	Lab Work	Assignment /Quiz/Term paper	End Sem	Total Marks	L	T	P	
BCA301	Object Oriented Programming With C++	60	20	20	100	20	10	20	50	4	0	2	6

OBJECTIVE : TO INTRODUCE AND UNDERSTAND STUDENTS TO PROGRAMMING CONCEPTS AND TECHNIQUES USING THE C++ LANGUAGE AND PROGRAMMING ENVIRONMENT, CLASS, OBJECTS

UNITS	SYLLABUS
UNIT- I	Object Oriented Programming, Concepts, Advantages, Usage. C++ Environment: Program Development Environment, C++ language standards. Introduction to Various C++Compilers, C++ Standard Libraries, Prototype of main() Function, Datatypes. Classes & Objects- Classes, Structure & classes, Union & Classes, Friend Function, Friend Classes, Inline Function,, Scope Resolution Operator, Static Class Members, Static Data Member, Static Member Function, Passing Objects to Function, Returning Objects, Object Assignment.
UNIT- II	Array, Pointers References & The Dynamic Allocation operators Array of objects, Pointers to Object, Type Checking C++ Pointers, The This pointer, Pointer to Derived Types, Pointer to Class Members, Reference parameter, Passing references to Objects, Returning Reference, Independent Reference, 'C++ 'S Dynamic Allocation Operators, Initializing Allocated Memory, Allocating Array, Allocating Objects.
UNIT-III	Constructor & Destructor - Introduction, Constructor, Parameterized constructor, Multiple Constructor in a class, Constructor with Default Argument, Copy Constructor, Default Argument, Destructor, Function & Operator Overloading Function Overloading, Overloading Constructor Function Finding the address of an Overloaded Function
UNIT-IV	Operator Overloading: Creating a member, Operator Function, Creating Prefix & Postfix forms of the increment & decrement operation, Overloading the shorthand operation, Operator overloading restriction ,Operator overloading using friend function, Overloading New & Delete, Overloading some special operators, Overloading [ ], ( ),-, comma operator, Overloading .
UNIT-V	Inheritance -Base Class Access Control, Protected Members, Protected Base Class Inheritance, Inheriting Multiple Base Classes, Constructors, Destructors &Inheritance, When Constructor & Destructor Function, Passing parameters to base class constructors, Granting access,Virtual base classes. Virtual functions & Polymorphism: Virtual function, Pure Virtual functions, Early vs. Late binding.

COURSE OUTCOME : AFTER COMPLETING THIS COURSE STUDENTS WILL ABLE TO LEARN ABOUT CONCEPTS OF OBJECT ORIENTED PROGRAMMING

TEXT & REFERENCE BOOKS:

•Herbertz shield, "c++ the complete reference "tmh publication isbn 0-07-463880-7
•R.Subburaj, 'object oriented programming with c++ vikas publishing house, new delhi.isbn 81-259-
•E. Balgur uswamy, "c++ " tmh publication isbn o-07-462038-x
•M Kumar 'programming in c++" tmh publications
•R.Lafore, 'object oriented programming c++"
•Ashok . N. Kamthane, "object oriented programming with ansi & turbo c++ ",
Pearson education publication,isbn8j- 7808-772-3

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BCA301 Object Oriented Programming With C++
PRACTICAL

Subject Code	Subject Name & Title	Maximum Marks Allotted								Credit			Total Credits
		Theory				Practical							
		End Sem	Mid Sem. MST	Quiz, Assignment	Total Marks	Lab Work	Assignment /Quiz/Term paper	End Sem	Total Marks	L	T	P	
BCA301	Object Oriented Programming With C++	60	20	20	100	20	10	20	50	4	0	2	6

List of Experiments

1) Write a Program to show days of week by using Switch statement.
2) Write a Program to print a table using for loop.
3) Write a Program to count even and odd numbers
4) Write a Program to find number is Palindrome.
5) Write a Program to find division of students by using nested-if. [ARRAY]
6) Write a Program to print marks, total and average of students using array.
7) Write a Program to print a matrix in 2D array.
8) Write a Program to sort the elements in ascending order.
   [FUNCTIONS]
9) Write a Program to show the use of friend function.
10) Write a Program to show the use of copy constructor.
11) Write a Program to show the use of function overloading.
12) Write a Program to show the use of virtual function.
13) Write a Program of Recursive function.
    [INHERITANCE]
14) Write a Program to implement the concept of Single inheritance.
15) Write a Program to implement the concept of multilevel inheritance.
16) Write a Program to implement the concept of multiple inheritances by ambiguity problem.
    [POLYMORPHISM]
17) Write a Program of unary operator overloading.
18) Write a Program of Binary operator overloading.
19) Write a Program to access global variables in C++.
    [FILE HANDLING]
20) Write a Program to open, write and close a file.

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BCA302 Data Structure

Subject Code	Subject Name & Title	Maximum Marks Allotted								Credit			Total Credits
		Theory				Practical							
		End Sem	Mid Sem.	Quiz, Assignment	Total Marks	Lab Work	Assignment /Quiz	End Sem	Total Marks	L	T	P	
BCA302	Data Structure	60	20	20	100	20	10	20	50	4	0	2	6

OBJECTIVE: TO STUDY THE BASIC CONCEPT OF ALGORITHM AND GRAPHS

UNITS	SYLLABUS
UNIT- I	The Concept of Data Structure, Abstract Data Type, Concept of List & Array, Introduction to Stack, Stack as an Abstract Data Type, Primitive Operation on Stack, Stack's Application - Infix, Postfix, Prefix and Recursion. Introduction toQueues, Primitive Operations on Queues, Queue as an Abstract Data type, Circular Queue, Dequeue, Priority Queue, Applications of Queue.
UNIT- II	Linked List - Introduction to Linked List, Memory Representation of Linked List,Operations on Linked List, Linked List Representation of Stack and Queue, Header Nodes. Types of Linked List - Doubly Linked List, Circular Linked List, Application of Linked List
UNIT-III	Trees - Basic Terminology of Trees, Binary Trees, Tree Representations as Array & Linked List. Binary Tree Representation. Traversal of Binary Trees – Inorder Preorder & Postorder, Application of Binary Tree, Threaded Binary tree, Height Balanced tree, B-tree.
UNIT-IV	Analysis of Algorithm, Complexity with Big'O' Notation. Searching - SequentialSearch, Binary Search and their Comparison. Sorting - External & Internal Sorting, Insertion Sort, Selection Sort, Quick Sort, Bubble Sort, Heap Sort, Comparison of Sorting Methods.
UNIT-V	Graphs - Introduction to Graphs, Basic Terminology, Directed, Undirected & Weighted graph, Representation of Graphs, Graph Traversals - Depth First &Breadth First Search. Spanning Trees, Minimum Spanning Tree, Applications of Graphs : Shortest Path Problem using Dijkstra Method.

COURSE OUTCOME: AFTER STUDYING THIS COURSE STUDENT WILL ABLE TO LEARN ABOUT GRAPHS, TREES AND LINKED LIST

TEXT & REFERENCE BOOKS:

- Fundamentals of data structure, by s.Sawhnev & e. Horowitz
- Data structure: by t rembley & sorrenson
- Data structure: by lipschuists (schaum 's outline series mcgraw hill publication)
- Fundamentals of computer algorithm: by ellis horowitz and sartaj sawhney

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BCA302 DATA STRUCTURE

PRACTICAL

Subject Code	Subject Name & Title	Maximum Marks Allotted								Credit			Total Credits
		Theory				Practical							
		End Sem	Mid Sem.	Quiz, Assignment	Total Marks	Lab Work	Assignment /Quiz	End Sem	Total Marks	L	T	P	
BCA302	Data Structure	60	20	20	100	20	10	20	50	4	0	2	6

List of Experiments

1. Write a program for Iterative and Recursive Linier search
2. Write a program for Iterative and Recursive Binary Search.
3. Write a program for Merge Sort.
4. Write a program for Quick Sort.
5. Write a program for minimum spanning trees using Kruskal's algorithm.
6. Write a program for minimum spanning trees using Prim's algorithm.
7. Write a program for single sources shortest path algorithm.

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BCA303 OPERATING SYSTEM

Subject Code	Subject Name & Title	Maximum Marks Allotted								Credit			Total Credits
		Theory				Practical							
		End Sem	Mid Sem. MST	Quiz, Assignment	Total Marks	Lab Work	Assignment /Quiz/Term paper	End Sem	Total Marks	L	T	P	
BCA303	Operating System	60	20	20	100	20	10	20	50	4	0	2	6

OBJECTIVE : The objective of this course is to help the students to get detailed Knowledge of the various functions which are being performed by the operating system.

UNITS	SYLLABUS
UNIT- I	INTRODUCTION: - Machine Hardware (Traps and Interrupts, Multimode Execution), Operating System Structure (Operating System Types, Operating System Kernel, the Boot Process). PROCESS MANAGEMENT :- Process Scheduling, Process State, Scheduling Criteria, Scheduling Algorithms (First-Come First-Served, Shortest Job First, Shortest Remaining Time, Round Robin, Priority, Multilevel feedback Queues)
UNIT- II	INTERPROCESS COMMUNICATION AND SYNCHRONIZATION:- Inter process Communication, Process Synchronization (Critical Section, Interrupt Disabling, Test and Set Instruction, Write a Program Instruction, Wait and Signal, Semaphores) Deadlock (Deadlock Prevention, Deadlock Avoidance, Deadlock Detection, Recovery from Deadlock).
UNIT-III	MEMORY MANAGEMENT: - Single Absolute Partition, Single Relocatable Partition, Multiprogramming, and Multiple Partitions (Multiple Fixed Partitions, Multiple Variable Partitions (Partition Selection Algorithms), Paging, Segmentation, Segmentation with Paging, Page and Segment Tables (Associative Memory, Inverted page table.VIRTUAL MEMORY: - Demand Paging (Locality of Reference, Page Locking, Page Size, Page Replacement Algorithms, Algorithm Performance, Allocation Policies, Working Set), FILE SYSTEM
UNIT-IV	FILE MANAGEMENT: - Directories and Names (Partitions, Per-Process Root Directory, Directory Structure, Directory Entries), Types of File System Objects, File System Functions, Information. Types, File System Architecture (Access Methods, Access Control, File Locking, Blocking, Allocation, Free Space).
UNIT-V	DEVICE MANAGEMENT :- Hardware I/O Organization (I/O Control, Port and Memory-Mapped I/O, Module Registers, Busy Wait I/O, Polled I/O, Interrupt I/O, Direct Memory Access (DMA), Software Organization (Network I/O, Logical I/O, Buffering, Caching, Device Drivers), Devices Graphics, Text-Based Displays, Storage Disks, Hard-Disk Performance, Hard-Disk Scheduling, Formatting, Raid, RAM Disks). SECURITY: - Authentication (Passwords, Physical Authentication), Prevention, Detection, Correction, Identification, Threat Categories, Program Threats.

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COURSE OUTCOME : AFTER THE COMPLETION OF SUBJECT STUDENT WILL LEARN ABOUT HOW TO PREPARE BALANCESHEET AND REPORTS

TEXT & REFERENCE BOOKS:

•Operating system concepts by silberschatz &galvin, addison edition.

•operating system concepts & design by milan milen kovic, wesley publication

•operating system concepts & design by milan milen kovic,tmh Publication

OUTCOME: Students will learn various techniques and algorithms used by operating systems to perform its functions.

Suggested Readings/ Books:

1. William Stalling, "Operating System Internals and Design Principle", edition 6th, Pearson Education India, 2009.
2. Peter bears Galvin, "Operating System Principle", Edition 7th, Wiley India,2009
3. J.Harris,"Operating System SCHAUM'S OUTLINE", Special Indian edition, Tata McGraw Hill. 2008
4. Pramod Chandra," An Introduction to Operating System", Edition 3rd, PH, 2010.

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BCA 303 OPERATING SYSTEM
PRACTICAL

Subject Code	Subject Name	Credits	Maximum marks Allotted						Duration of Exam.	
			Theory			Practical			Theory	Practical
			End Sem	Mid Sem	Assign.	**Lab Work**	**Assignment /Quiz/Term paper**	**End Sem**		
BCA303	Operating System	2	-	-	-	20	10	20		3 hr

List of Experiments

1. Write a C program to simulate the following file allocation strategies. a) Sequential b) Linked c)) Indexed
2. Write a C program to simulate multi-level queue scheduling algorithm considering the following scenario. All the processes in the system are divided into two categories – system processes and user processes.
3. Write a C program to simulate the MVT and MFT memory management techniques
4. Write a C program to simulate the following contiguous memory allocation techniques a) Worst-fit b) Best-fit c) First-fit
5. Write a C program to simulate paging technique of memory management
6. Write a C program to simulate producer-consumer problem using semaphore

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BCA 304 ELEMENTARY MATHEMATICS

Subject Code	Subject Name & Title	Maximum Marks Allotted								credit			Total Credits
		Theory				Practical							
		End Sem	Mid Sem. MST	Quiz, Assignment	Total Marks	Lab Work	Assignment /Quiz/Term paper	End Sem	Total Marks	L	T	P	
BCA304	Elementary Mathematics	60	20	20	100					3	1		4

OBJECTIVES

This syllabus is specially designed to help the students of computer science to understand the mathematical concepts like matrices, differential calculus and integral calculus which have applications in various subjects of computer science. Also Statistics has been added to help them understand the topics like central tendency, deviations, and moments etc which are very useful in day to day life.

UNITS	SYLLABUS
UNIT- I	Set of Real Numbers Especially Intervals (with notations). Power Set. Universal Set.Venn Diagrams.Union and Intersection of Sets.Difference of Sets.Complement of a Set. Ordered Pairs, Cartesian Product of Sets. Number of Elements in the Cartesian Product of two Finite Sets. Cartesian Product of the Reals with itself (upto R x R x R). Definition of Relation, Pictorial Diagrams, Domain.Co- domain and Range of a Relation.
UNIT- II	Function as a special kind of relation from one set to another. Pictorial representation of a function, domain, co-domain & range of a function. Realvalued function of the real variable, domain and range of these functions, constant, identity, polynomial, rational, modulus, signum and greatest integerfunctions with their graphs. Sum, difference, product and quotients of functions.Types of relations: reflexive, symmetric, transitive and equivalence relations. One to one and onto functions, composite functions, inverse of a function.Binary operations.
UNIT-III	Complex numbers, Brief description of algebraic properties of complex numbers. Argandplane and polarrepresentation of complex numbers. Statement ofFundamental Theorem of Algebra, solution of quadratic equations in the complexnumber system. Fundamentalprincipleofcounting. Factorial n. (n!) , Permutations and combinations
UNIT-IV	**Sequence and Series.Arithmetic** progression (A. P.). arithmetic mean (A.M.) Geometric progression (G.P.), general term of a G.P sum of n terms of a G.P, geometric mean (G.M.), relation between A.M. and G.M. Sum **Sets and Their Representations**. Empty Set, Finite & Infinite Sets, Equal Sets.Subsets.Subsets of the to n terms of the special series Σn, Σn2 and Σn3.
UNIT-V	**Slope of a line and angle between two lines. Various forms of equations of a line:** parallel to axes, point-slope form, slope-intercept form, two point form, intercepts form

	and normal form. General equation of a line. Distance of a point from a line. Standard equation of a circle, Coordinate axes and coordinate planes in three dimensions. Coordinates of a point.

OUTCOME

This course will help students to understand about mathematical concepts like matrices, differential calculus and integral calculus which have applications in various subjects of computer science.

TEXT & REFERENCE BOOKS:

- www.e-booksdirectory.com/mathematics
- www.origoeducation.com/go-maths.
- Basics Of Mathematics By R D Sharma.

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BCA 305 LEADERSHIP EDUCATION

Subject Code	Subject Name & Title	Maximum Marks Allotted								credit			Total Credits
		Theory				Practical							
		End Sem	Mid Sem. MST	Quiz, Assignment	Total Marks	Lab Work	Assignment /Quiz/Term paper	End Sem	Total Marks	L	T	P	
BCA305	Leadership Education	60	20	20	100					3	1		4

OBJECTIVES

To explain about management of organization, leadership and related theories. To explain about motivational theories, behavioral concept, Interpersonal Behavior, team management .

UNITS	SYLLABUS
UNIT- I	Organization – Management – Leadership –Meaning and Significance – Different theories – Trait Theory, Blake & Mountan Theory – Other functions of Management.
UNIT- II	Behavioral Concepts – Individual Behaviour – Perception – Learning – Attitude Formation and Change – Motivation – Theories of Motivation – Personality Development.
UNIT-III	Interpersonal Behaviour – Communication – Leadership – Influencing Relations – Transactional Analysis.
UNIT-IV	Group Dynamics – Roles – Morale – Conflict – Groups – Inter-Group Behaviour – Inter-Group Collaboration and Conflict Management.
UNIT-V	Team Building and Management – Developing team resources – Designing team – Participation and Repercussion – Team building activities.

COURSE LEARNING OUTCOMES

Students will be able to understand about organization and management, leadership and related theories. To explain about motivational theories, behavioral concept, Interpersonal Behaviour, team management

Reference Books:

1. Fred Luthans, “Organizational Behaviour”, Tata McGraw Hill Publishing Co., New Delhi.
2. Robins, Stephen P, “Organisational Behaviour”, 9th Edition, Prentice Hall of India, New Delhi.
3. Koontz and O “Donnell”, Essentials of Management, Tata McGraw Hill Publishing Co., New Delhi.
4. Keith Davis, “Human Behaviour at Work”, Tata McGraw Hill Publishing Co., New Delhi.

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BCA401 JAVA PROGRAMMING

Subject Code	Subject Name & Title	Maximum Marks Allotted								credits			Total Credits
		Theory				Practical							
		End Sem	Mid Sem. MST	Quiz, Assignment	Total Marks	Lab Work	Assignment /Quiz/Term paper	End Sem	Total Marks	L	T	P	
BCA401	Java Programming	60	20	20	100	20	10	20	50	4	0	2	2

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.

UNITS	SYLLABUS
UNIT- I	OVERVIEW OF JAVA - Introduction, Programming Paradigm, OOPS Concepts, Evolution Of Java, Features Of Java, C++ Vs Java, Java And Internet, Java And WWW, Java Support Systems, JavaEnvironment Key Features Of Java - Introduction, Java Program Structure, Simple Java Program, Tokens, Java Statements, Java Virtual Machine, Constants And Variables, Declaration Of Variables, Scope Of Variables, Data Types, Symbolic Constants, Type Casting, Command Line Arguments
UNIT- II	OPERATORS - Operators, Arithmetic Operators, Relational Operators, Logical Operators, Bitwise Operators, Increment And Decrement, Conditional Operators, Special Operators, Assignment Operators, Expression & Its Evaluation CONTROLSTATEMENTS-Introduction, Control Statements, Sequence Control Statement, Decision Control Statement, Case Control Statement, Iteration Control Statement, Jump In Loops, Labeled Loops ARRAYS AND STRINGS - Introduction, Array, Need Of Array, Types Of Array, One Dimensional Array, Two-Dimensional Array, Multidimensional Array, Strings, Concatenation Of Strings, Methods For String Comparison, Methods For Searching Strings, Changing The Case Of Characters, StringBuffer
UNIT-III	CLASSES - Introduction, Defining A Class, Adding Variables, Adding Methods, Creating Objects, Accessing Class Members, Call By Value And Call By Reference, Recursion, Access Control, Constructors, Method Overloading, Constructor Overloading, Garbage Collection, Finalize( ) Method, This Keyword, Static Members, Nesting Of Methods

	INHERITANCE - Inheritance, Single Inheritance, Multilevel Inheritance, Multiple Inheritance, Hierarchical Inheritance, Using Super, Constructor -Order Of Execution In Inheritance, Overriding Methods, Final Variables And Methods, Final Classes, Abstract Methods And Classes, Containership, Visibility Control
UNIT-IV	WRAPPER CLASSES AND VECTORS- Introduction,WrapperClasses,NumberClass,Byte Class, Short Class, Integer Class, Long Class, Converting Numbers To And From Strings, Float Class,DoubleClass,CharacterClass,BooleanClass,Vectors,CreatingAVector INTERFACE & PACKAGES - Introduction, Interfaces, Defining Interface, Implementing Interface, Accessing Interface Method, Accessing Interface Variable, Extending Interfaces, Packages, System Packages, Using System Packages, User Defined Packages, Adding Class To A Package, Accessing And UsingPackage Exception handling - Introduction, Exceptions, Using Try & Catch, Multiple Catch Clauses, Finally, Throw, Throws Multithreading - Introduction, The Main Thread, Creating Threads, Life Cycle Of Thread, Using Threads Methods, Thread Priorities, Stopping And Blocking A Thread, Thread Exceptions, Using Is Alive( ) And Join(), Synchronization
UNIT-V	Applets - Introduction, Local & Remote Applets, Applet Vs Applications, Writing Applets, Life Cycle Of An Applet, Creating Source Code Of Applet, Creating An Executable Applet, Creating Applet Tag, Adding Applet Tag To Html, Running The Applet, Detailed Form Of Applet Tag, Passing Parameters To Applet, Aligning The Display, Html Tags, Getting Input From User Input-output streams and file management - Introduction, Stream, Stream Classes, Byte Stream Classes, Character Stream Classes, System Class, Reading Console Input, Writing Console Output, Using The File Class, Random Access File Graphics programming - Introduction, The Graphics Class, Drawing Lines And Rectangles, Using Draw Oval() And Fill Oval() Method, Drawing Arcs, Drawing Polygon, Line Graphs, Drawing Bar Charts

OUTOCMES –

- 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.

Reference Books:

- E. Balaguruswamy, "Programming In Java", 2nd Edition, TMH Publications ISBN 0- 07-463542-5
- Peter Norton, "Peter Norton Guide To Java Programming", Tech media Publications ISBN81-87105-61-5
- JAVA, How To Program, Deitel & Deitel, PHI,Pearson

MADHYANCHAL PROFESSIONAL UNIVERSITY, Bhopal, (M.P.)
Scheme of Examination

BCA 401 JAVA PROGRAMMING

PRACTICAL

Subject Code	Subject Name & Title	Maximum Marks Allotted								credits			Total Credits
		Theory				Practical							
		End Sem	Mid Sem. MST	Quiz, Assignment	Total Marks	Lab Work	Assignment /Quiz/Term paper	End Sem	Total Marks	L	T	P	
BCA401	Java Programming	60	20	20	100	20	10	20	50	4	0	2	2

Practical:

1. Write A Java Program To Display Message On Computer Screen.

2. Write A Java Program To Develop A Class For Rationa lNumbers

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 OfPolymorphism

6. Design A Date Class InJava.

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 OfJava.

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.

MADHYANCHAL PROFESSIONAL UNIVERSITY, Bhopal, (M.P.)
Scheme of Examination

BCA402 RDBMS PRACTICE WITH ORACLE/ MS SQL SERVER EXPRESS EDITION

Subject Code	Subject Name & Title	Maximum Marks Allotted								credits			Total Credits
		Theory				Practical							
		End Sem	Mid Sem.	Quiz, Assignment	Total Marks	Lab Work	Assignment	End Sem	Total Marks	L	T	P	
BCA402	RDBMS Practice with Oracle/ MS SQL Server Express Edition	60	20	20	100	20	10	20	50	4	0	2	2

OBJECTIVE

To identify the advantages of the database approach over the file-based data storage system and to understand the architecture of a DBMS and functions of the database system components.

UNITS	SYLLABUS
UNIT- I	Introduction To DBMS &RDBMS - Introduction to database, introduction DBMS, different database models, structure of DBMS, RDBMS an introduction, Cod's Law For RDBMS, Components Of RDBMS (Kernel/Data Dictionary). Introduction To Oracle RDBMS And Client/Server Computing - Introduction To Oracle, The Features of Oracle 9i, The Oracle Product Details, An Introduction To Client/Server Computing, Oracle And Client/Server Computing. Overview of Oracle Architecture - Oracle Architecture, Oracle Files, System And User Processes, Oracle Memory, System Database Object, Protecting Data
UNIT- II	Introduction To SQL*PLUS -Introduction To Sql, Features OfSql, Components Of Sql, Introduction To Sql*Plus, Features Of Sql*Plus, Execution OfSql*Plus, Important Commands Used In Sql*Plus, Oracle Data-Types. Working With Tables -Tables - An Introduction, Use Of Table In Sql, Viewing The Stored Data In Tables, Filtering Table Data, Updating Data, Deleting Data From Tables, Modifying The Structure Of Tables, Destroying A Table, A Few Other Sql Statements Data Constraints - Data Constraints, The Use Of Data Constraints, The Types Of Data Constraints, Defining Integrity Constraints By 'Alter Table', Removing Integrity Constraints, 'Null' Value Concept, 'Not Null' Constraint, Default Value Concept, 'User Constraints' Table
UNIT-III	Data Manipulation In SQL - Oracle Operators, Range Searching, Pattern Matching, LIKE 'IN' And 'NOT IN' Predicates, An Introduction To 'DUAL' Table, An Introduction To'SYSDATE' Oracle Functions - Oracle Function, Function Types, Group Function, Scalar

	Function, Working With 'Date' In Sql, Grouping Of Data Of Different Tables In Sql Joins, Sub-Queries &Views - Types Of Joins, Use Of Sub-Query, 'Union' And Clause, 'Intersect' Clause, Minus Clause, Concept Of View, Types Of View, Use Of View User Accounts Management &Indexing - Creation Of User Account, User Account Management, Granting Privileges, Revoking Privileges, Modifying Password, Closing User account, Concept Of Index, Creation Of Index, Types Of Index, Use Of Index, Deleting Index.
UNIT-IV	Introduction To PL/SQL Programming - Introduction To PL/SQL, Advantages OfPL/SQL, Differences Between SQL And PL/SQL, PL/SQL Block Structure, PL/SQL Character Set, Variable, Constant And Data Type, Assignment Operator And The Use Of' SELECT....INTO, PL/SQL Program Control Structure, The Use Of' IF...THEN...ELSE...ENDIF', Iteration Control (The Use Of LOOP, WHILE, FOR), The Use Of' GOTO Statement. Cursor - Cursor An Introduction, Types Of Cursor, Features Of Cursor, Implicit Cursor, Explicit Cursor, Application Of For Loop With Cursor. Exception Handling In PL/SQL - Exception Handling In Pl/Sql, Built In Exception Handling, User Defined Exception Handling, The Raise Application-Error Procedure.
UNIT-V	Oracle Transaction - Oracle Transaction, Commit Statement, Rollback Statement, Save Point Statement, Concept Of Lock, Types Of Locks, Levels Of Locks, 'SELECT.....FOR UPDATE' Statement, Removing The Lock. Procedures And Functions- Concept Of Procedures And Functions, Advantages Of Procedure And Function, Creation Of Procedure And Function, Deleting Procedure And Function. Database Triggers- Concept Of Triggers, Types Of Triggers, Creation Of Triggers, Application Of Triggers, Deleting Triggers. 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 SQLServer..

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 SQLServer.

Reference Books:

1. Ivan Bayross, "SQL, PL/SQL", BpbPublications"
2. Liebschuty, "The Oracle Cook Book", BPBPublication
3. Michael Abbey, Michael J.Corey, "Oracle A Beginners Guide".TMH Publication

MADHYANCHAL PROFESSIONAL UNIVERSITY, Bhopal, (M.P.)
Scheme of Examination

BCA402 RDBMS Practice with Oracle/ MS SQL Server Express Edition
PRACTICAL

Subject Code	Subject Name	Credits	Maximum marks Allotted						Duration of Exam.	
			Theory			Practical			Theory	Practical
			End Sem	Mid Sem	Assign.	**Lab Work**	**Assignment /Quiz/Term paper**	**End Sem**		
BCA402	RDBMS Practice with Oracle/ MS SQL Server Express Edition	2	-	-	-	20	10	20		3 hr

Practical List

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 InSQL.
5. Write A Query To Explore 'Select' Clause Using Where, Order By, Between, Like, Group-By, HavingEtc.
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 Sub questionries.
10. Write A Query To Implement The Structure Of The Table.

MADHYANCHAL PROFESSIONAL UNIVERSITY, Bhopal, (M.P.)
Scheme of Examination

BCA403 LINUX & SHELL PROGRAMMING

Subject Code	Subject Name & Title	Maximum Marks Allotted								credits			Total Credits
		Theory				Practical							
		End Sem	Mid Sem. MST	Quiz, Assignment	Total Marks	Lab Work	Assignment /Quiz/Term paper	End Sem	Total Marks	L	T	P	
BCA403	Linux & Shell Programming	60	20	20	100	20	10	20	50	4	0	2	2

OBJECTIVE

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.

UNITS	SYLLABUS
UNIT- I	Introduction To Linux- Introduction, what is linux? Basic features, linux, different lavors, gnu/ linux, the most popular flavors of linux, installing requirement: minimum hardware requirements, software requirements to install linux, allocating disk space for linux, adding a new hard drive, using an existing hard drive or partition, reconstructing an existing partition to install linux, using fdisk to partition a hard disk, installing linux, basic architecture ofunix/linux system, linux logging in, logging out and shutting down, avoid thegui
UNIT- II	Linux File Systems - introduction, the inode and its structure, the linux file system , linux standard directories, layout of file system , supported file systems, the second extended file system (ext2), the ext2 superblock, linux directory terminology, how linux access files , storage files Using Linux Commands- Introduction, commands for files and directories, creating and viewing files, viewing files, disk related command. Shells, Processes & Essential Linux Commands - introduction , understanding shells, process in linux, connecting process with pipes, background processing, managing multiple processes, changing process priority, printing commands in linux, scheduling of process, file related commands Mathematical Commands And Text Editors In Linux - introduction, mathematical commands, interacting with 'units', using 'units' non-interactively, the vi editor, the vim editor - the powerful simple editor, efficient editing with vim, the joe editor- joe's own editor, editing tasks- basic editing
UNIT-III	System Administrations In Linux - introduction, system administrator or supper user, common administrative tasks: role of system administrator, identifying administrative files: configuration and log files, managing user accounts, changing permission and ownership, creating and mounting file system, getting system information.

	Backup And Utilities- Introduction, backup and restore files, linuxconf, utilityingui, reconfiguration hardware with kudzu Configuring Desktop In Linux - Introduction, desktop environment, linux configuration tools, x-configurator, understanding xf86config file, starting and using x desktop, configuring x: changing x settings, kde & gnome graphical interface.
UNIT-IV	Basic Networking Administrations In Linux- Introduction, setting up alanusing linux, setting up an ethernet (local area networks (LAN), network topologies, lan equipment, lan equipment setup, configuring host computers, choosing peer to peer vs client server model, administrations in network environment, checking ethernet connection, connecting to internet, common networking administrative tasks, linux network file system (nfs), initializing and configuring Ethernet interface TCP/IP network - introduction, tcp/ip basics, dns services, routing using linux, slip & ppp services, squid - linuxwebcache/proxy server
UNIT-V	Installation & administrations of servers- Introduction, what are servers? Type of servers, overview of e-mail, installation and administrations of mail servers (send mail), overview of ftp, installation and administrations of ftp (vsftpd) servers, installation and administrations of apache web servers. Shell programming-Introduction, basic of shell programming building blocks, shell scripts, getting started with shell programming, wild cards (filename shorthand or meta characters), shell variables, shell keywords, various types of shells, conditional and looping statements, creating shell programs for automate system and report printing, use of grep in shell, call awk from shell script, examples of general shell programming, using "bourne shell".

COURSE OUTCOMES - after study this student will be able to know about basic features, different flavors oflinux. advantages, installing. student will know about processes in linux, shell programming & gnome graphical interfaces.

Reference Books:

- UNIX – Concepts &Applications (Third Ed.) – Sumitabha Das, Tata McgrawHill Publications.
- UNIXfor Programmers And Users (Third Ed.) – Graham Glass &King Ables, Pearson Education India. (Low PricesEdition).
- Fedora Core 6Bible

MADHYANCHAL PROFESSIONAL UNIVERSITY, Bhopal, (M.P.)
Scheme of Examination

BCA403 LINUX & SHELL PROGRAMMING
PRACTICAL

Subject Code	Subject Name	Credits	Maximum marks Allotted						Duration of Exam.	
			Theory			Practical			Theory	Practical
			End Sem	Mid Sem	Assign.	Lab Work	Assignment /Quiz	End Sem		
BCA403	Linux & Shell Programming	2	-	-	-	20	10	20		3 hr

Practical List

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
8. If Basic Salary Is >=15000 Then HRA =500 And DA =98% Of Basic.
9. 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 Electrical80

   Mechanical67 Computers43

   Mechanical65 Civil198
10. Create A Script File Called File Properties That Reads A File Name Entered And Output Its Properties
11. Write A Shell Script Using Expr Command To Read In A String And Display A Suitable Message If It Does Not Have At Least 10Characters.
12. 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.

MADHYANCHAL PROFESSIONAL UNIVERSITY, Bhopal, (M.P.)
Scheme of Examination

BCA 404 SOFTWARE ENGINEERING

Subject Code	Subject Name & Title	Maximum Marks Allotted								credit			Total Credits
		Theory				Practical							
		End Sem	Mid Sem	Quiz, Assignment	Total Marks	Lab Work	Assignment /Quiz/Term paper	End Sem	Total Marks	L	T	P	
BCA404	Software Engineering	60	20	20	100					3	1	-	4

OBJECTIVE

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

UNITS	SYLLABUS
UNIT- I	Introduction To Software Engineering - Introduction, Reusable Software Components, What Is Well Engineered Software? Programming And Software Engineering, What Is Software Engineering? Goals Of Software Engineering, Software Processes, Software Process Models, Process Iteration, And Other Important Software Models
UNIT- II	Software Project Management - Project Management, Management Activities, Project Planning, Project Scheduling, Risk Management, Selecting Staff, Metrics Used For Measuring The Software Cost, Cocomo Model, Software Process And Project Metric - Software Quality, Metrics For The Analysis Model, Metrics For The Design Model, Metrics For Source Code, Metrics For Testing. Software Project Planning - Introduction, Software Project Planning, Other Planning Activities, Organization Of The Software Project, Management Plan (Spmp) Document. Software Cost Estimation - Introduction, Software Cost Factors, Programmer's Ability, Product Complexity, Product Size, Required Level Of Reliability, Level Of Technology, Decomposition Technique, Empirical Estimation Models, The Structure Of Estimation Models Software Project Requirements - Software Requirements, Functional And Non-Functional Requirements, User Requirements, System Requirements, Software Requirements Document
UNIT-III	Requirements Engineering Process - Requirements Engineering Process, Feasibility Study, Requirements Elicitation and Analysis, Scenarios, Requirements Specification, Ethnography, Requirements Validation, Requirements Management Software Prototyping - Software Prototyping, Prototyping In The Software Process, Rapid Prototyping Techniques, User Interface Prototyping Analysis Concept And Modeling - Analysis Modeling, Context Model, Data Modeling Concepts, Cardinality And Modality, Flow Oriented Diagram, Data Dictionary Design

	Concepts And Principles - Introduction, Design Within The Context Of Software Engineering, Design Process And Design Quality, Design Concepts, Information Hiding, Functional Independence, Design Classes, The Design Model, Software Patterns.
UNIT-IV	Software Architecture - Software Architecture Data Design, Architectural Styles And Patterns, Analyzing Alternative Architectural Designs, Mapping The Requirements Into Software Architecture, Architectural Design. Designing the User Interface - User Interface, Input Design, End-User Considerations for Input Design, Output Design, Design Principles, Screens, Forms, Menu, Messages, Importance Of Code, Data Codification Schemes, Designing Code Less Systems Software Quality Management, Software Quality Management, Role Of A Software Quality Manager, Iso Quality Model, Quality Assurance Standards, Quality Planning, Quality Control, Software Reviews, Software Reliability,
UNIT-V	Verification And Validation - Verification And Validation, Software Testing, Verification And Validation Planning, Software Inspections, Automated Static Analysis, Clean Room Software Development. Software Testing Models - Software Testing Fundamentals, Black-Box And White- Box Testing, White-Box Testing, Basis Path Testing, Control Structure Testing, Black-Box Testing, Object-Oriented Testing Methods Software Testing Strategies - The Strategic Approach, The Software Testing Strategy, Strategic Issues, Unit Testing, Integration Testing, Validation Testing, System Testing, Test Automation Computer Aided Software Engineering (CASE) - Computer Aided Software Engineering (CASE), Case Workbenches, Integrating Case Environment, Need Of Software Reuse:, Types Of Reuse, Reuse.

COURSE OUTCOME

1. 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 Fora Project.
2. Identify Project Risks, Monitor And Track Project Deadlines And Produce A Work Plan And Resource Schedule.
3. 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.

Reference Books:

- Software Engineering By R.S.Pressman
- An Integrated Approach To Software Engineering By Pankaj Jalote

MADHYANCHAL PROFESSIONAL UNIVERSITY, Bhopal, (M.P.)
Scheme of Examination

BCA 405 COMMUNICATION AND SOFT SKILLS

Subject Code	Subject Name & Title	Maximum Marks Allotted								credit			Total Credits
		Theory				Practical							
		End Sem	Mid Sem. MST	Quiz, Assignment	Total Marks	Lab Work	Assignment /Quiz/Term paper	End Sem	Total Marks	L	T	P	
BCA405	Communication and Soft Skills	60	20	20	100					3	1		4

OBJECTIVE

To explain students about soft skills, Paragraph writings, Paraphrasing and Summarizing, letter writing and resume writing.

UNITS	SYLLABUS
UNIT- I	Soft Skills: Positive Attitude, Body Language, SWOT/SWOC Analysis, Emotional Intelligence, Netiquette.
UNIT- II	Paragraph Writing: Paragraph Structure, Development of Ideas.
UNIT-III	Paraphrasing and Summarizing: Elements of Effective Paraphrasing, Techniques for Paraphrasing, What Makes a Good Summary? Stages of Summarizing
UNIT-IV	Letter Writing: Letter Writing (Formal and Informal), E-correspondence.
UNIT-V	Writing skills: Resume and CV; Cover Letter.

COURSE OUTCOMES

It will help students to develop soft skills, positive attitude and SWOT analysis. Students will be able to understand of Paragraph writings and Elements of Effective Paraphrasing. Student will be able to enhance their letter and resume writing skills which will be beneficial for future aspects.

Reference Books:

1) Commissioner ate of Collegiate Education, Government of Andhra Pradesh (2015)
2) JKC -Communication Skills and Soft Skills: Student's Book
3) Sethi, J., and P.V. Dhamija (1999) A Course in Phonetics and Spoken English New Delhi: Prentice-Hall of India

MADHYANCHAL PROFESSIONAL UNIVERSITY, Bhopal, (M.P.)
Scheme of Examination

BCA 501 Theory Of Computation

Subject Code	Subject Name & Title	Maximum Marks Allotted								Credit			Total Credits
		Theory				Practical							
		End Sem	Mid Sem. MST	Quiz, Assignment	Total Marks	Lab Work	Assignment /Quiz/Term paper	End Sem	Total Marks	L	T	P	
BCA501	Theory Of Computation	60	20	20	100	20	10	20	50	4	0	0	4

OBJECTIVE: To study basic knowledge of automata theory and techniques for construction of turing machine

UNITS	SYLLABUS
UNIT- I	Introduction of Automata Theory: Examples of automata machines, Finite Automata as a language acceptor and translator, Moore machines and mealy machines, composite machine, Conversion from Mealy to Moore and vice versa
UNIT- II	Types of Finite Automata: Non Deterministic Finite Automata (NDFA), Deterministic finite automata machines, conversion of NDFA to DFA, minimization of automata machines, regular expression, Arden's theorem. Meaning of union, intersection, concatenation and closure, 2 way DFA.
UNIT-III	Grammars: Types of grammar, context sensitive grammar, and context free grammar, regular grammar. Derivation trees, ambiguity in grammar, simplification of context free grammar, conversion of grammar to automata machine and vice versa, Chomsky hierarchy of grammar, killing null and unit productions. Chomsky normal form and Greibach normal form.
UNIT-IV	Push down Automata: example of PDA, deterministic and non-deterministic PDA, conversion of PDA into context free grammar and vice versa, CFG equivalent to PDA, Petrinet model.
UNIT-V	Turing Machine: Techniques for construction. Universal Turing machine Multitape, multihead and multidimensional Turing machine, N-P complete problems. Decidability and Recursively Enumerable Languages, decidability, decidable languages, undecidable languages, Halting problem of Turing machine & the post correspondence problem.

COURSE OUTCOMES
It will help students to develop finite automata and conversion of NDFA to DFA and halting problem of turing machine

Text & Reference Books:

Introduction to Automata Theory Language & Computation, Hopcroft& Ullman, Narosa Publication.

Element of the Theory Computation, Lewis• &Christors, Pearson.

Theory of Computation, Chandrasekhar• & Mishra, PHI.

MADHYANCHAL PROFESSIONAL UNIVERSITY, Bhopal, (M.P.)
Scheme of Examination

BCA 502 Data Communication & Network

Subject Code	Subject Name & Title	Maximum Marks Allotted								Credit			Total Credits
		Theory				Practical							
		End Sem	Mid Sem.	Quiz, Assignment	Total Marks	Lab Work	Assignment /Quiz	End Sem	Total Marks	L	T	P	
BCA502	Data Communication & Network	60	20	20	100	20	10	20	50	4	0	2	6

OBJECTIVE: To study basic knowlwdgwe of multiplexing and transmission media

UNITS	SYLLABUS
UNIT- I	Introduction to data communication: Components , data representation ,data flow and basic model ,data representation ,Serial & Parallel transmission , Modes of data transmission, Encoding:Unipolar,Polar ,Bipolar line & block codes ,Data compression ,Frequency dependant codes, Run length encoding ,Relative encoding ,LZ Compression ,Image and multimedia compression. Review of analog & digital transmission methods, Nyquist Theorem .
UNIT- II	Multiplexing: FDM, TDM, WDM, Synchronous & Statistical TDM, North American digital multiplexing hierarchy, European TDM, Spread spectrum: Frequency Hopping & Direct Sequence spread spectrum. Terminal handling & polling. Switched Communication Networks: Circuit, Message, Packet & Hybrid Switching, Softswitch Architecture with their comparative study, X.25, ISDN.
UNIT-III	Physical Layer: Introduction, Interface, Standards, EIA-232-D, RJ-45, RJ-11, BNC connector & EIA-449 digital Interface: Connection, specifications & configuration, X.21 Modem: Types, features, signal constellation, block schematic, limited distance, dial up, baseband,line driver, Group Band and Null modems etc., ITU-T V-series modem standards Connecting Devices: Active and Passive Hubs, Repeaters, Bridges, Two & Three layer switches & Gateway. Study of various types of topology and their comparative study and introduction to queing theory.
UNIT-IV	Transmission Media: Transmission line characterestics, distortions, Crosstalk, Guided Media: Twisted Pair, Baseband & Broadband Coaxial.Optical Fibre : Physics and velocity of propagation of light , Advantages & Disadvantages ,Block diagram ,Nodes and classification ,Comparision,losses , light source and detectors , Construction, Unguided media : Electromagnetic polarization ,Rays and wavesfront ,electromagnetic spectrum and radiation ,spherical wavefront and inverse square law , wave attenuation and absorption, optical properties of Radio waves , Terestrial Propagation of electromagnetic waves , skip distance , free – space path loss ,Radio waves , Microwave , Infrared & Satellite

	Communication system . Telephone Network: Components, LATAs, signaling and Services, Digital Subscriber Line: ADSL,HDSL, SDSL, VDSL, Cable TV network for data transfer.
UNIT-V	Transmission Errors : Content Error , flow integrity error , methods of error control ,Error detection ,Error correction ,Bit error rate , Error detection methods: Parity checking , Checksum Error Detection ,Cyclic Redudancy Check ,Hamming code , Interleaved codes , Block Parity , Convolution code, Hardware Implementation, Checksum .

COURSE OUTCOMES

It will help students to know basics of different layers of TCP/IP

Reference books

1. Gupta Prakash C.,"Data communication", PHI Learning
2. Tomasi,"Introduction to Data Communication & Networking, Pearson Education
3. Forouzan, "Data communication", TATA McGraw
4. Godbole,"Data Communication & Network" , TMH
5. Miller,"Data Network and Comunication",Cengage Delmar Learning
6. William Stallings ,"Data & Computer Communication", Pearson Education
7. A.S Tanenbum,"Computer Network",Pearson Education.

MADHYANCHAL PROFESSIONAL UNIVERSITY, Bhopal, (M.P.)
Scheme of Examination

BCA 502 DATA COMMUNICATION AND NETWORK

PRACTICAL

Subject Code	Subject Name	Credits	Maximum marks Allotted						Duration of Exam.	
			Theory			Practical			Theory	Practical
			End Sem	Mid Sem	Assign.	Lab Work	Assignment /Quiz/Term paper	End Sem		
BCA502	Data Communication & Network	20	10	20	50	4	0	2	6	20

List of Experiments

1. To study different types of transmission media
2. To study LAN using Star Topology
3. To study LAN using Bus Topology
4. To study LAN using Tree Topology
5. To study Fibre Optic Communication
6. To study Wireless Communication
7. To configure hub/ Switch
8. To study configure modem of Computer
9. To study pc-pc Communication using LAN
10. To study and analysis of QAM modulation

MADHYANCHAL PROFESSIONAL UNIVERSITY, Bhopal, (M.P.)
Scheme of Examination

BCA 503 VB.NET

Subject Code	Subject Name & Title	Maximum Marks Allotted								Credit			Total Credits
		Theory				Practical							
		End Sem	Mid Sem. MST	Quiz, Assignment	Total Marks	Lab Work	Assignment /Quiz/Term paper	End Sem	Total Marks	L	T	P	
BCA503	VB.NET	60	20	20	100	20	10	20	50	4	0	2	6

UNITS	SYLLABUS
UNIT- I	Introduction to .Net Technology Why .Net?, The .Net Framework Class Library, Working with the .Net FCL, Namespaces, Types of a .Net Namespace.
UNIT- II	The Visual Basic.Net Language VB.Net Data types, Operators, Decision Statements- If..then, If..then..else, Select.. Case, Loop Statements- While, Do .. Loop, For .. Next, For Each ..Next, Arrays.
UNIT-III	OOP using VB.Net Object Oriented features- Abstraction, Encapsulation, Polymorphism, Inheritance, Declaring Classes, Implementing Typecasting, Procedures and Functions, Optional arguments, Error handling in Procedures, Properties, Public and Private variables, Types of Properties, Polymorphism, Inheritance, Method Overriding.
UNIT-IV	Windows Form Introduction to Class Libraries, Event and Event Handlers, Windows Application, Windows GUI, First Win Forms Application, Controls, Text controls, Selection List Controls, VB.Net is overridden, Some controls with examples. Error handling In Windows Forms: Types of Validations, Types of Errors, Exceptions, Classified Runtime based Exceptions. SDI and MDI Applications: SDI and MDI interfaces, Characteristics of MDI components, Creating MDI Forms.
UNIT-V	Data access with ADO.Net Overview of Microsoft Database Access Technology, ADO.Net, Creating a Database, ADO.Net Architecture, ADO.Net Class Libraries, Databound Controls, Creating a Data Set, Using XML Data

Reference books

1. Visual Basic .NET Programming Black Book Paperback – 2005 by Steven Holzner
2. Visual Basic(R).Net: The Complete Reference Paperback – 1 Jul 2017 by Jeremy Shapiro

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BCA 503 VB.NET

PRACTICAL

Subject Code	Subject Name	Credits	Maximum marks Allotted						Duration of Exam.	
			Theory			Practical			Theory	Practical
			End Sem	Mid Sem	Assign.	**Lab Work**	**Assignment /Quiz/Term paper**	**End Sem**		
BCA503	VB.NET	2	-	-	-	20	10	20		3 hr

List of Experiments

1. **Program to show the use of combo box**
2. **Program to perform all Arithmetic operations**
3. **Program to show the use of check box and option button**
4. **Program to create menu bar**
5. **Program to print the result of student with total marks**
6. **Program to calculate salary of employee**
7. **Program to show details of students in the form of form**
8. **Program to show students using forms**
9. **Program to create puzzle application**
10. **Program to create quiz puzzle**

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BCA 504 MARKETING MANAGEMENT

Subject Code	Subject Name & Title	Maximum Marks Allotted								credit			Total Credits
		Theory				Practical							
		End Sem	Mid Sem. MST	Quiz, Assignment	Total Marks	Lab Work	Assignment /Quiz/Term paper	End Sem	Total Marks	L	T	P	
BCA504	Marketing Management	60	20	20	100					3	1		4

UNITS	SYLLABUS
UNIT- I	Introduction: Concept, nature, scope and importance of marketing; Marketing concept and its evolution; Marketing mix; Strategic marketing planning – an overview. Market Analysis and Selection: Marketing environment – macro and micro components and their impact on marketing decisions; Market segmentation and positioning; Buyer behavior; consumer versus organizational buyers; Consumer decision making process.
UNIT- II	Product Decisions: Concept of a product; Classification of products; Major product decisions; Product line and product mix; Branding; Packaging and labeling; Product life cycle – strategic implications; New product development and consumer adoption process. Pricing Decisions: Factors affecting price determination; Pricing policies and strategies; Discounts and rebates.
UNIT-III	Distribution Channels and Physical Distribution Decisions: Nature, functions, and types of distribution channels; Distribution channel intermediaries; Channel management decisions; Retailing and wholesaling. Promotion Decisions: Communication Process; Promotion mix – advertising, personal selling, sales promotion, publicity and public relations; Determining advertising budget; Copy designing and testing; Media selection; Advertising effectiveness; Sales promotion – tools and techniques.
UNIT-IV	Marketing Research: Meaning and scope of marketing research; Marketing research process. Marketing Organisation and Control: Organising and controlling marketing operations.
UNIT-V	Issues and Developments in Marketing: Social, ethical and legal aspects of marketing; Marketing of services; International marketing; Green marketing; Cyber marketing; Relationship marketing and other developments of marketing.

Suggested Readings :

1. Kotlar, Philip, Marketing Management, Prentice Hall, New Delhi.
2. Stanton, Etzel, Walker, Fundamentals of Marketing, Tata-McGraw Hill, New Delhi.
3. Saxena, Rajan, Marketing Management, Tata-McGraw Hill, New Delhi.
4. McCarthy, E.J., Basic Marketing: A managerial approach, Irwin, New York.

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BCA 505 OPERATION RESEARCH AND OPTIMIZATION TECHNIQUES

Subject Code	Subject Name & Title	Maximum Marks Allotted								credit			Total Credits
		Theory				Practical							
		End Sem	Mid Sem. MST	Quiz, Assignment	Total Marks	Lab Work	Assignment /Quiz/Term paper	End Sem	Total Marks	L	T	P	
BCA 505	Operation Research and Optimization Techniques	60	20	20	100					3	1		4

UNITS	SYLLABUS
UNIT- I	Operation Research- History of OR, Definition, Applications, Scope of OR, Limitations of OR, OR Models, Applications of various OR Techniques
UNIT- II	Linear Programming Problems and Applications, Various Components of LP problem formulation, Solving Linear Programming problem using simultaneous equations and Graphical Method, Simplex Method and extensions, Sensitivity analysis- Duality theory, Revised Simplex Transportation and assignment problems
UNIT-III	Network Analysis- shortest paths, Maximal Flow including PERT-CPM. Integer programming concepts, formulation, solution and application
UNIT-IV	Game Theory – Introduction, Decisions under risk, Decision under uncertainty.
UNIT-V	Queuing Theory – Introduction , Basic definitions & notations, axiomatic derivation of the arrival & departure distributions for Poission Queue, Poission Queuing model, M/M/1 queues in series, application.

SUGGESTED BOOKS

1. V.K.Kapoor- Operation Research
2. Kanti Swarup- Operation Research
3. Hillier & Liberman – Introduction to Operation Research
4. Vinod Kumar – Linear Programming

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BCA601 WEB DEVELOPEMENT

Subject Code	Subject Name & Title	Maximum Marks Allotted								credits			Total Credits
		Theory				Practical							
		End Sem	Mid Sem. MST	Quiz, Assignment	Total Marks	Lab Work	Assignment /Quiz/Term paper	End Sem	Total Marks	L	T	P	
BCA601	Web Developement	60	20	20	100	20	10	20	50	4	0	2	2

UNITS	SYLLABUS
UNIT- I	Introduction to PHP, History of PHP, Versions of PHP, Features of PHP, Advantages oF PHP over other Scripting Languages, Installation and Configuration of PHP, Data types in PHP Variables and Constants, Scope of Variables, PHP String, String Manipulation, PHP Operators, Precedence of Operators, Expressions, Creating a PHP Script, Running a PHP Script.
UNIT- II	Basic HTML, Embedding PHP in HTML, Passing Information between Pages, PHP $_GET, $_POST, PHP Conditional Statements, PHP Looping , PHP Statements, Break, Continue, Exit, PHP Functions: Built-in and User Defined Function, Regular Expression Functions, Mathematical, Date and Time Functions, PHP Arrays: Creating Array and Accessing Array Elements,
UNIT-III	PHP File Permissions, Working with Files: Opening, Closing, Reading, Writing a File; Working with Directory: Creating, Deleting, Changing a Directory; Working with Forms: Introduction to a Web Form, Processing a Web Form, Validating a Web Form, Input Validation, PHP with Client Side Scripting Language, Exception and Error Handling in PHP, Introduction to Cookies and Session Handling,
UNIT-IV	Working with Database: PHP-Supported Databases; Using PHP & My SQL:Installation and Configuration of My SQL on Windows, Checking Configuration, Connecting to Database, Selecting a Database, Adding Table and Altering Table in a Database, Inserting, Deleting and Modifying Data in a Table, Retrieving Data, Performing Queries, Processing Result Sets,
UNIT-V	Code Re-use, require(), include(), and the include_path, File System Functions and File Input and Output, File Uploads, Use of CSS, Introduction to Object Oriented Programming with PHP, Installing and Configuring Apache to use PHP on Windows, php.ini File,

Reference books

- Php & my sql, by vikram vaswani, tmh publications
- Php essentials, by julie c. Meloni, bpb publications
- Php 5 and my sql bible, by tim converse and joyce park, wiley-dreamtech india publications
- Web technologies, black book, dreamtech press
- atkinson, leon. Core php programming, new york: prentice hall
- Learning php 5, by david sklar publisher o'reilly media
- Mastering php, by charles, publisher: bpb
- expert php and mysql, wrox programmer to programmer, wrox press, 2010
- Php for absolute beginners, apress, 2009

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BCA 601 WEB DEVELOPEMENT

PRACTICAL

Subject Code	Subject Name	Credits	Maximum marks Allotted						Duration of Exam.	
			Theory			Practical			Theory	Practical
			End Sem	Mid Sem	Assign.	**Lab Work**	**Assignment**	**End Sem**		
BCA601	Web Development	2	-	-	-	20	10	20		3 hr

List Of Experiments:

1.Design a timetable and display it in tabular format.
2.. Design a mark sheet and display all your marks with subjects in a tabular format.
3. Create a table to show your class time-table.
4. Design a webpage to List a table of content and navigate within the pages.
5.Write a program to Demonstrate Array Objects and Date Object's predefined methods.
6. Write a program for Calendar Creation : Display all months.
7. Write a program to Demonstrate Exception Handling.
8.Design a CSS to create menu.
9. Design a webpage i.e. Bio data using CSS.
10.. WAP to create table and list using CSS.

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BCA602 COMPILER DESIGN

Subject Code	Subject Name & Title	Maximum Marks Allotted								credits			Total Credits
		Theory				Practical							
		End Sem	Mid Sem.	Quiz, Assignment	Total Marks	Lab Work	Assignment	End Sem	Total Marks	L	T	P	
BCA 602	Compiler Design	60	20	20	100	20	10	20	50	4	0	2	2

UNITS	SYLLABUS
UNIT- I	Introduction to compiling & Lexical Analysis Introduction of Compiler, Major data Structure in compiler, types of Compiler, Front-end and Back-end of compiler, Compiler structure: analysis-synthesis model of compilation, various phases of a compiler, Lexical analysis: Input buffering , Specification & Recognition of Tokens,Design of a Lexical Analyzer Generator, LEX.
UNIT- II	Syntax Analysis &Syntax Directed Translation Syntax analysis: CFGs, Top down parsing, Brute force approach, recursive descent parsing, transformation on the grammars, predictive parsing, bottom up parsing, operator precedence parsing, LR parsers (SLR,LALR, LR),Parser generation. Syntax directed definitions: Construction of Syntax trees, Bottom up evaluation of S-attributed definition, L-attribute definition, Top down translation, Bottom Up evaluation of inherited attributes Recursive Evaluation, Analysis of Syntax directed definition.
UNIT-III	Type Checking & Run Time Environment Type checking: type system, specification of simple type checker, equivalence of expression, types, type conversion, overloading of functions and operations, polymorphic functions. Run time Environment: storage organization, Storage allocation strategies, parameter passing, dynamic storage allocation , Symbol table, Error Detection & Recovery, Ad-Hoc and Systematic Methods.
UNIT-IV	Code Generation Intermediate code generation: Declarations, Assignment statements, Boolean expressions, Case statements, Back patching, Procedure calls Code Generation: Issues in the design of code generator, Basic block and flow graphs, Register allocation and assignment, DAG representation of basic blocks, peephole optimization, generating code from DAG.
UNIT-V	Code Optimization Introduction to Code optimization: sources of optimization of basic blocks, loops in flow graphs, dead code elimination, loop optimization, Introduction to global data flow analysis, Code Improving transformations ,Data flow analysis of structure flow graph Symbolic debugging of optimized code.

References:

1. A. V. Aho, R. Sethi, and J. D. Ullman. Compilers: Principles, Techniques and Tools , Pearson Education
2. Raghavan, Compiler Design, TMH Pub.
3. . Louden. Compiler Construction: Principles and Practice, Cengage Learning
4. . A. C. Holub. Compiler Design in C , Prentice-Hall Inc., 1993.
5. . Mak, writing compiler & Interpreters, Willey Pub.

MADHYANCHAL PROFESSIONAL UNIVERSITY, Bhopal, (M.P.)
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BCA602 Compiler Design
PRACTICAL

Subject Code	Subject Name	Credits	Maximum marks Allotted						Duration of Exam.	
			Theory			Practical			Theory	Practical
			End Sem	Mid Sem	Assign.	**Lab Work**	**Assignment /Quiz/Term paper**	**End Sem**		
BCA602	Compiler Design	2	-	-	-	20	10	20		3 hr

Practical List

1 Implement a lexical analyzer in "C".

2. Use LEX tool to implement a lexical analyzer.

3. Implement a recursive descent parser for an expression grammar that generates arithmetic expressions with digits, + and *.

4. Use YACC and LEX to implement a parser for the same grammar as given in problem

5. Write semantic rules to the YACC program in problem 5 and implement a calculator that takes an expression with digits, + and * and computes and prints its value.

6 Implement the front end of a compiler that generates the three address code for a simple language with: one data type integer, arithmetic operators, relational operators, variable declaration statement, one conditional construct, one iterative construct and assignment statement.

7. Implement the back end of the compiler which takes the three address code generated in problems 7 and 8, and produces the 8086 assembly language instructions that can be assembled and run using a 8086 assembler. The target assembly instructions can be simple move, add, sub, and jump. Also simple addressing modes are used.

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BCA603 ORGANIZATIONAL BEHAVIOUR

Subject Code	Subject Name & Title	Maximum Marks Allotted								credits			Total Credits
		Theory				Practical							
		End Sem	Mid Sem. MST	Quiz, Assignment	Total Marks	Lab Work	Assignment /Quiz/Term paper	End Sem	Total Marks	L	T	P	
BCA603	ORGANIZATIONAL BEHAVIOUR	60	20	20	100	20	10	20	50	4	0	2	2

UNITS	SYLLABUS
UNIT- I	Understanding Organizational behaviour: Levels of analysis within OB - individual, group and organization; challenges and opportunities for OB; relationship of OB with other fields.
UNIT- II	Foundation of individual behaviour; learning theories; Perception: factors infl uencing Perception; Personality, Attitudes, Job satisfaction and Values.
UNIT-III	Motivation: concept and process; Motivation theories: Maslow, McGregor, Herzberg, Alderfor's, Vroom, Porter & Lawler and Equity theory; Its Application in Organ isation; Group: nature, functions & development.
UNIT-IV	Organisational Culture & Climate; Organisational Conflicts Type, Causes and Management; Johari Window and Transactional Analysis; Emotional Intelligence; Knowledge Management; Power & Politics; Negotiation.
UNIT-V	Organisational Change: Forces for change; Resistance to change; Managing change; Stress; Concept, Sources of Stress, Consequences, Management of Stress; Burnout: Causes and Handling of Burnout; Leadership: Leadership Theories, Leadership Styles, Examples of Effective Organizational Leadership in India.

SUGGESTED READINGS:

1. Baron, RA. and Greenbeg. J, Behaviour in organization. Pearson.
2. Luthans, F., “Organizational Behaviour", New York, McGraw Hill.
3. Chandan, J., "Organizational Behaviour", Vikas Publishing House Pvt. Ltd.
4. Udai Pareek, "Organizational Behaviour", Oxford University Press.
5. Robbins, S.P., Judge, T. A and Sanghi, S., Organisational Behaviour Dehil : Pearson Education.
6. Khandwalla, P. N., Organization Design for excellence, new Delhi: Tata McGraw Hill Publishing Company Ltd.
7. Davis, K. Human Behariour at work, New Delhi. Tata McGraw Hill Publishing Company Ltd.

MADHYANCHAL PROFESSIONAL UNIVERSITY, Bhopal, (M.P.)
Scheme of Examination

BCA604 COMPUTER GRAPHICS AND MULTIMEDIA

Subject Code	Subject Name	Credits	Maximum marks Allotted						Duration of Exam.	
			Theory			Practical			Theory	Practical
			End Sem	Mid Sem	Assign.	Lab Work	Assignment /Quiz	End Sem		
BCA604	Computer Graphics And Multimedia	60	20	20	100	-	-	-	-	4

UNITS	SYLLABUS
UNIT- I	Introduction to raster scan displays, Pixels, frame buffer, Vector & Character generation, random scan systems, Graphics Primitives, Display devices, Display file structure, Scan Conversion techniques, line drawing: simple DDA, Bresenham's Algorithm, Circle Drawing Algorithms. Scan line polygon fill algorithm, boundary-fill and flood-fill algorithms
UNIT- II	2D transformation: Translation, Rotation, Scaling, Shearing, Reflection. Inverse Transformation, Homogenous coordinate system, Matrices Transformation, Composite Transformation. Windowing & Clipping: World Coordinate System, Screen Coordinate System, Viewing Transformation, Line Clipping, Cohen Sutherland, Midpoint Line clipping algorithms, Polygon Clipping: Sutherland –Hodgeman, Weiler-Atherton algorithms.
UNIT-III	3D transformations: translation, rotation, scaling. Parallel & Perspective Projection, Types of Parallel & Perspective Projection. Hidden Surface elimination: Depth comparison, Back face detection algorithm, Painters algorithm, Z-buffer algorithm. Curve generation, Bezier and B-spline methods.
UNIT-IV	Basic Illumination Model, Diffuse reflection, Specular reflection, Phong Shading Gourand shading, ray tracing, color models like RGB, YIQ, CMY, HSV.
UNIT-V	Multimedia System: An Introduction, Multimedia hardware, Multimedia System Architecture. Data & File Format standards. i.e RTF, TIFF, MIDI, JPEG, DIB, MPEG,Audio: digital audio, MIDI, processing sound, sampling, compression. Video: Avi, 3GP,MOV, MPEG , compression standards, compression through spatial and temporal redundancy. Multimedia Authoring .

Suggested Reading:

1. Donald Hearn and M.P. Becker "Computer Graphics" Pearson Pub.
2. Rogers, "Procedural Elements of Computer Graphics", Tata McGraw Hill
3. Folay Vandam, Feiner, Hughes "Computer Graphics Principle & Practice" , Pearson Pub.
4. Sinha and Udai , "Computer Graphics", Tata McGraw Hill
5. Parekh "Principles of Multimedia" Tata McGraw Hill
6. Prabhat k Andleigh, Kiran Thakral , "Multimedia System Design " PHI Pub.
7. Shuman "Multimedia in Action", Cengage Learning

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BCA 605 PROJECT WORK

Subject Code	Subject Name & Title	Maximum Marks Allotted								credit			Total Credits
		Theory				Practical							
		End Sem	Mid Sem	Quiz, Assignment	Total Marks	Lab Work	Assignment /Quiz/Term paper	End Sem	Total Marks	L	T	P	
BCA 605	PROJECT WORK	60	20	20	100					3	1	-	4