MAHARISHI UNIVERSITY OF MANAGEMENT AND TECHNOLOGY

MAHARISHI ROAD, MANGLA, BILASPUR (C.G)

BOARD OF STUDIES MEETING - MINUTES

DATE OF THE MEETINGS – 6th July 2023

For the Approval of Syllabus of Program

DCA, BCA, B.Sc. IT, DMA , PGDCA

Venue: Hall in the Administrative building,

Maharshi University of Management & Technology

Mangla, Bilaspur

MAHARISHI UNIVERSITY OF MANAGEMENT AND TECHNOLOGY

MAHARISHI ROAD, MANGLA, BILASPUR (C.G.)

Department of Computer Science & Information Technology

Agenda

Date: / /2023

Proposed agenda items for BoS Meeting scheduled to be held on..../.../.....

The proposed agenda items for BoS meetings are following, is to be discuss-

1.	On Updation of Syllabus of BCA 2021-22, 2022-23 and 2023-24.
2.	On Updation of Syllabus of PGDCA session 2023-24.
3.	On Syllabus of DCA session 2023-24.
4.	On Syllabus of B.Sc.(I.T.) session 2023-24.
5.	Each program has intake at 60 seats, multiples of unit/intake in particular course is subject to the approval at BoM.

H.O.D./Chairman

MAHARISHI UNIVERSITY OF MANAGEMENT AND TECHNOLOGY

MAHARISHI ROAD, MANGLA, BILASPUR (C.G.)

Department of Computer Science & information & Technology

Board of Studies Meeting

Date: 06/ 07 / 2023

Agenda

Welcome Address	:	**Ms. Rama Soni** **Assistant Professor** **Department of CSIT** **MUMT, Bilaspur (C.G)**
Introduction of the Members	:	**External Members and Internal Members**
Presentation of Syllabus and Curriculum	:	**Mr. Suman Laha** **Head, Dept. of Computer Science & IT** **MUMT, Bilaspur (C.G)**
Programme Name	:	**BCA, B.Sc. IT, DCA, DMA**
Full Course Name	:	**Bachelor of Computer Application,** **Bachelor of Science in Information Technology** **Diploma in Computer Application,** **Diploma in Multimedia & Animation,**
Vote of Thanks	:	**Ms. Kajal Sen** **Assistant Professor** **Department of CSIT** **MUMT, Bilaspur (C.G)**

MAHARISHI UNIVERSITY OF MANAGEMENT AND TECHNOLOGY

MAHARISHI ROAD, MANGLA, BILASPUR (C.G.)

Date: 06/ 07 / 2023

The Board of studies meeting of **Department of Computer Science & information & Technology** held on ...06.../...July.../..2023... at conference Hall of Maharishi University of Management and Technology, Maharishi Road, Mangla, Bilaspur (C.G.)

Members Presented:

Mr. Suman Laha - **Chairman**
Head, Dept. of Computer Science & IT
MUMT, Bilaspur (C.G)

Dr Sumati Pathak - **External Member**
Assistant Professor, Computer Science
Govt. Bilasa Girls PG College,
Bilaspur, 495 001, C.G.

Ms Monika Yadav - **External Member**
Assistant Professor,
Chouksey College of Science & Commerce,
B Lalkhadan, Masturi Road
Bilaspur, 495 004, C.G.

Dr. Shilpa Sarkar - Internal Member
Assistant Professor
MUMT, Bilaspur (C.G)

Ms. Rama Soni - Internal Member
Assistant Professor
Department of Computer Science & IT
MUMT, Bilaspur (C.G)

Special Invitees

Dr. Yogendra Sharma
Assistant Professor
MUMT, Bilaspur (C.G)

MAHARISHI UNIVERSITY OF MANAGEMENT AND TECHNOLOGY

MAHARISHI ROAD, MANGLA, BILASPUR (C.G.)

Minutes of the Meeting

1.	**On Updation of Syllabus of BCA session 2021-22,2022-23 and 2023-24.** **Resolution:** Discussed
2.	**On Updation of Syllabus of PGDCA session 2023-24.** **Resolution:** Discussed
3.	**On Syllabus of DCA session 2023-24.** **Resolution:** Discussed
4.	**On Syllabus of DMA session 2023-24.** **Resolution:** Discussed
5.	**On Syllabus of BSc.(I.T.) session 2023-24.** **Resolution:** Discussed
6.	To be discuss on the point" Each program has intake at 60 seats, multiples of unit/intake in particular course is subject to the approval at BoM". **Resolution**: Confirmed Each program has intake at 60 seats, multiples of unit/intake in particular course is subject to the approval at BoM.

MAHARISHI UNIVERSITY OF MANAGEMENT AND TECHNOLOGY
MAHARISHI ROAD, MANGLA, BILASPUR

BOARD OF STUDIES – Department of Computer Science & information & Technology

Minutes of the Meeting

Date: 06/ 07 / 2023

The Board of studies meeting of **Department of Computer Science & information & Technology** held on ...06.../...July.../..2023... at conference Hall of Maharishi University of Management And Technology, Maharishi Road, Mangla, Bilaspur (C.G.)

Members Presented:

Mr. Suman Laha - **Chairman**
Head, Department of Computer Science & IT (I/c)
MUMT, Bilaspur (C.G)

Dr Sumati Pathak - **External Member**
Assistant Professor, Computer Science
Govt. Bilasa Girls PG College,
Bilaspur, 495 001, C.G.

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Dr. Shilpa Sarkar - Internal Member
Assistant Professor
MUMT, Bilaspur (C.G)

Ms. Rama Soni - Internal Member
Assistant Professor
Department of Computer Science & IT
MUMT, Bilaspur (C.G)

Special Invitees

Dr. Yogendra Sharma
Assistant Professor
MUMT, Bilaspur (C.G)

The following points have been discussed and recommended for academic council approval.

1. The BCA 2021-22 (update), 2022-23 (update) & 2023-24 Curriculum and syllabus was presented by Mr. Suman Laha and recommended for academic council for approval.

2. The B. Sc. IT (2023-24) Curriculum and syllabus was presented by Mr. Suman Laha and recommended for academic council for approval.

3. The DCA (2023-24) Curriculum and syllabus was presented by Mr. Suman Laha and recommended for academic council for approval.

4. The DMA (2023-24) Curriculum and syllabus was presented by Mr. Suman Laha and recommended for academic council for approval.

5. Permission for seat increment if number of candidates increases.

Mr. Suman Laha

Dr Sumati Pathak

Ms Monika Yadav

Dr. Shilpa Sarkar

Ms. Rama Soni

Special Invitees

Dr. Yogendra Sharma

The members had a valuable discussion and interaction among themselves. Based on the suggestions given by the members, BOS resolved to recommend the following to the Academic Council for further approval.

1. On Updation of Syllabus of BCA session 2021-22,2022-23,2023-24.
2. On Updation of Syllabus of PGDCA session 2023-24.
3. On Syllabus of DCA session 2023-24.
4. On Syllabus of DCA session 2023-24.
5. On Syllabus of B.Sc.(I.T.) session 2023-24.
6. Each program has intake at 60 seats, multiples of unit/intake in particular course is subject to the approval at BoM.

Maharishi University of Management and Technology

Mangla, Bilaspur

FACULTY OF

COMPUTER SCIENCE & INFORMATION TECHNOLOGY
(CSIT)

SYLLABUS

2023-24

Bachelor of Computer Application
(BCA)

Introduction of the Programme

Name of the Programme: - BCA

The broad **objectives** of the programme are:

- To train students in the latest trends of Application Development, Programming Languages, Database Management & Networking.
- To enhance their career opportunities in the software development and maintenance sector nationwide.
- To expose the students to Open-Source Technologies so that they become familiar with it and can seek appropriate opportunity in trade and industry.
- To give hands on experience to students while developing real life IT application as part of the study.
- To augment the knowledge base of the students, through various activities which will be complementary to the theoretical studies.

Aim of the Programme: BCA programme has been designed to prepare 10+2 students and who are interested in taking software/IT as a career or further study in MCA/ Master's program for attaining the following specific **outcomes**:

- Anability to apply knowledge of computer applications and office automation in practice.
- An ability to enhance not only comprehensive understanding of the theory but its application too in diverse field.
- The ability to work in an environment where a range of computer applications or techniques are being applied in form of Networking, Software Engineering, Web development, Database management etc.
- An ability to design a computing system to meet desired needs within realistic constraints such as safety, security, and applicability n multidisciplinary teams with positive attitude.
- Anability to communicate effectively in relevant fields.
- In order to enhance programming skills of the young IT professionals, the program has introduced the concept of project development in each language/technology learnt during semester.

Seats: 60 (sixty)

Eligibility: 10+2 from Recognized Board

Medium of Instruction: English

Scheme of Examinations:
For theory Papers:
Internal Assessment/Assignment: 30 marks
External Evaluation: 70 marks. (Term End Exams)
~~**For practical Papers: 100**~~

Practical / Paper

SYLLABUS
BCA
2023-2024

SEMESTER-I			
S no.	Course code	Subject	Marks
1.	BCA-101	Fundamental of Programming with C	100
2.	BCA-102	Computer Fundamentals	100
3.	BCA-103	Principles of Management	100
4.	BCA-104	Maharishi Vedic Science-I	100
5.	BCA-105	PC Software	100
6.	BCA-106	English Foundation Course-I	100
7.	BCA-107	Lab-I, Programming with C	100
8.	BCA-108	Lab-II, PC Software	100
		TOTAL Marks	**800**

SEMESTER-II			
S no.	Course code	Subject	Marks
1.	BCA-201	Data Structure	100
2.	BCA-202	Mathematics	100
3.	BCA-203	Business Communication	100
4.	BCA-204	Maharishi Vedic science-II	100
5.	BCA-205	HTML & CSS	100
6.	BCA-206	English Foundation Course-II	100
7.	BCA-207	Lab-I, Data Structure	100
8.	BCA-208	Lab-II, HTML& CSS	100
		TOTAL Marks	**800**

SEMESTER-III			
S no.	Course code	Subject	Marks
1.	BCA-301	Object Oriented Programming with C++	100
2.	BCA-302	Operating System	100
3.	BCA-303	Digital Electronics	100
4.	BCA-304	List (anyone)	100
5.	BCA-305	Environmental Science-I	100
6.	BCA-306	JAVA Script + tutorial	100
7.	BCA-307	Foundation course in Hindi-I	100
8.	BCA-308	Lab-I ,Object Oriented Programming with C++	100
		TOTAL Marks	**800**

SEMESTER – IV			
S no.	Course code	subject	Mark
1.	BCA-401	JAVA Programming	100
2.	BCA-402	Computer Network	100
3.	BCA-403	Discrete Mathematics	100
4.	BCA-404	Environmental Science-II	100
5.	BCA-405	Foundation course in Hindi-II	100
6.	BCA-406	Lab-I, JAVA Programming	100
		TOTAL Marks	**600**

SEMESTER-V			
S no.	Course code	Subject	Marks
1.	BCA-501	VB.NET	100
2.	BCA-502	RDBMS (Relational database management system)	100
3.	BCA-503	Introduction to AI and expert system	100
4.	BCA-504	Software Engineering	100
5.	BCA-505	Lab-I, VB.NET	100
6.	BCA-506	Lab-II, RDBMS (Relational database management system)	100
7	BCA-507	INTERNSHIP (30 DAYS)	100
		TOTAL Marks	**700**

SEMESTER-VI			
S no.	Course code	subject	Marks
1.	BCA-601	Web Technology	100
2.	BCA-602	Python Programming	100
3.	BCA-603	Numerical Methods	100
4.	BCA-604	Minor Project	100
5.	BCA-605	Lab-I, Web Technology	100
6	BCA-606	Lab-II, Python Programming	100
		TOTAL Marks	**600**
		TOTAL TREE YEAR MARKS	**4300**

Fundamental of Programming with C

Code: **BCA-101**

Discipline Specific Course (DSC-1)

Objective: The objectives of this course are to make the student understand basics of programming language, programming style, concepts of Loops, reading a set of Data, stepwise refinement, Functions, Control structure, Arrays. After completion of this course the student is expected to analyze the /real-life problem and write a program in 'C' language to solve the problem. The main emphasis of the course will be on problem solving aspect i.e., developing proper algorithms.

Course Outcomes:

Students will be able to understand and the use of

- the procedural language with fundamental concepts.
- control structures and decisional statements in programs
- user defined data types in programs
- functions &dynamic memory management techniques using pointers
- reading &writing data files and handling I/O in programs.

Unit-I: Programming Concepts

Understanding of a computer system, Concept of Software Language, C compiler, C Language Character set. Tokens, Constant, Keywords and Identifiers, Variables Data Types Declaration and Assignment of Variables, Type Casting, Defining Symbolic Constants, Operators and Expressions: Types of Operators- Arithmetic, Relational and Logical Operators, Assignment and Conditional Operators Increment & Decrement Operators, Bitwise and Special Operators, Arithmetic Expression and its evaluation, Hierarchy of Arithmetic Operations- Evaluations, Precedence and Associatively- Mathematical Functions, Library functions: Getchar (), putchar (), printf (), scanf (), puts (), gets ().

Unit-II: Branch and Control Handling

Flow of control - if, if-else, while, do-while, for loop, Nested control structures - Switch, break and continue go to statements, Comma operator, Ternary ? : Operator, Functions -Definition - prototypes - Passing arguments - Recursion- Storage Classes - Automatic, External, Static, Register Variables, Storage Classes and Character Strings: Automatic, Register, Static, External (Local and Global), Scope rules.

Unit-III: Array, Structure& Union

Arrays, String, Structures and Unions in C

Arrays - Defining and Processing, Single, Two Dimensional and Multi-dimensional arrays. Passing arrays to functions, Arrays and Strings, Handling of Character Set: Declaration & Initialization of String Variables, Structures and Unions: Definitions, Initialization and Assigning Values to Members, Arrays of Structures and Arrays Within Structures, Unions- Size of Structures.

Unit-IV: Functions and Pointers

User Defined Functions: Form of "C" functions- Calling a Function - Nesting of Functions - Recursion - Functions with Arrays, Pointers: Declaration and Initialisation of Pointers, Pointer Expression, Operation on Pointers, Pointer and Arrays, Arrays of Pointers, Pointer and Character Strings, Pointers and Functions, Pointers and Structures, Pointer on Pointers.

Unit-V: File Handling in C

File Input/Output: Introduction, Defining, Opening and closing a file, Study of file I/O Operations: fopen(), fclose(), fputs(), fgets(), fread (), fwrite() Input / Output Operations on a file, Random access to file, Command line arguments, Time, Date and Localization Functions, Dynamic Allocation Functions.

Reference Books:

1. LET US C, Yashwant Kanetkar, BPB PUBLICATIONS
2. The Complete Reference C, Herbert Schildt, Tata McGraw HILL
3. PROGRAMMING IN ANSI C - by E. Balgurusamy - Tata McGraw HILL
4. PROGRAMMINGWITH C. Byron S. Gottfried, Tata McGraw HILL
5. The "C" Programming Language, Briain W. Kenigham& Dennis Ritchie, Pearson

Computer Fundamentals

Code: **BCA-102**

Minor (MIN-1)

Objective: The objectives of this course are to make the student understand basics of computer fundamental. , concepts of basic input/output device reading a parts of computer , storage devices After completion of this course the student is expected to analyze the working of computer system The main emphasis of the course will be on familiar with the computer system .

Course Outcomes:

Students will be able to

1. Aware of parts of computer
2. Understand the input and output devices.
3. Gain the basic ideas of storage devices, computer Networks and Operating System.

UNIT - I

Introduction to Computer and information technology: Brief history of development of computer and generations of computer. Computer system characteristics, Advantages and disadvantages of a computer, Block diagram of computer. Types of computer - Analog, Hybrid, digital, Micro, Mini, Mainframe, Super computer, Personal Computer, Types of PCs desktop, Laptop, Notebook, Palmtop, etc., Number systems (Binary, Octal, Decimal, Hexadecimal), Computer codes - ASCII, EBCDIC.

UNIT - II

Input devices : Keyboard, Mouse, Monitor, Trackball, Joystick, Electronic Pen, Touch Screen, Image Scanner, MICR, OCR, OMR, Bar Code reader, Digitizer, Electronic Card Reader, Voice Recognition, Vision Input System,
Output Devices: Monitors, Printers, Plotters, Screen Image Projector, voice response system.

UNIT - III

Main Memory (RAM, ROM, EPROM, Cache memory).
Secondary storage devices (Sequential and Direct Access Devices), Magnetic tapes, Magnetic Disk, Optical Disk, CD-ROM, DVD

UNIT-IV

Types of Software (System software, Application Software, Firmware), Computer Language (Machine, Assembly, High level), Assemblers, Compliers, and Interpreter. Types of assemblers- Single pass and Double pass.

UNIT-V

Computer Network and Security: Types of network (LAN, MAN, WAN etc.), Network Models, Protocols and Architecture, Topology, OSI reference model, TCP/IP reference model. Virus definition, type, effects, symptoms, Anti-virus program, virus prevention.

Reference Books:

1. Fundamentals of Computers by Reema Thareja, Oxford University Press
2. Computer Fundamentals,6 th edition by Pradeep K.Sinha, Priti Sinha, BPB Publications
3. Computers Today by A.Ravichandran, Khanna Book Publishing.

Maharishi Vedic Science-I

Code: **BCA-104**

Ability Enhancement course (AEC-1)

Objective:

- To specifically groom a generation of experts who can perform independent and application-oriented study of Vedic concepts for modern times.
- To explore the strength and scope of Vedic Education study through interdisciplinary learning

Course Outcomes:

The subject entitled 'Maharishi Vedic Science' has the following CO:

CO1: The study of Maharishi Vedic Science develops the full potential of the knower and lays the foundation for complete knowledge of any discipline, while it fosters evolution to higher states of consciousness and progressive and fulfilling action and accomplishment in life.

CO2: Maharishi Vedic Science is the systematic study, experience, and development of the full range of life, both individual and cosmic, and its applications to create a better world.

CO3: Its principles and technologies are based on the direct experience and understanding of the most vital element in life – the unbounded field of consciousness that is the inner intelligence at the basis of every individual and the entire universe.

Unit-1: Guru Worship and importance of Guru, meditation, mind, intellect, mind, ego, thought, Maharishi Transcendental Meditation, benefits of Transcendental Meditation, Siddhi program, yogic flight etc.

Unit- 2: Vedas and Vedic literature, form of Vedic literature, description of forty regions like Rigveda, consciousness and levels of consciousness, states of consciousness.

Unit- 3: Maharishi Yoga, definition and characteristics of Ashtanga Yoga, types of Yogasanas, usefulness of Yogasanas in human life, benefits from Yogasanas.

Unit-4: Maharishi Astrology, Origin of Astrology, Introduction to Triskandha Astrology, (Siddhanta, Sanhita and Hora), Definition and Introduction of Panchang (Tithi, Vaar, Nakshatra, Yoga and Karana), Human Life and Astrology, External and Internal Personality, Planets and Introduction to expressions etc.

Unit-5: Introduction of Maharishi Sthapatyaveda, purpose of the book, origin of Vastu Purush, tradition of Vastu Shastra, natural development from Vastu, progress from Vastu, symptoms of auspicious Vastu, inauspicious Vastu symptoms, usefulness of home, when to do Vastu Puja etc.

Reference Books:

1. Maharishi Sandesh Part I and II.
2. Chetna Vigyan by His Holiness Maharishi Mahesh Yogi Ji.
3. Dhyan Shailey by Brahmachari Dr.Girish Chandra Verma Ji

PC Software

Code: BCA-105

Skill Enhancement Course (SEC-1)

Objective: The objectives of this course are to make the student understand basics software, do work with MS word, power point, excel and to understand working of windows. After completion of this course the student is expected to do work easily with the help of office automation tools.

Course Outcomes:

After completion of course students are expected to be able to:

CO-1. Understand, analyse windows.

CO-2. Understand the MS Word, Excel, Power Point & Access.

CO-3. Able to work on MS Word, Excel, Power Point & Access

Unit-I: Windows

Installing WINDOWS, Basic Elements of WINDOWS, My Computer, Sharing Devices. Windows Explorer (Files and Folder Operations), Accessories like Accessibility, Entertainment, Communication, System Tools, Paint Brush, Calculator, Calendar, Clock, Note Pad, Word Pad Etc., Control Panel, Changing Color and Theme, Changing the Desktop Background, Screen Saver, Adjusting Display Settings, Adjusting Sound, Adjusting the Mouse, Changing the Date and Time, Changing Language and Region Options, Customizing Folder View Options, Connecting to the Internet: Dial-Up Connections, Broadband Connections, Installing New Hardware & Printer, Installing & Removing Software, Power Settings.

Unit- II: Introduction to MS Word

Menus, Shortcuts, Document types; Working with Documents: Opening Files - New & Existing, Saving Files, Formatting page and Setting Margins, Converting files to different formats- Importing, Exporting, Sending files to others, Editing text documents- Inserting, Deleting, Cut, Copy, paste, Undo, Redo, Find, Search, Replace, Using Tool bars, Ruler- Using Icons, Using help; Formatting Documents: Setting Font Styles, Setting Paragraph style, Setting Page Style, Setting Document Styles, Creating Tables, Drawing, Tools, Printing Documents, Mail Merge.

Unit-III: Introduction to MS Power Point

Creating new Presentation, Different presentation templates, Setting backgrounds, Selecting presentation layouts, Formatting a presentation-Adding style, Color, gradient fills, Arranging objects, Adding Header & Footer, Slide Background, Slide layout, Inserting pictures, movies, tables etc. into the presentation, Drawing Pictures using Draw, Setting Animation & transition effect, Adding audio and video, Printing Handouts. Generating standalone presentation viewer.

Unit-IV: Introduction to MS Excel

Introduction: Spreadsheet & its Applications, Opening spreadsheet, Menus & Toolbars & icons, Shortcuts, Working with Spreadsheets-Opening, Saving Files, Setting Margins, Converting files to different formats- Importing, Exporting and Sending files to others. Entering and Editing Data, Computing data: Formula. Formatting Spreadsheets- Cell, row, column & Sheet, Alignment, Font, Border & shading. Highlighting values, Hiding/Locking Cells: Worksheet- Sheet Name, Row & Column Headers, Row Height, Column Width and Worksheet Sheet Formatting & style background, Graphs, Printing worksheet.

Unit-V: Introduction MS Access

Database concepts Tables, Queries, Forms, Reports, Opening & Saving database files: Creating Tables, Table Design, Indexing, Entering data, Importing data, Creating Queries: SQL statements, Setting relationship, Creating Forms: GUI, Form, Creating & printing reports.

Reference Books:

1. Windows 8.1 Plain & Simple by Joli Ballew, Nancy Muir, PHI
2. Learning Microsoft Office 2013 by Ramesh Bangia, Khanna Book Publishing.
3. Comdex Computer Course Kit (windows 7 with office 2010), Gupta Vikas. Dreamtech Publication
4. Mastering MS Office 2000, Professional Edition by Courier, BPB Publication

English Foundation Course-I

Code: **BCA-106**

Common Values Added Course (VAC-1)

Objective: To be able to Speak & write English fluently and accurately. To read English newspapers regularly. To develop the ability to understand the Native writers. To make narratives and to make notes. To communicate with others in English.

Course Outcomes:

On completion of the course the student should be able to:

CO-1. Develop the student's ability to use English language accurately and effectively by enhancing their communication skills

CO-2. Mastering the art of a professional business presentation

CO-3. Distinguish different communication process and its practical application

CO-4. More effective written communication

Unit-1:

1. Where the Mind is without Fear – Rabindranath Tagore
2. The Ideal Indian Art – K. Bharatha Iyer
3. The Wonder that was India – A.L. Basham
4. The Heritage of Indian Art – Kapila Vatsyayan
5. Life in Vedic Literature – Krishna Chaitanya
6. Preface to the Mahabharata – C. Rajagopalachari
7. Freedom Movement in India – Sudhir Chandra

Unit - 2:

Comprehension: Unseen Passage

Unit - 3:

(a) Composition: Paragraph Writing.

(b) Letter Writing: With internal choice (One Formal & one Informal)

Unit-4:

Language Skills: Vocabulary A. Synonyms, Antonyms B. Prefix and Suffix C. Match the Column D. Make Sentence. etc.

Unit-5:

Grammar and Language Skills Based on Text Book: The Tense forms, Determiners and Countable/ Uncountable Nouns. Verbs, Articles, Conditional Sentences, Modals.

Reference Books:

1. Dr. Pankak Ku. Singh & Dr Aswini Joshi, 'English Language & Indian Culture'- Thakur Publication
2. Essential English Grammar- Raymond Murphy, Cambrige University Press
3. Practical English Grammar Exercises 1- A.J. Thomson & A.V. Martinet, Oxford India.
4. Bala subramanyam: Business Communication; Vikas Publishing House, Delhi. (Englishmedium)

LAB: Programming With C

Code: BCA-107

Discipline Specific Course (DSC) + LAB-I

Following Programs are suggested for practice along with other programs given time to time:

1) If a five-digit number is input through the keyboard, write a program to reverse the number, print the sum and product of digit.
2) WAP to interchange the content of two variable (swapping).
3) WAP to convert and print the distance in meter, feet, inches and centimeter if distance is input through the keyboard.
4) Write a program to convert received temperature into Celsius or Fahrenheit (as selected by the user) from the given expression: C/5 = (F-32)/9
5) WAP a to check whether a year entered through keyboard is a leap year or not. (Every year that is exactly divisible by four is a leap year, except for years that are exactly divisible by 100, but these centurial years are leap years, if they are exactly divisible by 400)
6) WAP to check whether a number is even or odd.
7) Write a program and find whether a number is Armstrong number or not. A number is thought of as an Armstrong number if the sum of its own digits raised to the power number of digits gives the number itself. For example, 153, 370, 371, 407 are three-digit Armstrong numbers and, 1634, 8208, 9474 are four-digit Armstrong numbers and there are many more.
8) WAP to determine whether entered character is a capital or small or digit or special symbol.
9) WAP to find the factorial value of any number entered through keyboard.
10) WAP to compute the sum of the first n terms of the following series
    S = 1+1/2+1/3+1/4+.....
11) WAP to compute the sum of the first n terms of the following series
    S =1-2+3-4+5.....
12) WAP to print all prime numbers from 1 to 100.
13) WAP to print a triangle of stars as follows (take number of lines from user for example if user gives 5):
    *
    ***
    *****
    ****
14) Write a menu driven program using switch which has following option:
    I) Factorial of number
    II) Prime or Not
    III) Odd or Even0
15) Write a function that checks whether a given string is Palindrome or not. Use this function to find whether the string entered by user is Palindrome or not.
16) Write a function to implement question number one (1) to seven (7) in above list.
17) WAP to perform following operations on strings:
    a) Concatenate two strings.
    b) Compare two strings
    c) Calculate length of the string
    d) Convert all lowercase characters to uppercase
    e) Convert all uppercase characters to lowercase
    f) Calculate number of vowels
    g) Reverse the string
18) WAP to print a triangle of stars as follows (take number of lines from user for example if user gives 5):
    *****
    ****
    **
    *
19) WAP to receive an integer then convert & display the same into binary.
20) WAP to receive an integer then convert the display same into hexadecimal.
21) Define a function (int print_max_min(int[], max_min) to find the biggest or smallest numbers from an array of numbers. Use the function to find max and min of 10 numbers in an array.
22) Define a function (double average(intt[])) to find the average from an array of numbers. Use the function to find average of 10 numbers in an array.
23) Define a function sort(int[]), ascending/descending) which sorts an array of numbers and then use the function to sort an array and display sorted numbers.
24) WAP to read a file and display the file content into the console.
25) WAP to read a line from the console and append the line into a file.
26) WAP to read a word from the console and find the existence of the word in a file content.

LAB: PC Software

Code: **BCA-108**

SEC-1 + LAB – II

Practical Exam on MS Office & Software

Data Structure

Code: **BCA-201**

Discipline Specific Course (DSC-2)

Objective: The objectives of this course are to make the student understand basics of data structure, programming style, concepts of algorithms, flow chart, Functions, Control structure, Arrays, stack, queue. After completion of this course the student is expected to analyze the real-life problem, to solve the problem. The main emphasis of the course will be on problem solving aspect i.e., developing proper algorithms.

Course Outcomes:

Upon successful completion of the course, a student will be able to:

CO-1. To access how the choices of data structure & algorithm methods impact the performance of program.

CO-2. To Solve problems based upon different data structure & also write programs.

CO-3. Choose an appropriate data structure for a particular problem

Unit-I: Introduction and Array

Data Types, Data Structure and its Classification, Arrays: Array concept (one dimension, two dimension), Operations for one dimension array (insertion, deletion, traversal), Examples.

Unit-II: Linked Lists

Concept of a linked list, Circular & Doubly linked list, Operations on linked lists, List Manipulation with Pointers, Insertion & Deletion of elements, Applications of linked lists.

Unit-III: Stacks-Queues and Binary Tree

Definitions and Structure, Representation using Array & Linked List, Application of Stack and Queues, Postfix and Prefix Conversion, Evolution of Arithmetic Expressions, Binary Trees: Definition, Memory Representation, Trees traversal algorithms (recursive and non-recursive), threaded trees, BFS, DFS.

Unit-IV: Searching and Sorting

Linear and Binary Search Algorithms, Complexity, Binary Search Trees (construction, insertion, deletion & search), Sorting Algorithms: Bubble Sort, Insertion Sort, Selection Sort, Tree sort, Heap Sort, Quick Sort, Merge Sort & Radix sort, External Sorting.

Unit-V: Analysis of Algorithm

Time and Space Complexity of Algorithms, Average Case & Worst Case Analysis, Asymptotic Notation, Big O notations, Analysis of sorting algorithms -Selection sort, Bubble sort, Insertion sort, Heap sort, Quick sort and Analysis of searching algorithms -Linear Search & Binary Search.

Reference Books:

1. Data Structures using C, A. M. Tenenbaum, Langsam, Moshe J. Augentem, PHI Pub.
2. Data Structures using C by A. K. Sharma, Pearson Education
3. Data Structures and Algorithms, A.V. Aho, J.E Hopcroft and T.D. Ullman, Addison- Wesley, Low Priced Edition.
4. Fundamentals of Data structures, Ellis Horowitz & Sartaj Sahni, AW Pub.
5. Fundamentals of computer algorithms, Horowitz Sahni and Rajasekaran, Pearson Edu.
6. Data Structures and Program Design in C, Robert Kruse, PHI of Data Structures, Jr. Symour Lipschetz, Schaum's outline by TMH.

MATHEMATICS

Code: **BCA-202**

Minor (MIN-2)

Objective: Students will be able to apply problem-solving and logical skills. Have a deeper understanding of mathematical theory. Be able to communicate mathematical/logical ideas in writing.

Course Outcomes:

Upon successful completion of the course, a student will be able to:

CO 1: understand the mathematical/ logical ideas

CO 2: put mathematical skills/ ideas into solving real life problems

UNIT-I: DETERMINANTS:

Definition, Minors, Cofactors, Properties of Determinants MATRICES: Definition, Types of Matrices, Addition, Subtraction, Scalar Multiplication and Multiplication of Matrices, Adjoint, Inverse, Cramers Rule, Rank of Matrix Dependence of Vectors, Eigen Vectors of a Matrix, Caley-Hamilton Theorem (without proof).

UNIT-II: LIMITS & CONTINUITY:

Limit at a Point, Properties of Limit, Computation of Limits of Various Types of Functions, Continuity at a Point, Continuity Over an Interval, Intermediate Value Theorem, Type of Discontinuities

UNIT-III: DIFFERENTIATION:

Derivative, Derivatives of Sum, Differences, Product & Quotients, Chain Rule, Derivatives of Composite Functions, Logarithmic Differentiation, Rolle's Theorem, Mean Value Theorem, Expansion of Functions (Maclaurin's & Taylor's), Indeterminate Forms, L' Hospitals Rule, Maxima & Minima, Curve Tracing, Successive Differentiation & Liebnitz Theorem.

UNIT-IV: INTEGRATION:

Integral as Limit of Sum, Fundamental Theorem of Calculus (without proof.), Indefinite Integrals, Methods of Integration Substitution, By Parts, Partial Fractions, Reduction Formulae for Trigonometric Functions, Gamma and Beta Functions(definition).

UNIT-V: VECTOR ALGEBRA:

Definition of a vector in 2 and 3 Dimensions; Double and Triple Scalar and Vector Product and physical interpretation of area and volume.

Reference Books:

1. B.S. Grewal, "Elementary Engineering Mathematics", 34th Ed., 1998.
2. Shanti Narayan, "Integral Calculus", S. Chand & Company, 1999
3. H.K. Dass, "Advanced Engineering Mathematics", S. Chand & Comp
4. J.P. Chauhan "BCA Mathematics Volume -1", Krishna Publications.

Maharishi Vedic science-II

Code: **BCA-204**

Ability Enhancement Course (AEC-2)

Objective:

- To specifically groom a generation of experts who can perform independent and application-oriented study of Vedic concepts for modern times.
- To explore the strength and scope of Vedic Education study through interdisciplinary learning

Course Outcomes:

The subject entitled,, Maharishi Vedic Science" has the following CO:

CO1: The study of Maharishi Vedic Science develops the full potential of the knower and lays the foundation for complete knowledge of any discipline, while it fosters evolution to higher states of consciousness and progressive and fulfilling action and accomplishment in life.

CO2: Maharishi Vedic Science is the systematic study, experience, and development of the full range of life, both individual and cosmic, and its applications to create a better world.

CO3: Its principles and technologies are based on the direct experience and understanding of the most vital element in life – the unbounded field of consciousness that is the inner intelligence at the basis of every individual and the entire universe.

Unit-1:

Maharishi General Introduction to Ayurveda, Definition of Ayurveda, Tradition of Ayurveda, Departments of Ayurveda Samhita,Ayurveda and Health, Ashtanga Ayurveda, Purpose of Ayurveda, Tridoshain Ayurveda.

Unit-2:

Routine, getting up in the morning, defecation, teething, exercise, morning walk, bath, worship, breakfast, food, earning livelihood, evening meal,sleeping etc.

Unit-3:

Introduction to Maharishi Complete Security Policy, Principles of Security Policy, Opinions of Scholars on Maharishi Complete Security Policy, Invincible Security, Defense and Mahasutra, Meaning of Invincibility, Qualities of Invincibility, Basis of Defense of Invincibility.

Unit-4:

Meissner Effect, Universal Effect of Maharishi Ji, Principle of Power in Purity, Components of Invincibility, Forty Areas of Complete Knowledge.

Unit-5:

Verification of Physics from Veda Science, Verification of Veda Science on the basis of Physics, Chemistry, Mathematics and Physiology, Latest research and development till date, Comparison of Veda Science with Physics etc.

Reference Books:

- Maharishi Sandesh Part I and II.
- Chetna Vigyan by His Holiness Maharishi Mahesh Yogi Ji.
- Dhyan Shailey by Brahmachari Dr. Girish Chandra Verma Ji.

HTML & CSS

Code: BCA-205

Skill Enhancement Course (SEC-2)

Objective: The objectives of this course are to make the student understand basics of html & css, programming style, concepts of html, style sheet, coloring, designing. After completion of this course the student is expected to design web page. The main emphasis of the course will be designing web page, creating the web page on i.e., web developing

Course Outcomes:
Upon successful completion of the course, a student will be able:
CO 1. To make acquainted with evolution and history of Internet.
CO 2. To make aware of history and function of web browser.
CO 3. Understanding concept of hypertext, different version of HTML and building HTML documents.
CO 4: To put style for webpage.

UNIT - I
Introduction to Internet:
History of internet, what is the internet, advantages of internet, Minimum requirements for internet, ISP, Internet protocols, Internet Tools (FTP, Gopher, E-mail, Telnet, Newsgroup, www etc.), Bridges, Hub, Routers, Repeaters and Gateways, Modem, Types of connections - Dial up, leased ISDN, Broadband, WWW, Browsers, Search Engines, URL

UNIT - II
Introduction to HTML:
Origin, evolution and importance of HTML, elements of HTML, Head, Title Body : background, bgcolor, link, vlink, alink, bgproperties, margin.
Anchor: href. Name, title.
Block formatting elements: font, heading, blockquote, line break, centre, marquee, list elements.

UNIT - III:
Forms in HTML:
Input elements: Textbox, password box, check box, radio button, combo box, select elements, option element.
Information types elements: code, emphasis, keyboard, strong, boldface, italics, strike and subscript.

UNIT-IV
Advanced HTML:
Table elements: border, cell spacing, width, height, align, bgcolor, border color, TR element, TD element, TH element, Col Element.
Frames: frame and frameset elements.

UNIT -V
CSS:
Benefits of CSS, CSS Versions History, CSS Syntax, External Style Sheet using <link>, Multiple Style Sheets, Value Lengths and Percentages, CSS Syntax, single Style Sheets, Multiple Style Sheets, ID Selectors, Class Selectors, Grouping Selectors, Universal Selector, Descendant / Child Selectors, Attribute Selectors, CSS – Pseudo Classes,

Reference Books:

1. Internet for Everyone by Alexis Leon and M.Leon, Vikas Publishing.
2. Internet for Dummies, Pustak Mahal, New Delhi.
3. HTML For Beginners the Easy Way available at html.com.
4. W3Schools for study & hands on training.

English Foundation Course-II

Code: BCA-206

Common Values Added Course (VAC-2)

Objective: To be able to Speak & write English fluently and accurately. To read English newspapers regularly. To develop the ability to understand the Native writers. To make narratives and to make notes. To communicate with others in English.

Course Outcomes:
The subject entitled "English-Foundation Course (Part-II)" has the following CO:
CO1: The courses shall enable the students to effectively communicate in both orally and verbally in English and improve their vocabulary.
CO2: Students will heighten their awareness of correct usage of English grammar in writing and speaking.
CO3: Students will improve their speaking ability in English both in terms of fluency and comprehensibility.
CO4: Students will enlarge their vocabulary by keeping a vocabulary journal
CO5: Students will strengthen their ability to write academic papers, essays and summaries using the process approach.

Unit-1:
1. Dandi Salt March–Louis Fischer
2. Aspects of Indian Constitution-M.C Chagla
3. Individual Freedom- Jawaharlal Nehru
4. Fundamental Duties
5. Delhiin1857-MirzaGhalib
6. Raja's Diamond-R.L Stevenson
7. Tree-Tina Morris

Unit-2:
PRECISWRITING

Unit-3:
REPORTWRITING

Unit-4:
NOTICE, AGENDA AND MINUTES

Unit-5:
A. GRAMMAR
Articles, Prepositions, Gerund, Self-awareness forms and Possessives, Narration (Direct & Indirect), Voice (Active &Passive)
B. VOCABULARY (from the text)
Synonyms, Antonyms, Match the column, combined the sentences

Reference Books:
1. ENGLISH LANGUAGE AND INDIAN CULTURE- MADHYAPRADESH HINDI GRANTH ACADEMY

Lab: Data Structure

Code: **BCA-207**

DSC-2 + LAB-I

Following Programs are suggested for practice along with other programs given time to time:

1. Implement one array of fifteen numbers taken from the user and from the array calculate and display the sum, average, largest number, and smallest number.
2. Implement stack and queue operations using array.
3. A six faced die is rolled 600 times. Find the frequency of the occurrence of each face and display.
4. Implement bubble sort to arrange the elements of an array
5. Implement quick sort to arrange the elements of an array
6. Implement insertion sort to arrange the elements of an array
7. Implement merge sort to arrange the elements of an array
8. Implement sequential search to find an element in an array
9. Implement binary search to find an element in an array
10. Implement single linked list

LAB: HTML & CSS

Code: **BCA-208**

SEC-2 + LAB - II

Practical Exam on HTML & CSS based on the theory syllabus.

List of Subjects offered by the other Departments of MUMT
(Interdisciplinary Courses)

1) Principles of Management [BCA-103 (IDC-1)]
2) Business Communication [BCA-203 (IDC-2)]

Principles of Management

Code: **BCA-103**

Inter Disciplinary Course (IDC-1)

Objective: The objectives of this course are to make the student understand the management perspective of an organization and its elements, nature, and divisions. This course will provide the concept of the professional view, functional activities, and workflow mechanism of their future working place also helps to acquire leadership skills.

Course Outcomes:

The subject has the following CO:

CO1: Students will be aware of the necessity of management within an organization and its functions.

CO2: Students will have the concept of management activities, how decisions are emerged, plans are being executed, stress are being minimized.

CO3: Students will be aware what is leadership skills

UNIT I

Nature of Management: Meaning, Definition, it's nature purpose, importance & Functions, Management as Art, Science & Profession- Management as social System Concepts of management-Administration-Organization, Management Skills, Levels of Management.

UNIT II

Evolution of Management Thought: Contribution of F.W.Taylor, Henri Fayol, Elton Mayo, Chester Bernard & Peter Drucker to the management thought. Business Ethics & Social Responsibility: Concept, Shift to Ethics, Tools of Ethics.

UNIT III

Functions of Management: Part-I Planning – Meaning- Need & Importance, types, Process of Planning, Barriers to Effective Planning, levels – advantages & limitations. Forecasting- Need & Techniques Decision making-Types - Process of rational decision making & techniques of decision making Organizing – Elements of organizing & processes: Types of organizations, Delegation of authority – Need, difficulties Delegation – Decentralization Staffing – Meaning & Importance Direction – Nature – Principles Communication – Types & Importance

UNIT IV

Functions of Management: Part-II Motivation – Importance – theories Leadership – Meaning –styles, qualities & function of leader Controlling - Need, Nature, importance, Process & Techniques, Total Quality Management Coordination – Need – Importance

UNIT V

Management of Change: Models for Change, Force for Change, Need for Change, Alternative Change Techniques, New Trends in Organization Change, Stress Management.

UNIT VI

Strategic Management Definition, Classes of Decisions, Levels of Decision, Strategy, Role of different Strategist, Relevance of Strategic Management and its Benefits, Strategic Management in India.

Reference Books:

1. Essential of Management – Horold Koontz and Iteinz Weibrich- McGrawhills International 2.
2. Management Theory & Practice – J.N.Chandan
3. Essential of Business Administration – K.Aswathapa, Himalaya Publishing House
4. Principles & practice of management – Dr. L.M.Parasad, Sultan Chand & Sons – New Delhi
5. Business Organization & Management – Dr. Y.K.Bhushan
6. Management: Concept and Strategies By J.S. Chandan, Vikas Publishing

Business Communication

Code: **BCA-203**

Inter Disciplinary Course (IDC-2)

Objective: The objectives of this course are to make the student understand the management perspective of an organization and its elements, nature, and divisions. This course will provide the concept of the professional view, functional activities, and workflow mechanism of their future working place also helps to acquire leadership skills.

Course Outcomes:

The subject has the following CO:

CO1: Students will be aware of the necessity of management within an organization and its functions.

CO2: Students will have the concept of management activities, how decisions are emerged, plans are being executed, stress are being minimized.

CO3: Students will be aware what is leadership skills

UNIT-I: Means of Communication:

Meaning and Definition – Process – Functions – Objectives – Importance – Essentials of good communication – Communication barriers, 7C's of Communication

UNIT-II: Types of Communication:

Oral Communication: Meaning, nature and scope – Principle of effective oral communication – Techniques of effective speech – Media of oral communication (Face-to-face conversation – Teleconferences – Press Conference – Demonstration – Radio Recording – Dictaphone – Meetings – Rumour – Demonstration and Dramatisation – Public address system – Grapevine – Group Discussion – Oral report – Closed circuit TV). The art of listening – Principles of good listening.

UNIT-III: Written Communication

Purpose of writing, Clarity in Writing, Pricinciple of Effective writing, Writing Techniques, Electronic Writing Process.

UNIT-IV: Business Letters & Reports:

Need and functions of business letters – Planning & layout of business letter – Kinds of business letters – Essentials of effective correspondence, Purpose, Kind and Objective of Reports, Writing Reports.

UNIT-V: Drafting of business letters:

Enquiries and replies – Placing and fulfilling orders – Complaints and follow-up Sales letters – Circular letters Application for employment and resume

UNIT-VI: Information Technology for Communication:

Word Processor – Telex – Facsimile (Fax) – E-mail – Voice mail –Internet – Multimedia – Teleconferencing – Mobile Phone Conversation – Video Conferencing –SMS – Telephone Answering Machine – Advantages and limitations of these types.

Topics Prescribed for workshop/skill lab:

Group Discussion, Mock Interview, Decision Making in a Group

Reference Books:

1) Business Communication – K.K.Sinha – Galgotia Publishing Company, New Delhi.
2) Media and Communication Management – C.S. Rayudu – Hikalaya Publishing House, Bombay.
3) Essentials of Business Communication – Rajendra Pal and J.S. Korlhalli- Sultan Chand & Sons, New Delhi.
4) Business Communication (Principles, Methods and Techniques) Nirmal Singh – Deep &Deep Publications Pvt. Ltd., New Delhi.

Maharishi University of Management and Technology

Mangla, Bilaspur

FACULTY OF

COMPUTER SCIENCE & INFORMATION TECHNOLOGY
(CSIT)

SYLLABUS

2023-24

Bachelor of Computer Science (Information Technology) BSc (IT)

Maharishi University of Management and Technology

Mangla, Bilaspur

FACULTY OF

COMPUTER SCIENCE & INFORMATION TECHNOLOGY
(CSIT)

SYLLABUS

2023-24

Bachelor of Computer Science (Information Technology) BSc (IT)

Introduction of the Programme

Name of the Programme: - BSc (IT)

The broad **objectives** of the programme are:

- To train students in the latest trends of Application Development, Programming Languages, Database Management & Networking.
- To enhance their career opportunities in the software development and maintenance sector nationwide/ to enter the relevant master's programme.
- To expose the students to Open-Source Technologies so that they become familiar with it and can seek appropriate opportunity in trade and industry.
- To give hands on experience to students while developing real life IT application as part of the study.
- To augment the knowledge base of the students, through various activities which will be complementary to the theoretical studies.

Aim of the Programme: BSc (IT) programme has been designed to prepare 10+2 science/ Bio students and who are interested in taking software/IT as a career or further study in MCA/ Master's program for attaining the following specific **outcomes**:

- Anability to apply knowledge of computer applications and office automation in practice.
- An ability to enhance not only comprehensive understanding of the theory but its application too in diverse field.
- The ability to work in an environment where a range of computer applications or techniques are being applied in form of Networking, Software Engineering, Web development, Database management etc.
- An ability to design a computing system to meet desired needs within realistic constraints such as safety, security, and applicability n multidisciplinary teams with positive attitude.
- Anability to communicate effectively in relevant fields.
- In order to enhance programming skills of the young IT professionals, the program has introduced the concept of project development in each language/technology learnt during semester.

Seats: 60 (sixty)

Eligibility: 10+2 Science/ Bio from Recognized Board with Math/ Bio

Medium of Instruction: English

Scheme of Examination:
For Theory Papers: Practical Papers
Internal Assessment/ Assignment: 30 Marks
External Evaluation/ Term End Examination: 70 Marke
~~**For Practical Papers: 100 Marks**~~

SYLLABUS FOR THREE YEAR BACHELOR OF SCIENCE IN INFORMATION TECHNOLOGY
(B. Sc. IT) 2023-24

SEMESTER-I			
S no.	Course code	Subject	Marks
1.	BSCIT-101	Fundamental of Programming with C	100
2.	BSCIT-102	Computer Fundamentals	100
3.	BSCIT-103	Principles of Management	100
4.	BSCIT-104	Maharishi Vedic Science-I	100
5.	BSCIT-105	PC Software	100
6.	BSCIT-106	English Foundation Course-I	100
7.	BSCIT-107	Lab-I, Programming with C	100
8.	BSCIT-108	Lab-II, PC Software	100
		TOTAL MARKS	**800**

SEMESTER-II			
S no.	Course code	Subject	Marks
1.	BSCIT-201	Data Structure	100
2.	BSCIT-202	Mathematics	100
3.	BSCIT-203	Business Communication	100
4.	BSCIT-204	Maharishi Vedic science-II	100
5.	BSCIT-205	HTML & CSS	100
6.	BSCIT-206	English Foundation Course-II	100
7.	BSCIT-207	Lab-I, Data Structure	100
8.	BSCIT-208	Lab-II, HTML& CSS	100
		TOTAL MARKS	**800**

SEMESTER-III			
S no.	Course code	Subject	Marks
1.	BSCIT-301	Object Oriented Programming with C++	100
2.	BSCIT-302	Operating System	100
3.	BSCIT-303	Digital Electronics	100
4.	BSCIT-304	List (Interdisciplinary)	100
5.	BSCIT-305	Fundamental course in Environmental Science-I	100
6.	BSCIT-306	JAVA Script + tutorial	100
7.	BSCIT-307	Foundation course in Hindi-I	100
8.	BSCIT-308	Lab-I, Object Oriented Programming with C++	100
		TOTAL MARKS	**800**

SEMESTER – IV			
S no.	Course code	Subject	Marks
1.	BSCIT-401	Core JAVA	100
2.	BSCIT-402	Computer Network	100
3.	BSCIT-403	Discrete Mathematics	100
4.	BSCIT-404	Fundamental course in Environmental Science-II	100
5.	BSCIT-405	Foundation course in Hindi-II	100
6.	BSCIT-406	Lab-I, Core JAVA	100
		TOTAL MARKS	**600**

SEMESTER-V				
S no.		Course code	Subject	Marks
1.		BSCIT-501	VB.NET	100
2.		BSCIT-502	RDBMS (Relational database management system)	100
3.		BSCIT-503	Introduction to AI and expert system	100
4.		BSCIT-504	Software Engineering	100
5.		BSCIT-505	Lab-I, VB.NET	100
6.		BSCIT-506	Lab-II, RDBMS (Relational database management system)	100
7		BSCIT-507	SUMMER INTERNSHIP (30 DAYS)	100
			TOTAL MARKS	**700**

SEMESTER-VI				
S no.		Course code	Subject	Marks
1.		BSCIT-601	Web Technology	100
2.		BSCIT-602	Java Server Page	100
3.		BSCIT-603	Theory of Computer Science	100
4.		BSCIT-604	Minor Project	100
5.		BSCIT-605	Lab-I, Web Technology	100
6		BSCIT-606	Lab-II, JSP	100
			TOTAL CREDIT	**600**
			TOTAL MARKS (THREE YEAR)	**4300**

Fundamental of Programming with C

Code: **BSC (IT)-101**

Discipline Specific Course (DSC-1)

Objective: The objectives of this course are to make the student understand basics of programming language, programming style, concepts of Loops, reading a set of Data, stepwise refinement, Functions, Control structure, Arrays. After completion of this course the student is expected to analyze the /real-life problem and write a program in 'C' language to solve the problem. The main emphasis of the course will be on problem solving aspect i.e., developing proper algorithms.

Course Outcomes:

Students will be able to understand and the use of

- the procedural language with fundamental concepts.
- control structures and decisional statements in programs
- user defined data types in programs
- functions &dynamic memory management techniques using pointers
- reading &writing data files and handling I/O in programs.

Unit-I: Programming Concepts

Understanding of a computer system, Concept of Software Language, C compiler, C Language Character set. Tokens, Constant, Keywords and Identifiers, Variables Data Types Declaration and Assignment of Variables, Type Casting, Defining Symbolic Constants, Operators and Expressions: Types of Operators- Arithmetic, Relational and Logical Operators, Assignment and Conditional Operators Increment & Decrement Operators, Bitwise and Special Operators, Arithmetic Expression and its evaluation, Hierarchy of Arithmetic Operations- Evaluations, Precedence and Associatively- Mathematical Functions, Library functions: Getchar (), putchar (), printf (), scanf (), puts (), gets ().

Unit-II: Branch and Control Handling

Flow of control - if, if-else, while, do-while, for loop, Nested control structures - Switch, break and continue go to statements, Comma operator, Ternary ? : Operator, Functions -Definition - prototypes - Passing arguments - Recursion- Storage Classes - Automatic, External, Static, Register Variables, Storage Classes and Character Strings: Automatic, Register, Static, External (Local and Global), Scope rules.

Unit-III: Array, Structure& Union

Arrays, String, Structures and Unions in C

Arrays - Defining and Processing, Single, Two Dimensional and Multi-dimensional arrays. Passing arrays to functions, Arrays and Strings, Handling of Character Set: Declaration & Initialization of String Variables, Structures and Unions: Definitions, Initialization and Assigning Values to Members, Arrays of Structures and Arrays Within Structures, Unions- Size of Structures.

Unit-IV: Functions and Pointers

User Defined Functions: Form of "C" functions- Calling a Function - Nesting of Functions - Recursion - Functions with Arrays, Pointers: Declaration and Initialisation of Pointers, Pointer Expression, Operation on Pointers, Pointer and Arrays, Arrays of Pointers, Pointer and Character Strings, Pointers and Functions, Pointers and Structures, Pointer on Pointers.

Unit-V: File Handling in C

File Input/Output: Introduction, Defining, Opening and closing a file, Study of file I/O Operations: fopen(), fclose(), fputs(), fgets(), fread (), fwrite() Input / Output Operations on a file, Random access to file, Command line arguments, Time, Date and Localization Functions, Dynamic Allocation Functions.

Reference Books:

1. LET US C, Yashwant Kanetkar, BPB PUBLICATIONS
2. The Complete Reference C, Herbert Schildt, Tata McGraw HILL
3. PROGRAMMING IN ANSI C - by E. Balgurusamy - Tata McGraw HILL
4. PROGRAMMINGWITH C. Byron S. Gottfried, Tata McGraw HILL
5. The "C" Programming Language, Briain W. Kenigham& Dennis Ritchie, Pearson

Fundamental of Programming with C

Code: **BSC (IT)-101**

Discipline Specific Course (DSC-1)

Objective: The objectives of this course are to make the student understand basics of programming language, programming style, concepts of Loops, reading a set of Data, stepwise refinement, Functions, Control structure, Arrays. After completion of this course the student is expected to analyze the /real-life problem and write a program in 'C' language to solve the problem. The main emphasis of the course will be on problem solving aspect i.e., developing proper algorithms.

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Unit-II: Branch and Control Handling

Flow of control - if, if-else, while, do-while, for loop, Nested control structures - Switch, break and continue go to statements, Comma operator, Ternary ? : Operator, Functions -Definition - prototypes - Passing arguments - Recursion- Storage Classes - Automatic, External, Static, Register Variables, Storage Classes and Character Strings: Automatic, Register, Static, External (Local and Global), Scope rules.

Unit-III: Array, Structure& Union

Arrays, String, Structures and Unions in C

Arrays - Defining and Processing, Single, Two Dimensional and Multi-dimensional arrays. Passing arrays to functions, Arrays and Strings, Handling of Character Set: Declaration & Initialization of String Variables, Structures and Unions: Definitions, Initialization and Assigning Values to Members, Arrays of Structures and Arrays Within Structures, Unions- Size of Structures.

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User Defined Functions: Form of "C" functions- Calling a Function - Nesting of Functions - Recursion - Functions with Arrays, Pointers: Declaration and Initialisation of Pointers, Pointer Expression, Operation on Pointers, Pointer and Arrays, Arrays of Pointers, Pointer and Character Strings, Pointers and Functions, Pointers and Structures, Pointer on Pointers.

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Course Outcomes:

Students will be able to understand and the use of

- the procedural language with fundamental concepts.
- control structures and decisional statements in programs
- user defined data types in programs
- functions &dynamic memory management techniques using pointers
- reading &writing data files and handling I/O in programs.

Unit-I: Programming Concepts

Understanding of a computer system, Concept of Software Language, C compiler, C Language Character set. Tokens, Constant, Keywords and Identifiers, Variables Data Types Declaration and Assignment of Variables, Type Casting, Defining Symbolic Constants, Operators and Expressions: Types of Operators- Arithmetic, Relational and Logical Operators, Assignment and Conditional Operators Increment & Decrement Operators, Bitwise and Special Operators, Arithmetic Expression and its evaluation, Hierarchy of Arithmetic Operations- Evaluations, Precedence and Associatively- Mathematical Functions, Library functions: Getchar (), putchar (), printf (), scanf (), puts (), gets ().

Unit-II: Branch and Control Handling

Flow of control - if, if-else, while, do-while, for loop, Nested control structures - Switch, break and continue go to statements, Comma operator, Ternary ? : Operator, Functions -Definition - prototypes - Passing arguments - Recursion- Storage Classes - Automatic, External, Static, Register Variables, Storage Classes and Character Strings: Automatic, Register, Static, External (Local and Global), Scope rules.

Unit-III: Array, Structure& Union

Arrays, String, Structures and Unions in C

Arrays - Defining and Processing, Single, Two Dimensional and Multi-dimensional arrays. Passing arrays to functions, Arrays and Strings, Handling of Character Set: Declaration & Initialization of String Variables, Structures and Unions: Definitions, Initialization and Assigning Values to Members, Arrays of Structures and Arrays Within Structures, Unions- Size of Structures.

Unit-IV: Functions and Pointers

User Defined Functions: Form of "C" functions- Calling a Function - Nesting of Functions - Recursion - Functions with Arrays, Pointers: Declaration and Initialisation of Pointers, Pointer Expression, Operation on Pointers, Pointer and Arrays, Arrays of Pointers, Pointer and Character Strings, Pointers and Functions, Pointers and Structures, Pointer on Pointers.

Unit-V: File Handling in C

File Input/Output: Introduction, Defining, Opening and closing a file, Study of file I/O Operations: fopen(), fclose(), fputs(), fgets(), fread (), fwrite() Input / Output Operations on a file, Random access to file, Command line arguments, Time, Date and Localization Functions, Dynamic Allocation Functions.

Reference Books:

1. LET US C, Yashwant Kanetkar, BPB PUBLICATIONS
2. The Complete Reference C, Herbert Schildt, Tata McGraw HILL
3. PROGRAMMING IN ANSI C - by E. Balgurusamy - Tata McGraw HILL
4. PROGRAMMINGWITH C. Byron S. Gottfried, Tata McGraw HILL
5. The "C" Programming Language, Briain W. Kenigham& Dennis Ritchie, Pearson

Computer Fundamentals

Code: **BSC (IT)-102**

Minor (MIN-1)

Objective: The objectives of this course are to make the student understand basics of computer fundamental, , concepts of basic input/output device reading a parts of computer , storage devices After completion of this course the student is expected to analyze the working of computer system The main emphasis of the course will be on familiar with the computer system .

Course Outcomes:

Students will be able to

1. Aware of parts of computer
2. Understand the input and output devices.
3. Gain the basic ideas of storage devices, computer Networks and Operating System.

UNIT - I

Introduction to Computer and information technology: Brief history of development of computer and generations of computer. Computer system characteristics, Advantages and disadvantages of a computer, Block diagram of computer, Types of computer - Analog, Hybrid, digital, Micro, Mini, Mainframe, Super computer, Personal Computer, Types of PCs desktop, Laptop, Notebook, Palmtop, etc., Number systems (Binary, Octal, Decimal, Hexadecimal), Computer codes - ASCII, EBCDIC.

UNIT - II

Input devices : Keyboard, Mouse, Monitor, Trackball, Joystick, Electronic Pen, Touch Screen, Image Scanner, MICR, OCR, OMR, Bar Code reader, Digitizer, Electronic Card Reader, Voice Recognition, Vision Input System,
Output Devices: Monitors, Printers, Plotters, Screen Image Projector, voice response system.

UNIT - III

Main Memory (RAM, ROM, EPROM, Cache memory).
Secondary storage devices (Sequential and Direct Access Devices), Magnetic tapes, Magnetic Disk, Optical Disk, CD-ROM, DVD

UNIT-IV

Types of Software (System software, Application Software, Firmware), Computer Language (Machine, Assembly, High level), Assemblers, Compliers, and Interpreter. Types of assemblers- Single pass and Double pass.

UNIT-V

Computer Network and Security: Types of network (LAN, MAN, WAN etc.), Network Models, Protocols and Architecture, Topology, OSI reference model, TCP/IP reference model. Virus definition, type, effects, symptoms, Anti-virus program, virus prevention.

Reference Books:

1. Fundamentals of Computers by Reema Thareja, Oxford University Press
2. Computer Fundamentals,6 th edition by Pradeep K.Sinha, Priti Sinha, BPB Publications
3. Computers Today by A.Ravichandran, Khanna Book Publishing.

Maharishi Vedic Science-I

Code: **BSC (IT)-104**

Ability Enhancement course (AEC-1)

Objective:

- To specifically groom a generation of experts who can perform independent and application-oriented study of Vedic concepts for modern times.
- To explore the strength and scope of Vedic Education study through interdisciplinary learning

Course Outcomes:

The subject entitled 'Maharishi Vedic Science' has the following CO:

CO1: The study of Maharishi Vedic Science develops the full potential of the knower and lays the foundation for complete knowledge of any discipline, while it fosters evolution to higher states of consciousness and progressive and fulfilling action and accomplishment in life.

CO2: Maharishi Vedic Science is the systematic study, experience, and development of the full range of life, both individual and cosmic, and its applications to create a better world.

CO3: Its principles and technologies are based on the direct experience and understanding of the most vital element in life – the unbounded field of consciousness that is the inner intelligence at the basis of every individual and the entire universe.

Unit-1: Guru Worship and importance of Guru, meditation, mind, intellect, mind, ego, thought, Maharishi Transcendental Meditation, benefits of Transcendental Meditation, Siddhi program, yogic flight etc.

Unit- 2: Vedas and Vedic literature, form of Vedic literature, description of forty regions like Rigveda, consciousness and levels of consciousness, states of consciousness.

Unit- 3: Maharishi Yoga, definition and characteristics of Ashtanga Yoga, types of Yogasanas, usefulness of Yogasanas in human life, benefits from Yogasanas.

Unit-4: Maharishi Astrology, Origin of Astrology, Introduction to Triskandha Astrology, (Siddhanta, Sanhita and Hora), Definition and Introduction of Panchang (Tithi, Vaar, Nakshatra, Yoga and Karana), Human Life and Astrology, External and Internal Personality, Planets and Introduction to expressions etc.

Unit-5: Introduction of Maharishi Sthapatyaveda, purpose of the book, origin of Vastu Purush, tradition of Vastu Shastra, natural development from Vastu, progress from Vastu, symptoms of auspicious Vastu, inauspicious Vastu symptoms, usefulness of home, when to do Vastu Puja etc.

Reference Books:

1. Maharishi Sandesh Part I and II.
2. Chetna Vigyan by His Holiness Maharishi Mahesh Yogi Ji.
3. Dhyan Shailey by Brahmachari Dr.Girish Chandra Verma Ji

PC Software

Code: BSC (IT)-105

Skill Enhancement Course (SEC-1)

Objective: The objectives of this course are to make the student understand basics software, do work with MS word, power point, excel and to understand working of windows. After completion of this course the student is expected to do work easily with the help of office automation tools.

Course Outcomes:

After completion of course students are expected to be able to:

CO-1. Understand, analyse windows.

CO-2. Understand the MS Word, Excel, Power Point & Access.

CO-3. Able to work on MS Word, Excel, Power Point & Access

Unit-I: Windows

Installing WINDOWS, Basic Elements of WINDOWS, My Computer, Sharing Devices. Windows Explorer (Files and Folder Operations), Accessories like Accessibility, Entertainment, Communication, System Tools, Paint Brush, Calculator, Calendar, Clock, Note Pad, Word Pad Etc., Control Panel, Changing Color and Theme, Changing the Desktop Background, Screen Saver, Adjusting Display Settings, Adjusting Sound, Adjusting the Mouse, Changing the Date and Time, Changing Language and Region Options, Customizing Folder View Options, Connecting to the Internet: Dial-Up Connections, Broadband Connections, Installing New Hardware & Printer, Installing & Removing Software, Power Settings.

Unit- II: Introduction to MS Word

Menus, Shortcuts, Document types; Working with Documents: Opening Files - New & Existing, Saving Files, Formatting page and Setting Margins, Converting files to different formats- Importing, Exporting, Sending files to others, Editing text documents- Inserting, Deleting, Cut, Copy, paste, Undo, Redo, Find, Search, Replace, Using Tool bars, Ruler- Using Icons, Using help; Formatting Documents: Setting Font Styles, Setting Paragraph style, Setting Page Style, Setting Document Styles, Creating Tables, Drawing, Tools, Printing Documents, Mail Merge.

Unit-III: Introduction to MS Power Point

Creating new Presentation, Different presentation templates, Setting backgrounds, Selecting presentation layouts, Formatting a presentation-Adding style, Color, gradient fills, Arranging objects, Adding Header & Footer, Slide Background, Slide layout, Inserting pictures, movies, tables etc. into the presentation, Drawing Pictures using Draw, Setting Animation & transition effect, Adding audio and video, Printing Handouts. Generating standalone presentation viewer.

Unit-IV: Introduction to MS Excel

Introduction: Spreadsheet & its Applications, Opening spreadsheet, Menus & Toolbars & icons, Shortcuts, Working with Spreadsheets-Opening, Saving Files, Setting Margins, Converting files to different formats- Importing, Exporting and Sending files to others. Entering and Editing Data, Computing data: Formula. Formatting Spreadsheets- Cell, row, column & Sheet, Alignment, Font, Border & shading. Highlighting values, Hiding/Locking Cells: Worksheet- Sheet Name, Row & Column Headers, Row Height, Column Width and Worksheet Sheet Formatting & style background, Graphs, Printing worksheet.

Unit-V: Introduction MS Access

Database concepts Tables, Queries, Forms, Reports, Opening & Saving database files: Creating Tables, Table Design, Indexing, Entering data, Importing data, Creating Queries: SQL statements, Setting relationship, Creating Forms: GUI, Form, Creating & printing reports.

Reference Books:

1. Windows 8.1 Plain & Simple by Joli Ballew, Nancy Muir, PHI
2. Learning Microsoft Office 2013 by Ramesh Bangia, Khanna Book Publishing.
3. Comdex Computer Course Kit (windows 7 with office 2010), Gupta Vikas. Dreamtech Publication
4. Mastering MS Office 2000, Professional Edition by Courier, BPB Publication

PC Software

Code: BSC (IT)-105

Skill Enhancement Course (SEC-1)

Objective: The objectives of this course are to make the student understand basics software, do work with MS word, power point, excel and to understand working of windows. After completion of this course the student is expected to do work easily with the help of office automation tools.

Course Outcomes:

After completion of course students are expected to be able to:

CO-1. Understand, analyse windows.

CO-2. Understand the MS Word, Excel, Power Point & Access.

CO-3. Able to work on MS Word, Excel, Power Point & Access

Unit-I: Windows

Installing WINDOWS, Basic Elements of WINDOWS, My Computer, Sharing Devices. Windows Explorer (Files and Folder Operations), Accessories like Accessibility, Entertainment, Communication, System Tools, Paint Brush, Calculator, Calendar, Clock, Note Pad, Word Pad Etc., Control Panel, Changing Color and Theme, Changing the Desktop Background, Screen Saver, Adjusting Display Settings, Adjusting Sound, Adjusting the Mouse, Changing the Date and Time, Changing Language and Region Options, Customizing Folder View Options, Connecting to the Internet: Dial-Up Connections, Broadband Connections, Installing New Hardware & Printer, Installing & Removing Software, Power Settings.

Unit- II: Introduction to MS Word

Menus, Shortcuts, Document types; Working with Documents: Opening Files - New & Existing, Saving Files, Formatting page and Setting Margins, Converting files to different formats- Importing, Exporting, Sending files to others, Editing text documents- Inserting, Deleting, Cut, Copy, paste, Undo, Redo, Find, Search, Replace, Using Tool bars, Ruler- Using Icons, Using help; Formatting Documents: Setting Font Styles, Setting Paragraph style, Setting Page Style, Setting Document Styles, Creating Tables, Drawing, Tools, Printing Documents, Mail Merge.

Unit-III: Introduction to MS Power Point

Creating new Presentation, Different presentation templates, Setting backgrounds, Selecting presentation layouts, Formatting a presentation-Adding style, Color, gradient fills, Arranging objects, Adding Header & Footer, Slide Background, Slide layout, Inserting pictures, movies, tables etc. into the presentation, Drawing Pictures using Draw, Setting Animation & transition effect, Adding audio and video, Printing Handouts. Generating standalone presentation viewer.

Unit-IV: Introduction to MS Excel

Introduction: Spreadsheet & its Applications, Opening spreadsheet, Menus & Toolbars & icons, Shortcuts, Working with Spreadsheets-Opening, Saving Files, Setting Margins, Converting files to different formats- Importing, Exporting and Sending files to others. Entering and Editing Data, Computing data: Formula. Formatting Spreadsheets- Cell, row, column & Sheet, Alignment, Font, Border & shading. Highlighting values, Hiding/Locking Cells: Worksheet- Sheet Name, Row & Column Headers, Row Height, Column Width and Worksheet Sheet Formatting & style background, Graphs, Printing worksheet.

Unit-V: Introduction MS Access

Database concepts Tables, Queries, Forms, Reports, Opening & Saving database files: Creating Tables, Table Design, Indexing, Entering data, Importing data, Creating Queries: SQL statements, Setting relationship, Creating Forms: GUI, Form, Creating & printing reports.

Reference Books:

1. Windows 8.1 Plain & Simple by Joli Ballew, Nancy Muir, PHI
2. Learning Microsoft Office 2013 by Ramesh Bangia, Khanna Book Publishing.
3. Comdex Computer Course Kit (windows 7 with office 2010), Gupta Vikas. Dreamtech Publication
4. Mastering MS Office 2000, Professional Edition by Courier, BPB Publication

English Foundation Course-I

Code: **BSC (IT)-106**

Common Values Added Course (VAC-1)

Objective: To be able to Speak & write English fluently and accurately. To read English newspapers regularly. To develop the ability to understand the Native writers. To make narratives and to make notes. To communicate with others in English.

Course Outcomes:

On completion of the course the student should be able to:

CO-1. Develop the student's ability to use English language accurately and effectively by enhancing their communication skills

CO-2. Mastering the art of a professional business presentation

CO-3. Distinguish different communication process and its practical application

CO-4. More effective written communication

Unit-1:

1. Where the Mind is without Fear – Rabindranath Tagore
2. The Ideal Indian Art – K. Bharatha Iyer
3. The Wonder that was India – A.L. Basham
4. The Heritage of Indian Art – Kapila Vatsyayan
5. Life in Vedic Literature – Krishna Chaitanya
6. Preface to the Mahabharata – C. Rajagopalachari
7. Freedom Movement in India – Sudhir Chandra

Unit - 2:

Comprehension: Unseen Passage

Unit - 3:

(a) Composition: Paragraph Writing.

(b) Letter Writing: With internal choice (One Formal & one Informal)

Unit-4:

Language Skills: Vocabulary A. Synonyms, Antonyms B. Prefix and Suffix C. Match the Column D. Make Sentence, etc.

Unit-5:

Grammar and Language Skills Based on Text Book: The Tense forms, Determiners and Countable/ Uncountable Nouns, Verbs, Articles, Conditional Sentences, Modals.

Reference Books:

1. Dr. Pankak Ku. Singh & Dr Aswini Joshi, 'English Language & Indian Culture'- Thakur Publication
2. Essential English Grammar- Raymond Murphy, Cambrige University Press
3. Practical English Grammar Exercises 1- A.J. Thomson & A.V. Martinet, Oxford India.
4. Bala subramanyam: Business Communication; Vikas Publishing House, Delhi. (Englishmedium)

LAB: Programming With C

Code: BSC (IT)-107

Discipline Specific Course (DSC) + LAB-I

Following Programs are suggested for practice along with other programs given time to time:

1) If a five-digit number is input through the keyboard, write a program to reverse the number, print the sum and product of digit.
2) WAP to interchange the content of two variable (swapping).
3) WAP to convert and print the distance in meter, feet, inches and centimeter if distance is input through the keyboard.
4) Write a program to convert received temperature into Celsius or Fahrenheit (as selected by the user) from the given expression: C/5 = (F-32)/9
5) WAP a to check whether a year entered through keyboard is a leap year or not. (Every year that is exactly divisible by four is a leap year, except for years that are exactly divisible by 100, but these centurial years are leap years, if they are exactly divisible by 400)
6) WAP to check whether a number is even or odd.
7) Write a program and find whether a number is Armstrong number or not. A number is thought of as an Armstrong number if the sum of its own digits raised to the power number of digits gives the number itself. For example, 153, 370, 371, 407 are three-digit Armstrong numbers and, 1634, 8208, 9474 are four-digit Armstrong numbers and there are many more.
8) WAP to determine whether entered character is a capital or small or digit or special symbol.
9) WAP to find the factorial value of any number entered through keyboard.
10) WAP to compute the sum of the first n terms of the following series
    S = 1+1/2+1/3+1/4+.....
11) WAP to compute the sum of the first n terms of the following series
    S =1-2+3-4+5.....
12) WAP to print all prime numbers from 1 to 100.
13) WAP to print a triangle of stars as follows (take number of lines from user for example if user gives 5):
    *
    ***
    *****
    ****
14) Write a menu driven program using switch which has following option:
    I) Factorial of number
    II) Prime or Not
    III) Odd or Even0
15) Write a function that checks whether a given string is Palindrome or not. Use this function to find whether the string entered by user is Palindrome or not.
16) Write a function to implement question number one (1) to seven (7) in above list.
17) WAP to perform following operations on strings:
    a) Concatenate two strings.
    b) Compare two strings
    c) Calculate length of the string
    d) Convert all lowercase characters to uppercase
    e) Convert all uppercase characters to lowercase
    f) Calculate number of vowels
    g) Reverse the string
18) WAP to print a triangle of stars as follows (take number of lines from user for example if user gives 5):
    *****
    ****
    **
    *
19) WAP to receive an integer then convert & display the same into binary.
20) WAP to receive an integer then convert the display same into hexadecimal.
21) Define a function (int print_max_min(int[], max_min) to find the biggest or smallest numbers from an array of numbers. Use the function to find max and min of 10 numbers in an array.
22) Define a function (double average(intt[])) to find the average from an array of numbers. Use the function to find average of 10 numbers in an array.
23) Define a function sort(int[]), ascending/descending) which sorts an array of numbers and then use the function to sort an array and display sorted numbers.
24) WAP to read a file and display the file content into the console.
25) WAP to read a line from the console and append the line into a file.
26) WAP to read a word from the console and find the existence of the word in a file content.

LAB: PC Software

Code: **BSC (IT)-108**

SEC-I + LAB – II

Practical Exam on MS Office & Software

Data Structure

Code: **BSC (IT)-201**

Discipline Specific Course (DSC-2)

Objective: The objectives of this course are to make the student understand basics of data structure, programming style, concepts of algorithms, flow chart, Functions, Control structure, Arrays, stack, queue. After completion of this course the student is expected to analyze the real-life problem, to solve the problem. The main emphasis of the course will be on problem solving aspect i.e., developing proper algorithms.

Course Outcomes:

Upon successful completion of the course, a student will be able to:

CO-1. To access how the choices of data structure & algorithm methods impact the performance of program.

CO-2. To Solve problems based upon different data structure & also write programs.

CO-3. Choose an appropriate data structure for a particular problem

Unit-I: Introduction and Array

Data Types, Data Structure and its Classification, Arrays: Array concept (one dimension, two dimension), Operations for one dimension array (insertion, deletion, traversal), Examples.

Unit-II: Linked Lists

Concept of a linked list, Circular & Doubly linked list, Operations on linked lists, List Manipulation with Pointers, Insertion & Deletion of elements, Applications of linked lists.

Unit-III: Stacks-Queues and Binary Tree

Definitions and Structure, Representation using Array & Linked List, Application of Stack and Queues, Postfix and Prefix Conversion, Evolution of Arithmetic Expressions, Binary Trees: Definition, Memory Representation, Trees traversal algorithms (recursive and non-recursive), threaded trees, BFS, DFS.

Unit-IV: Searching and Sorting

Linear and Binary Search Algorithms, Complexity, Binary Search Trees (construction, insertion, deletion & search), Sorting Algorithms: Bubble Sort, Insertion Sort, Selection Sort, Tree sort, Heap Sort, Quick Sort, Merge Sort & Radix sort, External Sorting.

Unit-V: Analysis of Algorithm

Time and Space Complexity of Algorithms, Average Case & Worst Case Analysis, Asymptotic Notation, Big O notations, Analysis of sorting algorithms -Selection sort, Bubble sort, Insertion sort, Heap sort, Quick sort and Analysis of searching algorithms -Linear Search & Binary Search.

Reference Books:

1. Data Structures using C, A. M. Tenenbaum, Langsam, Moshe J. Augentem, PHI Pub.
2. Data Structures using C by A. K. Sharma, Pearson Education
3. Data Structures and Algorithms, A.V. Aho, J.E Hopcroft and T.D. Ullman, Addison- Wesley, Low Priced Edition.
4. Fundamentals of Data structures, Ellis Horowitz & Sartaj Sahni, AW Pub.
5. Fundamentals of computer algorithms, Horowitz Sahni and Rajasekaran, Pearson Edu.
6. Data Structures and Program Design in C, Robert Kruse, PHI of Data Structures, Jr. Symour Lipschetz, Schaum's outline by TMH.

MATHEMATICS

Code: BSC (IT)-202

Minor (MIN-2)

Objective: Students will be able to apply problem-solving and logical skills. Have a deeper understanding of mathematical theory. Be able to communicate mathematical/logical ideas in writing.

Course Outcomes:

Upon successful completion of the course, a student will be able to:

CO 1: understand the mathematical/ logical ideas

CO 2: put mathematical skills/ ideas into solving real life problems

UNIT-I: DETERMINANTS:

Definition, Minors, Cofactors, Properties of Determinants MATRICES: Definition, Types of Matrices, Addition, Subtraction, Scalar Multiplication and Multiplication of Matrices, Adjoint, Inverse, Cramers Rule, Rank of Matrix Dependence of Vectors, Eigen Vectors of a Matrix, Caley-Hamilton Theorem (without proof).

UNIT-II: LIMITS & CONTINUITY:

Limit at a Point, Properties of Limit, Computation of Limits of Various Types of Functions, Continuity at a Point, Continuity Over an Interval, Intermediate Value Theorem, Type of Discontinuities

UNIT-III: DIFFERENTIATION:

Derivative, Derivatives of Sum, Differences, Product & Quotients, Chain Rule, Derivatives of Composite Functions, Logarithmic Differentiation, Rolle's Theorem, Mean Value Theorem, Expansion of Functions (Maclaurin's & Taylor's), Indeterminate Forms, L' Hospitals Rule, Maxima & Minima, Curve Tracing, Successive Differentiation & Liebnitz Theorem.

UNIT-IV: INTEGRATION:

Integral as Limit of Sum, Fundamental Theorem of Calculus (without proof.), Indefinite Integrals, Methods of Integration Substitution, By Parts, Partial Fractions, Reduction Formulae for Trigonometric Functions, Gamma and Beta Functions(definition).

UNIT-V: VECTOR ALGEBRA:

Definition of a vector in 2 and 3 Dimensions; Double and Triple Scalar and Vector Product and physical interpretation of area and volume.

Reference Books:

1. B.S. Grewal, "Elementary Engineering Mathematics", 34th Ed., 1998.
2. Shanti Narayan, "Integral Calculus", S. Chand & Company, 1999
3. H.K. Dass, "Advanced Engineering Mathematics", S. Chand & Comp
4. J.P. Chauhan "BCA Mathematics Volume -1", Krishna Publications.

Maharishi Vedic science-II

Code: BSC (IT)-204

Ability Enhancement Course (AEC-2)

Objective:

- To specifically groom a generation of experts who can perform independent and application-oriented study of Vedic concepts for modern times.
- To explore the strength and scope of Vedic Education study through interdisciplinary learning

Course Outcomes:

The subject entitled,, Maharishi Vedic Science" has the following CO:

CO1: The study of Maharishi Vedic Science develops the full potential of the knower and lays the foundation for complete knowledge of any discipline, while it fosters evolution to higher states of consciousness and progressive and fulfilling action and accomplishment in life.

CO2: Maharishi Vedic Science is the systematic study, experience, and development of the full range of life, both individual and cosmic, and its applications to create a better world.

CO3: Its principles and technologies are based on the direct experience and understanding of the most vital element in life – the unbounded field of consciousness that is the inner intelligence at the basis of every individual and the entire universe.

Unit-1:

Maharishi General Introduction to Ayurveda, Definition of Ayurveda, Tradition of Ayurveda, Departments of Ayurveda Samhita,Ayurveda and Health, Ashtanga Ayurveda, Purpose of Ayurveda, Tridoshain Ayurveda.

Unit-2:

Routine, getting up in the morning, defecation, teething, exercise, morning walk, bath, worship, breakfast, food, earning livelihood, evening meal,sleeping etc.

Unit-3:

Introduction to Maharishi Complete Security Policy, Principles of Security Policy, Opinions of Scholars on Maharishi Complete Security Policy, Invincible Security, Defense and Mahasutra, Meaning of Invincibility, Qualities of Invincibility, Basis of Defense of Invincibility.

Unit-4:

Meissner Effect, Universal Effect of Maharishi Ji, Principle of Power in Purity, Components of Invincibility, Forty Areas of Complete Knowledge.

Unit-5:

Verification of Physics from Veda Science, Verification of Veda Science on the basis of Physics, Chemistry, Mathematics and Physiology, Latest research and development till date, Comparison of Veda Science with Physics etc.

Reference Books:

- Maharishi Sandesh Part I and II.
- Chetna Vigyan by His Holiness Maharishi Mahesh Yogi Ji.
- Dhyan Shailey by Brahmachari Dr. Girish Chandra Verma Ji.

HTML & CSS

Code: BSC (IT)-205

Skill Enhancement Course (SEC-2)

Objective: The objectives of this course are to make the student understand basics of html & css, programming style, concepts of html, style sheet, coloring, designing. After completion of this course the student is expected to design web page. The main emphasis of the course will be designing web page, creating the web page on i.e., web developing

Course Outcomes:
Upon successful completion of the course, a student will be able:
CO 1. To make acquainted with evolution and history of Internet.
CO 2. To make aware of history and function of web browser.
CO 3. Understanding concept of hypertext, different version of HTML and building HTML documents.
CO 4: To put style for webpage.

UNIT - I
Introduction to Internet:
History of internet, what is the internet, advantages of internet, Minimum requirements for internet, ISP, Internet protocols, Internet Tools (FTP, Gopher, E-mail, Telnet, Newsgroup, www etc.), Bridges, Hub, Routers, Repeaters and Gateways, Modem, Types of connections - Dial up, leased ISDN, Broadband, WWW, Browsers, Search Engines, URL

UNIT - II
Introduction to HTML:
Origin, evolution and importance of HTML, elements of HTML, Head, Title Body : background, bgcolor, link, vlink, alink, bgproperties, margin.
Anchor: href. Name, title.
Block formatting elements: font, heading, blockquote, line break, centre, marquee, list elements.

UNIT - III:
Forms in HTML:
Input elements: Textbox, password box, check box, radio button, combo box, select elements, option element.
Information types elements: code, emphasis, keyboard, strong, boldface, italics, strike and subscript.

UNIT-IV
Advanced HTML:
Table elements: border, cell spacing, width, height, align, bgcolor, border color, TR element, TD element, TH element, Col Element.
Frames: frame and frameset elements.

UNIT -V
CSS:
Benefits of CSS, CSS Versions History, CSS Syntax, External Style Sheet using <link>, Multiple Style Sheets, Value Lengths and Percentages, CSS Syntax, single Style Sheets, Multiple Style Sheets, ID Selectors, Class Selectors, Grouping Selectors, Universal Selector, Descendant / Child Selectors, Attribute Selectors, CSS – Pseudo Classes,

Reference Books:

1. Internet for Everyone by Alexis Leon and M.Leon, Vikas Publishing.
2. Internet for Dummies, Pustak Mahal, New Delhi.
3. HTML For Beginners the Easy Way available at html.com.
4. W3Schools for study & hands on training.

English Foundation Course-II

Code: **BSC (IT)-206**

Common Values Added Course (VAC-2)

Objective: To be able to Speak & write English fluently and accurately. To read English newspapers regularly. To develop the ability to understand the Native writers. To make narratives and to make notes. To communicate with others in English.

Course Outcomes:

The subject entitled "English-Foundation Course (Part-II)" has the following CO:

CO1: The courses shall enable the students to effectively communicate in both orally and verbally in English and improve their vocabulary.

CO2: Students will heighten their awareness of correct usage of English grammar in writing and speaking.

CO3: Students will improve their speaking ability in English both in terms of fluency and comprehensibility.

CO4: Students will enlarge their vocabulary by keeping a vocabulary journal

CO5: Students will strengthen their ability to write academic papers, essays and summaries using the process approach.

Unit-1:

1. Dandi Salt March–Louis Fischer
2. Aspects of Indian Constitution-M.C Chagla
3. Individual Freedom- Jawaharlal Nehru
4. Fundamental Duties
5. Delhiin1857-MirzaGhalib
6. Raja's Diamond-R.L Stevenson
7. Tree-Tina Morris

Unit-2:

PRECISWRITING

Unit-3:

REPORTWRITING

Unit-4:

NOTICE, AGENDA AND MINUTES

Unit-5:

A. GRAMMAR

Articles, Prepositions, Gerund, Self-awareness forms and Possessives, Narration (Direct & Indirect), Voice (Active &Passive)

B. VOCABULARY (from the text)

Synonyms, Antonyms, Match the column, combined the sentences

Reference Books:

1. ENGLISH LANGUAGE AND INDIAN CULTURE- MADHYAPRADESH HINDI GRANTH ACADEMY

Lab: Data Structure

Code: **BSC (IT)-207**

DSC-2 + LAB-I

Following Programs are suggested for practice along with other programs given time to time:

1. Implement one array of fifteen numbers taken from the user and from the array calculate and display the sum, average, largest number, and smallest number.
2. Implement stack and queue operations using array.
3. A six faced die is rolled 600 times. Find the frequency of the occurrence of each face and display.
4. Implement bubble sort to arrange the elements of an array
5. Implement quick sort to arrange the elements of an array
6. Implement insertion sort to arrange the elements of an array
7. Implement merge sort to arrange the elements of an array
8. Implement sequential search to find an element in an array
9. Implement binary search to find an element in an array
10. Implement single linked list

LAB: HTML & CSS

Code: **BSC (IT)-208**

SEC-2 + LAB - II

Practical Exam on HTML & CSS based on the theory syllabus.

List of Subjects offered by the other Departments of MUMT (Interdisciplinary Courses)

1) Principles of Management [BSC (IT)-103 (IDC-1)]
2) Business Communication [BSC (IT)-203 (IDC-2)]

Principles of Management

Code: **BSC (IT)-103**

Inter Disciplinary Course (IDC-1)

Objective: The objectives of this course are to make the student understand the management perspective of an organization and its elements, nature, and divisions. This course will provide the concept of the professional view, functional activities, and workflow mechanism of their future working place also helps to acquire leadership skills.

Course Outcomes:

The subject has the following CO:

CO1: Students will be aware of the necessity of management within an organization and its functions.

CO2: Students will have the concept of management activities, how decisions are emerged, plans are being executed, stress are being minimized.

CO3: Students will be aware what is leadership skills

UNIT I

Nature of Management: Meaning, Definition, it's nature purpose, importance & Functions, Management as Art, Science & Profession- Management as social System Concepts of management-Administration-Organization, Management Skills, Levels of Management.

UNIT II

Evolution of Management Thought: Contribution of F.W.Taylor, Henri Fayol, Elton Mayo, Chester Bernard & Peter Drucker to the management thought. Business Ethics & Social Responsibility: Concept, Shift to Ethics, Tools of Ethics.

UNIT III

Functions of Management: Part-I Planning – Meaning- Need & Importance, types, Process of Planning, Barriers to Effective Planning, levels – advantages & limitations. Forecasting- Need & Techniques Decision making-Types - Process of rational decision making & techniques of decision making Organizing – Elements of organizing & processes: Types of organizations, Delegation of authority – Need, difficulties Delegation – Decentralization Staffing – Meaning & Importance Direction – Nature – Principles Communication – Types & Importance

UNIT IV

Functions of Management: Part-II Motivation – Importance – theories Leadership – Meaning –styles, qualities & function of leader Controlling - Need, Nature, importance, Process & Techniques, Total Quality Management Coordination – Need – Importance

UNIT V

Management of Change: Models for Change, Force for Change, Need for Change, Alternative Change Techniques, New Trends in Organization Change, Stress Management.

UNIT VI

Strategic Management Definition, Classes of Decisions, Levels of Decision, Strategy, Role of different Strategist, Relevance of Strategic Management and its Benefits, Strategic Management in India.

Reference Books:

1. Essential of Management – Horold Koontz and Iteinz Weibrich- McGrawhills International 2.
2. Management Theory & Practice – J.N.Chandan
3. Essential of Business Administration – K.Aswathapa, Himalaya Publishing House
4. Principles & practice of management – Dr. L.M.Parasad, Sultan Chand & Sons – New Delhi
5. Business Organization & Management – Dr. Y.K.Bhushan
6. Management: Concept and Strategies By J.S. Chandan, Vikas Publishing

Business Communication

Code: **BSC (IT)-203**

Inter Disciplinary Course (IDC-2)

Objective: The objectives of this course are to make the student understand the management perspective of an organization and its elements, nature, and divisions. This course will provide the concept of the professional view, functional activities, and workflow mechanism of their future working place also helps to acquire leadership skills.

Course Outcomes:
The subject has the following CO:
CO1: Students will be aware of the necessity of management within an organization and its functions.
CO2: Students will have the concept of management activities, how decisions are emerged, plans are being executed, stress are being minimized.
CO3: Students will be aware what is leadership skills

UNIT-I: Means of Communication:
Meaning and Definition – Process – Functions – Objectives – Importance – Essentials of good communication – Communication barriers, 7C's of Communication

UNIT-II: Types of Communication:
Oral Communication: Meaning, nature and scope – Principle of effective oral communication – Techniques of effective speech – Media of oral communication (Face-to-face conversation – Teleconferences – Press Conference – Demonstration – Radio Recording – Dictaphone – Meetings – Rumour – Demonstration and Dramatisation – Public address system – Grapevine – Group Discussion – Oral report – Closed circuit TV). The art of listening – Principles of good listening.

UNIT-III: Written Communication
Purpose of writing, Clarity in Writing, Pricinciple of Effective writing, Writing Techniques, Electronic Writing Process.

UNIT-IV: Business Letters & Reports:
Need and functions of business letters – Planning & layout of business letter – Kinds of business letters – Essentials of effective correspondence, Purpose, Kind and Objective of Reports, Writing Reports.

UNIT-V: Drafting of business letters:
Enquiries and replies – Placing and fulfilling orders – Complaints and follow-up Sales letters – Circular letters Application for employment and resume

UNIT-VI: Information Technology for Communication:
Word Processor – Telex – Facsimile (Fax) – E-mail – Voice mail –Internet – Multimedia – Teleconferencing – Mobile Phone Conversation – Video Conferencing –SMS – Telephone Answering Machine – Advantages and limitations of these types.

Topics Prescribed for workshop/skill lab:
Group Discussion, Mock Interview, Decision Making in a Group

Reference Books:
1) Business Communication – K.K.Sinha – Galgotia Publishing Company, New Delhi.
2) Media and Communication Management – C.S. Rayudu – Hikalaya Publishing House, Bombay.
3) Essentials of Business Communication – Rajendra Pal and J.S. Korlhalli- Sultan Chand & Sons, New Delhi.
4) Business Communication (Principles, Methods and Techniques) Nirmal Singh – Deep &Deep Publications Pvt. Ltd., New Delhi.

Maharishi University of Management & Technology Mangla Bilaspur (Chhattisgarh)

FACULTY OF COMPUTER SCIENCE & INFORMATION TECHNOLOGY (CSIT)

Syllabus

Diploma in Computer Applications (DCA)

2023-24

Introduction of Program

Name of the Program - DCA

Aim of the Programme- DCA programme has been designed to prepare graduates for attaining the following specific outcomes:

- An ability to apply knowledge of mathematics, computer science and management in practice.
- An ability to enhance not only comprehensive understanding of the theory but its application too in diverse field.
- The program prepares the young professional for a range of computer applications, computer organization, techniques of Computer Networking, Software Engineering, Web development, Database management and Advance Java
- An ability to design a computing system to meet desired needs within realistic constraints such as safety, security and applicability in multidisciplinary teams with positive attitude.
- An ability to communicate effectively.
- In order to enhance programming skills of the young IT professionals, the program has introduced the concept of project development in each language/technology learnt during semester.

Seats: 60 (sixty)
Eligibility: 12th
Medium of Instruction: English

Scheme of Examination
For theory / Practical Paper
Internal Assessment/Assignment - 30 marks
External Evaluation - 70 marks.

DCA-Syllabus

S.N.	Paper Code	Paper No	Subject Title	Total
		I SEMESTER		
1	FC-I(I)	I	Maharishi Vedic Science -I	100
2	DCA 101	II	Fundamentals of Computer and Information Technology	100
3	DCA 102	III	PC Package	100
4	DCA 103	IV	Programming Methodology and C Programming	100
5	DCA 104	V	Desk Top Publishing (DTP)	100
6	DCA 105	VI	Practical-	100
		Total		600
		II SEMESTER		
7	FC-I(II)	I	Maharishi Vedic Science- II	100
8	DCA 106	II	Internet and Web Page Designing	100
9	DCA 107	III	Programming in Visual Basic	100
10	DCA 108	IV	DBMS using MS Access	100
11	DCA 109	V	Computerized Accounting	100
12	DCA 110	VI	Practical	100
		Grand Total		600

Programme Outcome:

PO-1. Enhance ability to use computer techniques.
PO-2. Develop understanding the basic components of computers and terminology.
PO-3. Make aware of different type of computer viruses and prevention.
PO-4. Develop ability to use computer to learn new skills and upgrade existing skills.
PO-5 Help to frame effective mail for good communication.
PO-6.Enhance ability touse word processor, spreadsheet and presentation software for creating documents.

Programme Specific Outcome:

After completion of the course, candidates will be equipped with:-

PSO-1. Basics of computer and its function.

PSO-2. Acquire knowledge of features of Ms Word, Ms Excel, worksheets and drafting email.

PSO-3. Ability of creating and compiling C-Programs.

PSO-4. Understanding of Internet and functions of web browser.

PSO-5. Acquire knowledge of MS Access and creating, editing table in MS Access.

PSO-6. Acquire Knowledge of Data base programming, visual basic language, Graphic method and Image handling in visual basic.

PSO-7. Ability to create balance sheet, understanding of tally vault and use of tally audit.

SEMESTER-I

Paper Code- FC-I (I)

Paper – I

Maharishi Vedic Science

Course Out Comes:

The subject entitled 'Maharishi Vedic Science has the following CO:

CO-1. Understand structures, patterns, models / thought models and rationale of the scientific knowledge systems of the west and the Vedic.

CO-2. Assimilate the Vedic worldview gleaning through the plethora of related knowledge streams.

CO-3. Contrast the western and Vedic worldviews and blend their functions in different applications as required through assimilation of their variety of structures and patterns made available through their respective ontologies.

CO-4. Prepare for a deep dive into Shaastras to supplement contemporary technology / lifestyle / personality solutions.

CO-5. Pursue career goals (armed with a vedic worldview) in science, technology, engineering, computation, governance & administration, leadership, public service, Shaastras, environmental sciences, politics, management, entrepreneurship and so on.

UNIT - I

Meaning & importance of Guru Pujan, Meaning of meditation, Mann, Intelligence, Chitta, Ego, Thought.

UNIT - II

Name of forty areas of Vedic Science and their expression in Human Physiology and characteristics of consciousness, Consciousness, types of consciousness, characteristics of higher stages of consciousness. Maharishiji's effect on Society, Environment, Behaviour and Moral Values.

UNIT - III

Maharishi's Yoga, Transcendental Meditation- a general Introduction, Types of Speech, TM Sidhi Programme, Principle of Yoga Asanas and their Concept. Meaning of " YogasthaKuruKarmani" and " GyanamChetanayaamNihitam".

UNIT – IV

Introduction: Maharishi Vedic Management. Fundamental elements of Vedic Management – Totality Introduction to Absolute theory of Maharishi Government.

UNIT – V

Theory of Ayurved, Vedic Management and Leadership.

Reference Books:

1. Maharishi Sandesh Part I and II.
2. ChetnaVigyan by His Holiness Maharishi Mahesh Yogi Ji.
3. DhyanShailey by BrahmachariDr. Girish Jii

Paper Code- DCA 101

Paper – II

Name- Fundamental of Computer and Information Technology

Course Out Comes–

CO-1. To make aware of history and development of Computers.
CO-2. Understanding Computer organization and its process of working.
CO-3.Understanding Input and Output devices and its function.

UNIT – 1

Introduction to computer and information technology : History of development of computers, computer system concept, characteristics, capabilities and limitation, types of computer analog, digital, hybrid, general, special purpose, micro, mainframe, super, generation of computer, personal computer (PCs)- IBM Pcs, characteristics, PC/PCXT/PCAT- configurations, Pentium and Newer PCs specification and main characteristics, types of PCs- Desktop, Laptop, Notebook, Palmtop, Workstation etc, their characteristics.

Computer Organization and Working: Basic component of a computer system- control unit, ALU, INPUT/Output function and characteristics, memory–RAM, ROM, EPROM, PROM and other types of memory.

UNIT - 2

Input Devices: Keyboard, Mouse, Trackball, Joysticks, Digitizing tablet, Scanner, Digital Camera, MICR, OCT, OMR, BAR-CODE Reader, Voice Recognition, Light Pen and Touch Screen.

Output Devices: Monitor – characteristics and types of monitor – digital, analog size, resolution, refresh rate, Interlaced/ Non Interlaced, Dot Pitch, Video Standard- VGA, SVGA, XGA etc, Printer - Daisy wheel, Dot Matrix, Inkjet, Laser, line printer, plotter, sound card and speakers.

UNIT – 3

Storage Devices : Storage Fundamental – Primary VS Secondary, Data Storage and Retrieval method – Sequential, Direct and Index Sequential, Various Storage Devices – Magnetic Tape, Magnetic disks, Cartridge Tape, data drives, hard disk drives, floppy (Winchester disks), Disks, Optical Disks, CD, VCD, CD-R, CD-RW,ZIP Drive.

Computer Software: Need types of software – system software, application software, system software- operating system, utility program, programming Language, assemblers, complier and interpreter.

UNIT - 4

Operating System : Function types – Batch, Single, Multiprogramming, Multiprocessing, Programming languages- Machine, Assembly, High Level and 4GL. Merit and Demerits of Programming Languages.

Disk Operating System (Dos) Introduction History & version of Dos basic – physics structure of disk name, Fat, File & directory structure and naming rules, booting process, Dos system files. Dos command: Internal – DIR, MD, CD, RD, COPY, DEL, REN, VOL, DATE, TIME, CLS, PATH, TYPE etc. External – CHKDSK, XCOPY, PRINT, DISKCOPY, DISKCOMP, DOSKEY, TREE, MOVE, LABEL, APPEND, FORMAT, SORT, FDISK, BACKUP, EDIT, MODE, ATTRIB, HELP, SYS, etc Executable V/s Non executable file in Dos.

Number System : Data representation in computer, number system of computer- Binary, Octal, Hexa - Representation & their conversion, coding system- ASCII, BCD, EBCDIC etc.

UNIT – 5

Data Communication and Networks : Communication channels – twister, coaxial, fiber, optic. Types of Network – LAN, WAN, MAN etc. Topologies of LAN – Ring, BUS, STAR, MESH and TREE topologies, components of LAN – media, NIC, NOS, Bridge, HUB, Routers Repeater and Gateway.

Computer virus: Virus working principles, types of viruses, virus detection and prevention, viruses on network. Use of communication and IT daily life.

An Introduction : Modern Science and Vedic Science, Unified field based computer Science.

REFERENCE & TEXT BOOKS

1. Learning Windows 98 step by step by Rajeev Mathur, BPB Publication.
2. Learning Word 97 for Window by Rajeev Mathur, BPB Publication.
3. Learning Excel 97 for Window by Rajeev Mathur, BPB Publication.
4. A First Course in Computer by Sanjay Saxena, Vikas Publishing House New Delhi.
5. Microsoft Office 2000 by A. Mansoor by Pragya Publication.
6. Office 97 Interactive Course by Greg Perry. Tec media.
7. Microsoft Office 2000 by A. Mansoor by Pragya Publications.

Paper Code- DCA 102

Paper – III

Name- PC Packages

Course Out Comes–

CO- 1. To make aware of creating, saving, opening documents and editing documents.
CO- 2. Helps to use advanced feature of MS Word and checking grammar, spelling and formatting of files.
CO- 3. Understanding Ms excel, basics of worksheet and drafting emails.

UNIT – 1

Word-processing : MS-Word : Introduction to word processing, introduction to MS- Word: features, creating, saving and opening documents in word, interface, Toolbars, Ruler, Menus, Keyboard Shortcut, Editing a document- moving, scrolling in a document, opening multi document window, editing text selecting, inserting, delete, moving text, previewing document, printing document – Print a document from the standard toolbars, print a document from the menu, shrinking a document to fit a page, reduce the number of pages by one, formatting document: paragraph format, Aligning text and Paragraph, Border and shading, header and footer, multiple columns.

UNIT – 2

Word –processing: Advanced Feature of MS Word: Find and replace, checking the grammar and spelling, formatting via find and replace, using the thesaurus, using Auto correct, Auto complete and Auto Text, Word count, Hyphenating, Mail merge, mailing labels Wizard and Templates, handling graphic, tables insert and modification, converting of tables. Converting a word document into various formats like – Text, Rich Text Format, Word Perfect, HTML etc.

UNIT – 3

Worksheet : MS- Excel : Worksheet basics, Creating worksheet, entering data into worksheet, heading information, data text dates, alphanumeric, values, saving & quitting worksheet, opening and moving around in a existing worksheet, toolbars and menus, keyboard shortcut, working with single and multiple worksheet, coping, renaming, moving between work books, working with formulas & cell referencing – Auto sum, Coping formulas, absolute & relative addressing, working with range – creating editing and selecting range, formatting of worksheet – Auto format, changing – alignment, character styles, column width, data format, border &colors, currency sign.

UNIT – 4

Worksheet : MS- Excel : Previewing & Printing Worksheet- Page setting, print titles, Adjusting margins, page break, header and footer, graphs and chart- using wizard, various chart types, formatting grid lines & legends, previewing & printing chart, database – creation, sorting, query * filtering a database, function – database, date and times, math's & Trigonometry, statistical, Text and logical function, creating and using macros, multiple worksheet – concept creating and using.

UNIT – 5

MS Power Point: Introduction and area of use, working with MS Power Point, creating a new presentation working with presentation, using wizards, slides & different views, deleting coping slides, working with notes, handout, columns and list, adding graphics, sound and movies to a slide, working with power point objects designing and presentation of a slide show, printing and presentation, notes, Handouts with print options.

Outlook Express: Setup E-mail account with outlook, sending and receiving mail through outlook, concepts of CC, BCC, forwarding mail, draft message, formatting E-mail message , Concept of MIME protocol, attaching files and items into messages, inserting hyperlink using outlook editor and using send and receive

group mails, opening received message, opening message with attachment, replying to mail forward message flagging for further action, setting email options, managing contacts with outlook, setting up multiple email account on single machine.

REFERENCE & TEXT BOOKS

1. Window XP Complete Reference, BPB Publication
2. MS Office XP Complete BPB Publication
3. IT Tools and Applications Pragya Publications

Paper Code- DCA 103

Paper – IV

Name- Programming Methodology and C Programming

Course Out Comes–

CO- 1. Making aware of Program concept, its characteristics and various programming techniques.
CO- 2. Develop ability to understand C-language , its standards and features.
CO- 3. Understanding to create and compile C programs.

UNIT – 1

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 - 2

Introduction to C Language, C Language Standards, Features of C, Structure of C Program, Introduction to C Compliers, Creating and Complier 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 Associability of Operators, Type Conversion. Basic Input / Output Library Functions, Character Input/Outputgetch(), getchar(), getcher(), putchart(). Formatted Input/Output – printf() and scanf(), Mathematical & Character Functions.

UNIT – 3

Declaration Statement, Conditional Statement – if Statement, if else Statement, Nesting of it... else Statement, else if Ladder, The?: Operator, switch Statement. Iteration Statement – for Loop, while Loop, do-while Loop. Jump statements: break, continue, goto, exit(). Arrays – Concept of Single and Multi Dimensional Arrays Strings : Deceleration, Initialization, Functions.

UNIT – 4

The Need of C Functions, User Defined and Library Function, Prototype of Functions, Prototype of main (). Function, Calling of Function, Function Arguments, Argument Passing: Call By Value and Call By Reference, Return Values, Nesting of Function, Recursion, Array as Function Argument, Command Line Arguments, Storage Class Specified – Auto, Extern, Static, Register.

UNIT – 5

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.

REFERENCE & TEXT BOOKS

1.Balaguruswamy, "Programming C", TMH Publication.

2. Gottfried Schaums outline series, "Programming with C", TMH Publication.
3. Mahapatra, "Thinking in C", (PHI) Publications
4. Anurag Seetha, "Introduction to computers and information technology". Rain Prasad & sons, Bhopal
5. S.K. Basandra, "Computers Today". Galgotia Publication.
6. Peter Juliff "Program Design" PHI Publication.

Paper Code- DCA 104

Paper –V

Name- Desk Top Publishing (DTP)

Course Out Comes–

CO- 1. Understanding DTP, its importance, characteristics and its use in publishing and newspaper printing.
CO- 2. Understanding Adobe page maker and its usage.
CO- 3. Ability to create files using colours, fonts, filters and understanding photoshop and creating animations.

UNIT – 1

Introduction to DTP> Definition, Importance, Characteristics. Use of DTP in publishing & Newspaper Printing. Various DTP Software. Bit stream & vector graphics. Printers _ Dot Matrix, Inkjet and Laser. Introduction to offset printing technology. Typography – history, element, selection of fonts, point use of blank spaces and dashes, white spaces, various breaks, Good designing and Easy readability. Different Measurement used in DTP printing.

UNIT – 2

Introduction to Adobe Page Maker. Why Page Maker popular in publication. Toolbox, Styles, Menus, Templates. Page Orientation & Page Setup. Importing & Text block. Spell Check & find & Replace. Working with text and graphics. Columns & gutters. Different Page Layouts. Master page, page Numbering. Auto flow. Story Editor & Layout view. Attribute setting, Alignments, grids, and Guides etc. Tab Setting.

UNIT – 3

Import & Export of files Styles & Palettes. Using colors, Fonts: Post script font, true types fonts, bit stream & vector fonts. Column Balancing, Breaks. I Reverse Text. Reverse Command. Printing Options. Placing Text Graphic. Picture Editing. Bullets. Masking. Window & Orphan Lines. Text Warpping. Drop Caps. Control Palette Clips & Image Files. OLE & Embedding. Plugging. Tables Editors. Filters, Layer, PDF Files. Header & Footers. Key Board Control. Linking. Mathematics equation. Printing Options. Frame Options.

UNIT – 4

Photoshop – History & introduction, the file menu, the tools, Drawing lines & shapes. Inserting picture and shapes, filling colors, text effects, working with layers, filters. Creating design patterns, Photoshop presentation – static & dynamic presentation. WEB & WEB GALLERY using internet explorer in photo in photo shop. Creating animations using image ready, creating animations & presentations. Tips and tricks in Photoshop.

UNIT – 5

Corel draw – An overview, menus and tools. Drawing – lines, shapes. Inserting-pictures, objects, tables, templates. Adding special effects, Exporting drawings, outlining & filling objects , inserting symbols & Clip arts. Working in Corel draw presentation – adjusting the position, resizing, positioning, merging, color shades & shadows. Working with advanced effects, special interactive effects. Creating – business cards, pamphlets, banners, news papers, books. Shortcut key in Corel draw.

REFERENCE & TEXT BOOKS

1. DTP- Desktop publishing by T Balaji publications.

Paper Code- DCA 105
Paper –VI

Name- Practical on Based on 102,103,104

SEMESTER – II

Paper Code- FC-I (II)
Paper – I
Maharishi Vedic Science-II

Course Out Comes:
The subject entitled '**Maharishi Vedic Science II** has the following CO:

CO-1. Understand structures, patterns, models / thought models and rationale of the scientific knowledge systems of the west and the Vedic.

CO-2. Assimilate the Vedic worldview gleaning through the plethora of related knowledge streams.

CO-3. Contrast the western and Vedic worldviews and blend their functions in different applications as required through assimilation of their variety of structures and patterns made available through their respective ontologies.

CO-4. Prepare for a deep dive into Shaastras to supplement contemporary technology / lifestyle / personality solutions.

CO-5. Pursue career goals (armed with a vedic worldview) in science, technology, engineering, computation, governance & administration, leadership, public service, Shaastras, environmental sciences, politics, management, entrepreneurship and so on.

Unit 1:-
Maharishi General Introduction to Ayurveda, Definition of Ayurveda, Tradition of Ayurveda, Departments of Ayurveda Samhita, Ayurveda and Health, Ashtanga Ayurveda, Purpose of Ayurveda, Tridosha in Ayurveda.

Unit II:-
Routine, getting up in the morning, defecation, teething, exercise, morning walk, bath, worship, breakfast, food, earning livelihood, evening meal, sleeping etc.

Unit III:-
Introduction to Maharishi Complete Security Policy, Principles of Security Policy, Opinions of Scholars on Maharishi Complete Security Policy, Invincible Security, Defense and Mahasutra, Meaning of Invincibility, Qualities of Invincibility, Basis of Defense of Invincibility.

Unit IV:-
Meissner Effect, Universal Effect of Maharishi Ji, Principle of Power in Purity, Components of Invincibility, Forty Areas of Complete Knowledge.

Unit V:-
Verification of Physics from Veda Science, Verification of Veda Science on the basis of Physics, Chemistry, Mathematics and Physiology, Latest research and development till date, Comparison of Veda Science with Physics etc.

Reference Books:

1. Maharishi Sandesh Part I and II.
2. ChetnaVigyan by His Holiness Maharishi Mahesh Yogi Ji.
3. DhyanShailey by BrahmachariDr. Girish Jii

Paper Code- DCA 106

Paper – II

Name- Internet and Webpage designing

Course Out Comes–

CO- 1. Making acquainted with evolution and history of Internet.
CO- 2. To make aware of history and function of web browser.
CO- 3. Understanding concept of hypertext, different version of HTML and building HTML documents.

UNIT – 1

Internet: Evolution, Protocols, Concept, Internet Vs Intranet, growth of Internet, ISP Connectivity, Dial-up, leased line, VSAT etc, URIs, Domain names, Portals, Application.

E-Mail: Concept, POP and Web Based E-mail, merit, address basics of sending & Receiving, E-mail protocols, mailing list and free E-mail services.

UNIT – 2

File transfer Protocols, Telnet & chatting: Data Transmission Protocols, Client/ Server Architecture & its Characteristics, FTP & Its usages telnet Concept, Remote Logging, Protocols, Terminal Emulation Massage Board, Internet chatting – voice chat, text chat.

UNIT – 3

World Wide Web (WWW): History, Working, Web Browser, its function, Concept of Search Engine, Searching the web HTTP, URLS, Web Server, Web Protocols.

UNIT - 4

Web Publishing: Concept, Domain name Registration, space on Host Server for web site, HTML, Design tools, HTML editor, Image editor, issues in web site creation & maintenance, FTP software for upload web site.

UNIT – 5

HTML: Concept of Hypertext, Version of HTML, Element of HTTML, syntax, head & body section Building HTML document, Inserting Text, Image, Hyperlinks, Background and color controls, different HTML tag, Tables, Tables layout and presentation use of size & Attributes, List types and its tags.

REFERENCE & TEXT BOOKS

1. Level Madul M. 1.2 Internet & Web page Designing by Y.K. Jain, BPB Publication.
2. Internet for Dummies – Pustak Mahal, New Delhi
3. Internet & E-Commerce A. Mansoor&Anrag Seetha, Pragya Publication.

Paper Code- DCA 107

Paper – III

Name- Programming in Visual Basic

Course Out Comes–

CO- 1. Acquire confidence in Database programming with visual basic.
CO- 2. Understanding visual basic languageand components of Visual basic.
CO-3. Understanding Graphic method ,Graphic controls and Image handling in Visual basic.

UNIT – 1

Integrated Development Environment of Visual Basic : Integrated Development Environment of VB, User Interface Designing, Basic of Event Driven Programming. From – designing, showing & hiding.

UNIT – 2

Visual Basic Language: Data types, variable & Constant, arrays, dynamic array, array as function, collections, procedures, arguments passing, function return values.

Control flow statements: if – then – else, select case, looping statement: Do-loop, for-next, While-Wend. Nested Control Structure, Exit stmt.

UNIT – 3

Building Blocks of Visual Basic: Basic Active X Control & Their Use – Textbox, list box, combo-box, scrollbar, slider & fire controls.

Graphic controls, Image Handling in VB, Coordinate System, Graphic method- Text Drawing, Lines & shape, filling shape and grid methods.

UNIT – 4

Components of visual Basic: Menu editor: pull down and pop-up menus, Multiple Document interface-parent & Child form & Methods.

UNIT – 5

Database Programming with VB: Database programming with VB – Data Control – Method, Properties, Connectivity With database.

REFERENCE & TEXT BOOKS

1.Beginner's Guide to V.B. 6 byReetaSahoo

2. V.B. By Pragya Publication

Paper Code- DCA 108

Paper – IV

Name- DBMS Using MS Access

Course Out Comes–

CO- 1. Acquire knowledge of Database system and its characteristics.
CO- 2. Making aware of MS Access, creating table in MS Access and editing a table.
CO- 3. Understanding Reports, Forms, types of basic Reports and types of basic Forms.

UNIT – 1

Introduction To Database System 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. Why use a Relational Database.

UNIT – 2

Introduction to MS Access. Create a Table in MS Access Data Types, Field Properties, Fields: names, types, properties-default values, format, caption, validation rules Data Entry, Add record, delete record and edit text, Sort, find/replace, filter/select, rearrange columns, freeze columns. Edit a Tables – Copy, delete, import, modify table structure, find, replace.

UNIT – 3

Add a relationship, set a rule for Referential Integrity, change the join type, delete a relationship, save relationship Queries & Filter – difference between queries and filter, filter using multiple fields, Create Query with one table, find record with select query, find duplicate record with query, find unmatched record with query, run query, save and change query.

UNIT – 4

Introduction to Forms Types of Basic Forms: Columnar, Tabular, Datasheet, Main/ Sub-forms, add headers and footers, add fields to form, add text to form use label option button, check box, combo box, list box Forms Wizard, Create Template, Navigation between forms.

UNIT – 5

Introduction to Reports, Types of Basic Reports: Single Column, Tabular Report Groups/ Total, Single table report, multi table report preview report print report, Creating Report and Labels, Wizard.

REFERENCE & TEXT BOOKS

1. MS Office XP Complete BPB Publication ISBN 8 1 – 7656-564-4

2.MS Access Fast & Easy By FaitheWempen PHI

Paper Code- DCA 109

Paper – V

Name- Computerized Accounting

Course Out Comes–

CO- 1. To make aware of Accounting financial statement, concept of tally and its configuration.
CO- 2. Ability to create balance sheet , balance account book list cash/bank
CO- 3. Understanding printing formats, tally vault and use of tally audit.

UNIT – 1

Basic Concept of Accounting Financial Statements. Financial, Statements, Analysis, Cost Centre. Basic Concept of Inventory, Tally Configuration & INI setup, Data Directory & Folder, Configuration, Single & Multiple User Tally Screen Components, Mouse/ Keyboard Convention & Key, Combination switching between screen areas, Quitting Tally. Maintaining Company data Create/ Alter /Select/ Load/ Close a Company, Chart of Account, Company Features, Configuration.

UNIT – 2

Create, Alter & display Groups, Ledgers, All accounting voucher types and transactions, create and Alter new Voucher types, Item and Account Invoice Transaction, Excise Invoice, Export Invoice, Transaction using Bill-wise detail create, Alter & Display Cost Center and Cost Categories, Cost centre & cost Category allocation in voucher entry, Creating Cost centre Class, Invoice entry in a Class situation, Create, Alter & Delete Foreign Currencies, Voucher entry using foreign currency Bank reconciliation. Interest calculation using simple & advance parameter, Interest calculation on outstanding balance & on invoices, Use of voucher class, adjustment of interest, Creation of voucher class Invoices entry in a class situation.

UNIT – 3

Create , Alter & delete Budgets for groups, Ledger & cost center, Defining Credit Limit & Credit period, Display Budget & Variances, Create Alter & Delete a scenario. Enabling Job Costing in Tally, Master creation & configuration for job coasting, creation of voucher types & Voucher class for stock Transaction, Creation of Transfer journal for transfer of stock between godowns, Consumption journal Transaction, Payment Voucher, Go down summary Report, Job Works Analysis, Material consumption summary, Report Like balance sheet, profit & loss account Ration analysis, Trial Balance Account books Like cash/bank books, All Ledger Group summary & Voucher, Sales, Purchase & Journal Registers, Cost Centre & Category summary, cost centre breakup, ledger & group breaker, outstanding receivables & payables, interest receivable & payable, statistics, cash & fund flow, day books, list of Accounts, Reversing journals, optional voucher, post-dates vouchers.

UNIT – 4

Create, Alter & Display Stock Group and Stock Item, Stock item behavior using costing and market valuation method, other behavior like treating all sales as new manufacture, treating all purchase as consumed, treating all rejection inward as scrap, ignoring negative balances, treating difference due to physical counting, Create Alter & Display stock categories, Create, Alter, Display simple & Compound units of measures, stock item using alternate units, Defining standard cost & selling prices, Defining Rate of duty, Defining MRP, Create, Alter & Display Godown, Allocation of item to the Godowns, All Inventory Voucher types and transaction, Inventory detail in accounting voucher. Defining re-order Level, Transaction using tracking number, Use of batch –wise detail in accounting voucher. Additional coast detail in voucher, creating Bill of material, Coast estimation, creation prices list & defining Prices levels, invoices using Prices List, Zero valued entries, Transaction in case of Different actual & billed quantities. Report Like Stocks summary, Inventory books like stock item, Group summary, Stock transfer, physical stock register, Movement analysis, stock group & item analysis stock category analysis, Ageing analysis, sales order & Purchase order books, Statement of inventory related to Godwons, categories, stocks query, Reorder status,

Purchase & sales order summary, Purchases & sales bill pending, exception report stocks & Ledger, overdue receivables & payables memorandum voucher, optional voucher, post – dated voucher, reversing journals.

UNIT – 5

Cheque Printing Common Printing options, Different printing formats, Multi-Account printing, Dynamic Report specific options. Creating Group company, Use of Tally vault, Using security control & defining different security Levels, Use of Tally Audit, Backs – Up & Restore, splitting company data, Export & Import of data, ODBC compliance, use of E-Mail, Internet publishing Upload, Web browser & Online help, Rewrite data.

REFERENCE & TEXT BOOKS

1. Computerized Accounting System by Ajay Sharma and Manoj Bansal, SahityaBhawan Publications.
2. Computerized Accounting system by V Mishra and PK Pandey, T Balaji Publications

Paper Code- DCA 110
Paper – VI
Name- Practical-DCA106,107,108,109

MAHARISHI UNIVERSITY OF MANAGEMENT AND TECHNOLOGY

MAHARISHI ROAD, MANGLA, BILASPUR (C.G)

BOARD OF STUDIES MEETING - MINUTES

DATE OF THE MEETINGS – 6th July 2023

For the Approval of Syllabus of Program

PGDCA

Venue: Hall in the Administrative building,

Maharshi University of Management & Technology

Mangla, Bilaspur

Maharishi University of Management & Technology, Bilaspur

SYLLABUS

2022-23

BCA

Introduction of Program

NameoftheProgramme:	**BACHELOROFCOMPUTER APPLICATION(BCA)**
AimoftheProgramme:	The basic objective of the programme is to open a channel of admission for computing courses for students, who have done the 10+2 and are interested in taking computing/IT as a career. After acquiring the Bachelor's Degree (BCA) at MUMT, there is a further educational opportunity to go for an MCA or Master's Programme. Also after completing BCA Programme, a student should be able to get an entry-level jobs in the field of Information Technology or ITES.
AllottedSeats:	**60(sixty)**
Eligibility:	Candidatesshouldhavepassedthe12thexams fromarecognizededucation board.
MediumofInstruction:	English&Hindi

Scheme of Examinations:
For theory Papers: Practical Paper ✓
Internal Assessment/Assignment: 30 marks.
External Evaluation: 70 marks.
~~**For practical Papers: 100**~~

Programme Outcome:

BCA programme has been designed to prepare graduates for attaining the following specific outcomes:

PO-1. An ability to apply knowledge of mathematics, computer science and management in practice.
PO-2. An ability to enhance not only comprehensive understanding of the theory but its application too in diverse field.
PO-3. The program prepares the young professional for a range of computer applications, computer organization, techniques of Computer Networking, Software Engineering, Web development, Database management and Advance Java
PO-4. An ability to design a computing system to meet desired needs within realistic constraints such as safety, security and applicability in multidisciplinary teams with positive attitude.
PO-5. An ability to communicate effectively
PO-6. In order to enhance programming skills of the young IT professionals, the program has introduced the concept of project development in each language/technology learnt during

Programme Specific Outcome:

After completion of the course, candidates will be equipped with:-
PSO-1. Equip themselves to potentially rich & employable field of computer applications.
PSO-2. Pursue higher studies in the area of Computer Science/Applications.
PSO-3. Take up self-employment in Indian & global software market.
PSO-4. Meet the requirements of the Industrial standards.

MAHARISHI UNIVERSITY OF MANAGEMENT & TECHNOLOGY,
MANGLA, BILASPUR (C.G.)
SYLLABUS: BCA 2022-2023

S.No.	Paper Code	Paper No.	Name of the Paper	Marks
Semester – I				
1.	FC-I (I)	I	Foundation Course - Maharishi Vedic Science-I	100
2.	FC-II (I)	II	Foundation Course- English -I	100
3.	BCA101	III	Computer Fundamental	100
4.	BCA102	IV	Discrete Mathematics	100
5.	BCA103	V	PC Software Package	100
6.	BCA104	VI	Practical Computer Fundamental	100
7.	BCA105	VII	Practical Pc software	100
	TOTAL			700
Semester – II				
8.	FC-I (II)	I	Foundation Course - Maharishi Vedic Science-II	100
9.	FC-II (II)	II	Foundation Course- English -II	100
10.	BCA106	III	Programming Methodology and C Programming	100
11.	BCA107	IV	Operating System	100
12.	BCA108	V	Concept of Software	100
13.	BCA109	VI	Lab of Programming in "C"	100
14.	BCA110	VII	Lab of Software Packages	100
	TOTAL			700
Semester – III				
15.	FC-III (I)	I	Foundation Course- Hindi- I	100
16.	FC-IV (I)	II	Foundation Course- Environmental Science -I	100
17.	BCA111	III	Digital Electronics and Microprocessor	100
18.	BCA112	IV	Computer Networks	100
19.	BCA113	V	Data Structure	100
20.	BCA114	VI	Basic Mathematics (Bridge Course)	100
21.	BCA115	VII	Lab 1 –Data Structure	100
	TOTAL			700
Semester – IV				
22.	FC-III (II)	I	Foundation Course- Hindi- II	100
23.	FC-IV (II)	II	Foundation Course- Environmental Science -II	100
24.	BCA116	III	Object Oriented Programming Using C++	100
25.	BCA117	IV	Computer Graphics and Multimedia	100
26.	BCA118	V	Computer Organization and Architecture	100
27.	BCA119	VI	Lab-1 : Programming Lab Using C++	100
28.	BCA120	VII	Lab-2 : Multimedia Lab	100
	TOTAL			700
Semester – V				
29.	BCA121	I	Numerical Analysis	100
30.	BCA122	II	Software Engineering and Project Management	100
31.	BCA123	III	Database Design and RDBMS	100
32.	BCA124	IV	Introduction to AI and Expert System	100
33.	BCA125	V	DBMS Practical (SQL)	100
	TOTAL			500
Semester – VI				
32.	BCA126	I	.Net Technology	100
33.	BCA127	II	Data Mining and Warehousing	100
34.	BCA128	III	Current Trends and Technology in Computer Science	100
35.	BCA129	IV	Lab : Practical based on .NET Technology	100
36.	BCA130	V	Project: Major Project	100
	TOTAL			500
TOTAL THREE YEAR MARKS				3800

SEMESTER I

PAPER-I
Subject Code: FC-I(I),
Course Name: Maharishi Vedic Science-I

Course Outcomes–

The subject entitled 'Maharishi Vedic Science' has the following CO:

CO1: The study of Maharishi Vedic Science develops the full potential of the knower and lays the foundation for complete knowledge of any discipline, while it fosters evolution to higher states of consciousness and progressive and fulfilling action and accomplishment in life.

CO2: Maharishi Vedic Science is the systematic study, experience, and development of the full range of life, both individual and cosmic, and its applications to create a better world.

CO3: Its principles and technologies are based on the direct experience and understanding of the most vital element in life – the unbounded field of consciousness that is the inner intelligence at the basis of every individual and the entire universe.

Course Contents

Unit-1: Guru Worship and importance of Guru, meditation, mind, intellect, mind, ego, thought, Maharishi Transcendental Meditation, benefits of Transcendental Meditation, Siddhi program, yogic flight etc.

Unit- 2: Vedas and Vedic literature, form of Vedic literature, description of forty regions like Rigveda, consciousness and levels of consciousness, states of consciousness.

Unit- 3: Maharishi Yoga, definition and characteristics of Ashtanga Yoga, types of Yogasanas, usefulness of Yogasanas in human life, benefits from Yogasanas.

Unit-4: Maharishi Astrology, Origin of Astrology, Introduction to Triskandha Astrology, (Siddhanta, Sanhita and Hora), Definition and Introduction of Panchang (Tithi, Vaar, Nakshatra, Yoga and Karana), Human Life and Astrology, External and Internal Personality, Planets and Introduction to expressions etc.

Unit-5: Introduction of Maharishi Sthapatyaveda, purpose of the book, origin of Vastu Purush, tradition of Vastu Shastra, natural development from Vastu, progress from Vastu, symptoms of auspicious Vastu, inauspicious Vastu symptoms, usefulness of home, when to do Vastu Puja etc.

REFERENCE & TEXT BOOKS

1. Maharishi Sandesh Part I and II.
2. Chetna Vigyan by His Holiness Maharishi Mahesh Yogi Ji.
3. Dhyan Shailey by Brahmachari Dr.Girish Chandra Verma Ji

PAPER- II

Subject Code: FC-II(I), Subject : English Foundation Course-I

Course Out Comes–

On completion of the course the student should be able to:
CO-1. Develop the student's ability to use English language accurately and effectively by enhancing their communication skills
CO-2. Mastering the art of a professional business presentation
CO-3. Distinguish different communication process and its practical application
CO-4. More effective written communication

Course Contents

Unit-1:

1. Where the Mind is without Fear – Rabindranath Tagore
2. The Ideal Indian Art – K. Bharatha Iyer
3. The Wonder that was India – A.L. Basham
4. The Heritage of Indian Art – Kapila Vatsyayan
5. Life in Vedic Literature – Krishna Chaitanya
6. Preface to the Mahabharata – C. Rajagopalachari
7. Freedom Movement in India – Sudhir Chandra

Unit - 2:

Comprehension: Unseen Passage

Unit - 3:

(a) Composition: Paragraph Writing.
(b) Letter Writing: With internal choice (One Formal & one Informal)

Unit-4:

Language Skills: Vocabulary A. Synonyms, Antonyms B. Prefix and Suffix C. Match the Column D. Make Sentence, etc.

Unit-5:

Grammar and Language Skills Based on Text Book: The Tense forms, Determiners and Countable/ Uncountable Nouns, Verbs, Articles, Conditional Sentences, Modals.

REFERENCE & TEXT BOOKS

1. Dr. Pankak Ku. Singh & Dr Aswini Joshi, 'English Language & Indian Culture'- Thakur Publication
2. Essential English Grammar- Raymond Murphy, Cambrige University Press
3. Practical English Grammar Exercises 1- A.J. Thomson & A.V. Martinet, Oxford India.
4. Bala subramanyam: Business Communication; Vikas Publishing House, Delhi. (Englishmedium)

PAPER- III

Course Code BCA101 Course Name- Computer Fundamental

Course Out Comes–
The subject entitled **Computer Fundamental** has the following CO :
CO-1. Familiar with parts of computer
CO-2. Understand the input and output devices.
CO-3. Basic ideas of storage devices, computer Networks and Operating System

Course Contents

Unit-I: Basics of Computer
Brief History of Computers, Technical Evolution of Computers, Computer Pioneers, Categories/Types of Computers, Computer Hardware, Computer Software, CPU and its components; Mother board, Microprocessor, Expansion slots, Input/output Ports, Memory; Types of Computer Memory, Memory modules viz. SIMM, DIMM, EDO, RDRAM, SDRAM, DDRRAM, etc

Unit-II: Input, Hard/Soft copy Devices, Storage Devices:
Input Concepts, Input Devices viz. Keyboard, Mouse, Joystick, Track Ball, Touch Screen, Light pen, MICR, OMR, OBR, OCR, Voice Input, Smart Cards, Bar Code readers, Digitizer, Scanner, etc. Graphic Display Devices: DVST, Graphical input devices, three dimensional input devices; Voice output systems. Hard copy Devices viz. Printer, Types of printers, Features of printers; Plotter, Types of plotters, Features of plotters; Soft copy devices viz VDU and it's types, Types of Cards (brief) viz. CGA, MGA/MDA, EGA, VGA, SVGA, etc. Storage devices viz. Fixed Disk or Hard Disk, Floppy Diskette, Data Retrieval and Characteristics; Optical Technology; CD-ROM, CD-ROM operation, CD-ROM standards, Origins of CD-ROM; Hard Disk Drive, Floppy disk drive, CD-Drive, DVD-Drive, Tape drive, Zip drive,, Pen drive, etc.

Unit – III: Operating Systems and MS-DOS:
Custom made software, Pre-written software, Computer processing techniques, Functions of operating system (only list), Compiler, Assembler, Interpreter, Debugger, Loader, and Linker; Machine language, Assembly language, High level languages, Fourth generation languages; Booting process(with BIOS & POST), Auto executing programs, Setting parameters of config.sys; Internal and External commands of MS-DOS along with their syntax and different options.

Unit-IV: Program Planning & Computer Languages:
Planning the computer program: algorithm, representation of algorithms, flowchart, flowchart symbols, advantages and limitations of flowchart, Pseudocode: definition, pseudocodes for basic control structures, advantages and limitations of pseudocode.

Introduction and evolution of programming language, Types of programming language, characteristics of a good programming language, programming paradigms: procedural oriented and object oriented programming

Unit – V: Internet & Application:
Internet: Definition, history of internet, basic services of internet, uses of internet, internet search engine; Internet security: firewall, encryption.

PAPER- III

Course Code BCA101 Course Name- Computer Fundamental

Course Out Comes–
The subject entitled **Computer Fundamental** has the following CO :
CO-1. Familiar with parts of computer
CO-2. Understand the input and output devices.
CO-3. Basic ideas of storage devices, computer Networks and Operating System

Course Contents

Unit-I: Basics of Computer
Brief History of Computers, Technical Evolution of Computers, Computer Pioneers, Categories/Types of Computers, Computer Hardware, Computer Software, CPU and its components; Mother board, Microprocessor, Expansion slots, Input/output Ports, Memory; Types of Computer Memory, Memory modules viz. SIMM, DIMM, EDO, RDRAM, SDRAM, DDRRAM, etc

Unit-II: Input, Hard/Soft copy Devices, Storage Devices:
Input Concepts, Input Devices viz. Keyboard, Mouse, Joystick, Track Ball, Touch Screen, Light pen, MICR, OMR, OBR, OCR, Voice Input, Smart Cards, Bar Code readers, Digitizer, Scanner, etc. Graphic Display Devices: DVST, Graphical input devices, three dimensional input devices; Voice output systems. Hard copy Devices viz. Printer, Types of printers, Features of printers; Plotter, Types of plotters, Features of plotters; Soft copy devices viz VDU and it's types, Types of Cards (brief) viz. CGA, MGA/MDA, EGA, VGA, SVGA, etc. Storage devices viz. Fixed Disk or Hard Disk, Floppy Diskette, Data Retrieval and Characteristics; Optical Technology; CD-ROM, CD-ROM operation, CD-ROM standards, Origins of CD-ROM; Hard Disk Drive, Floppy disk drive, CD-Drive, DVD-Drive, Tape drive, Zip drive,, Pen drive, etc.

Unit – III: Operating Systems and MS-DOS:
Custom made software, Pre-written software, Computer processing techniques, Functions of operating system (only list), Compiler, Assembler, Interpreter, Debugger, Loader, and Linker; Machine language, Assembly language, High level languages, Fourth generation languages; Booting process(with BIOS & POST), Auto executing programs, Setting parameters of config.sys; Internal and External commands of MS-DOS along with their syntax and different options.

Unit-IV: Program Planning & Computer Languages:
Planning the computer program: algorithm, representation of algorithms, flowchart, flowchart symbols, advantages and limitations of flowchart, Pseudocode: definition, pseudocodes for basic control structures, advantages and limitations of pseudocode.

Introduction and evolution of programming language, Types of programming language, characteristics of a good programming language, programming paradigms: procedural oriented and object oriented programming

Unit – V: Internet & Application:
Internet: Definition, history of internet, basic services of internet, uses of internet, internet search engine; Internet security: firewall, encryption.

Application of IT, Latest IT trends: Artificial intelligence, Data mining, Cloud computing, Big Data.

REFERENCE & TEXT BOOKS

1. "Computer Fundamentals", P.K. Sinha, BPB Publication
2. Fundamental of Computers, Raja Raman V., Prentice Hall of India, New Delhi.
3. Introduction to Computers, Norton, Peter, , Mc-Graw-Hill.
4. Computer Fundamentals, B. Ram, New Age International Pvt. Ltd.
5. A+ Certification All-in-One Desk Reference for Dummies, Glen Clarke
6. BM PC & Clones: Hardware Trouble Shooting and Maintenance, B. Govindarajalu, Tata McGraw Hill
7. Pc Upgrade & Repair Bible , Wiley India

PAPER- IV

Subject Code BCA102, Subject Name- Discrete Mathematics

Course Out Comes–

After completion of course students are expected to be able to:
CO-1. Understand, analyze and create mathematical arguments.
CO-2. Understand sets, perform operations and algebra on sets, and describe sequences and summations.
CO-3. Understand basic concepts of number theory and familiarize public and private key cryptosystems.
CO-4. Determine properties of relations identify equivalence and partial order relations, sketch relations.

Course Contents

Unit-I

Recall of statements and logical connectives, tautologies and contradictions, logical equivalence, algebra of propositions quantifiers, existential quantifiers and universal quantifiers.

Unit -II

Boolean algebra and its properties, algebra of propositions as an example, De Morgan's Laws, partial order relations G.L.B., L.U.B. Algebra of electric circuits and its applications. Design of simple automatic control system.

Unit-III

Boolean functions - disjunctive and conjugative normal forms. Boolean's expansion theorem, fundamental forms. Many terminal Networks.

Unit -IV

Arbitrary Cartesian product of sets. Equivalence relations, partition of sets, injective, surjective, bijective maps, binary operations, countable, uncountable sets.

Unit-V

Basic Concept of Graph Theory, Sub graphs, Trees and their properties, Binary Trees, Spanning Trees, Directed Trees, Planar graphs, Euler Circuit, Hamiltonian Graph. Chromatic number.

REFERENCE & TEXT BOOKS

1. Boolean Algebra and Its Applications, J. Eldon Whitesitt, Addison-Wesley.
2. A Textbook of Discrete Mathematics, Swapan Kumar Sarkar, S. Chand.
3. Discrete Math with Proof, Eric Gossett, Pearson.
4. Discrete Math Workbook: Interactive Exercises, James R Bush, Pearson.
5. Discrete Mathematics, Prof. H K Pathak, Shiksha Sahitya Prakashan
6. Discrete Maths, C.L.Liu, T McGraw Hill

PAPER- IV

Subject Code BCA102, Subject Name- Discrete Mathematics

Course Out Comes–

After completion of course students are expected to be able to:
CO-1. Understand, analyze and create mathematical arguments.
CO-2. Understand sets, perform operations and algebra on sets, and describe sequences and summations.
CO-3. Understand basic concepts of number theory and familiarize public and private key cryptosystems.
CO-4. Determine properties of relations identify equivalence and partial order relations, sketch relations.

Course Contents

Unit-I

Recall of statements and logical connectives, tautologies and contradictions, logical equivalence, algebra of propositions quantifiers, existential quantifiers and universal quantifiers.

Unit -II

Boolean algebra and its properties, algebra of propositions as an example, De Morgan's Laws, partial order relations G.L.B., L.U.B. Algebra of electric circuits and its applications. Design of simple automatic control system.

Unit-III

Boolean functions - disjunctive and conjugative normal forms. Boolean's expansion theorem, fundamental forms. Many terminal Networks.

Unit -IV

Arbitrary Cartesian product of sets. Equivalence relations, partition of sets, injective, surjective, bijective maps, binary operations, countable, uncountable sets.

Unit-V

Basic Concept of Graph Theory, Sub graphs, Trees and their properties, Binary Trees, Spanning Trees, Directed Trees, Planar graphs, Euler Circuit, Hamiltonian Graph. Chromatic number.

REFERENCE & TEXT BOOKS

1. Boolean Algebra and Its Applications, J. Eldon Whitesitt, Addison-Wesley.
2. A Textbook of Discrete Mathematics, Swapan Kumar Sarkar, S. Chand.
3. Discrete Math with Proof, Eric Gossett, Pearson.
4. Discrete Math Workbook: Interactive Exercises, James R Bush, Pearson.
5. Discrete Mathematics, Prof. H K Pathak, Shiksha Sahitya Prakashan
6. Discrete Maths, C.L.Liu, T McGraw Hill

APER- V

Subject Code BCA103, Subject Name- PC Software Package

Course Out Comes–

After completion of course students are expected to be able to:

CO-1. Understand, analyse windows.

CO-2. Understand the MS Word, Excel, Power Point & Access.

CO-3. Able to work on MS Word, Excel, Power Point & Access.

Course Contents

Unit-I: Windows

Installing WINDOWS, Basic Elements of WINDOWS, My Computer, Sharing Devices. Windows Explorer (Files and Folder Operations), Accessories like Accessibility, Entertainment, Communication, System Tools, Paint Brush, Calculator, Calendar, Clock, Note Pad, Word Pad Etc., Control Panel, Changing Color and Theme, Changing the Desktop Background, Screen Saver, Adjusting Display Settings, Adjusting Sound, Adjusting the Mouse, Changing the Date and Time, Changing Language and Region Options, Customizing Folder View Options, Connecting to the Internet: Dial-Up Connections, Broadband Connections, Installing New Hardware & Printer, Installing & Removing Software, Power Settings.

Unit- II: Introduction to MS Word

Menus, Shortcuts, Document types; Working with Documents: Opening Files - New & Existing, Saving Files, Formatting page and Setting Margins, Converting files to different formats- Importing, Exporting, Sending files to others, Editing text documents- Inserting, Deleting, Cut, Copy, paste, Undo, Redo, Find, Search, Replace, Using Tool bars, Ruler- Using Icons, Using help; Formatting Documents: Setting Font Styles, Setting Paragraph style, Setting Page Style, Setting Document Styles, Creating Tables, Drawing, Tools, Printing Documents, Mail Merge.

Unit-III: Introduction to MS Power Point

Creating new Presentation, Different presentation templates, Setting backgrounds, Selecting presentation layouts, Formatting a presentation-Adding style, Color, gradient fills, Arranging objects, Adding Header & Footer, Slide Background, Slide layout, Inserting pictures, movies, tables etc. into the presentation, Drawing Pictures using Draw, Setting Animation & transition effect, Adding audio and video, Printing Handouts. Generating standalone presentation viewer.

Unit-IV: Introduction to MS Excel

Introduction: Spreadsheet & its Applications, Opening spreadsheet, Menus & Toolbars & icons, Shortcuts, Working with Spreadsheets-Opening, Saving Files, Setting Margins, Converting files to different formats- Importing, Exporting and Sending files to others. Entering and Editing Data, Computing data: Formula. Formatting Spreadsheets- Cell, row, column & Sheet, Alignment, Font, Border & shading. Highlighting values, Hiding/Locking Cells: Worksheet- Sheet Name, Row & Column Headers, Row Height, Column Width and Worksheet Sheet Formatting & style background, Graphs, Printing worksheet.

Unit-V: Introduction MS Access

Database concepts Tables, Queries, Forms, Reports, Opening & Saving database files: Creating Tables, Table Design, Indexing, Entering data, Importing data, Creating Queries: SQL statements, Setting relationship, Creating Forms: GUI, Form, Creating & printing reports.

REFERENCE & TEXT BOOKS

1. Comdex Computer Course Kit (windows 7 with office 2010), Gupta Vikas. Dreamtech Publication
2. Mastering MS Office 2000, Professional Edition by Courier, BPB Publication
3. MS Office 2000 Training Guide by Maria, BPB Publications
4. MS Office complete by SYBEX.

Paper –VI Paper Code- BCA104
Paper – LAB-I
Practical Computer Fundamental

1. Identify and use the following hardware parts and peripherals.
    a. Printer, Scanner and Web Cam.
    b. Different Ports used in computer.
    c. DVD Drive and USB Devices.
2. Write the steps for the following operations
    a. Booting the system and Customize the desk top.
    b. Create a new folder and a file.
    c. Copy the created file to a new folder.
    d. Rename, Copy and Delete the created file and folder.
3. Explain various input and output devices?
4. Define DOS. Explain different types of external and internal commands.
5. Draw a block diagram of computer and describe various generations of computer?
6. What is the difference between impact and non-impact printer?
7. What is Software?
8. Briefly describe a line printer?
9. Define Search Engine. Name any 3 Search Engine
10. Why computer is needed? Explain types of computer.
11. What is Booting Process?
12. Explain the characteristics of following number systems?
    a) Decimal Number System
    b) Octal Number System
    c) Hexadecimal Number System
    d) Binary Number System
13. What do you understand by EBCDIC and ASCII Codes of computer systems? Explain with suitable example?
14. Explain 1,s and 2,s complement representation?
15. What is LAN, PAN, WAN and MAN?

Paper – VII, Paper Code- BCA105
Paper – LAB-II
Practical PC Software

1) Write the steps for changing the desktop background?

2) What is screen saver? How to set screen saver?

3) What is mail merge. Write the steps for creating a mail merge?

4) Write the use and shortcut key for cut, copy, past, find and replace?

5) How to use page setup option in MS Word?

6) What is print area? How to set print area in excel worksheet?

7) Write any ten function with syntax and example in MS excel?

8) Write the steps for formatting spreadsheet?

9) How to create table in Ms access? How to set primary key field in table?

10) How to create form and report in MS access?

11) How to insert picture and sound in PowerPoint?

12) Write the steps for creating power point presentation

SEMESTER-II
Paper- I, Subject Code FC- I (II)
Subject Name: Maharishi Vedic Science-II

Course Outcomes–

The subject entitled„ Maharishi Vedic Science" has the following CO:
CO1: The study of Maharishi Vedic Science develops the full potential of the knower and lays the foundation for complete knowledge of any discipline, while it fosters evolution to higher states of consciousness and progressive and fulfilling action and accomplishment in life.
CO2: Maharishi Vedic Science is the systematic study, experience, and development of the full range of life, both individual and cosmic, and its applications to create a better world.
CO3: Its principles and technologies are based on the direct experience and understanding of the most vital element in life – the unbounded field of consciousness that is the inner intelligence at the basis of every individual and the entire universe.

Course Contents-

Unit-1:
Maharishi General Introduction to Ayurveda, Definition of Ayurveda, Tradition of Ayurveda, Departments of Ayurveda Samhita,Ayurveda and Health, Ashtanga Ayurveda, Purposeof Ayurveda, Tridoshain Ayurveda.

Unit-2:
Routine, getting up in the morning, defecation, teething, exercise, morning walk, bath, worship, breakfast, food, earning livelihood, evening meal,sleeping etc.

Unit-3:
Introduction to Maharishi Complete Security Policy, Principles of Security Policy, Opinions of Scholars on Maharishi Complete Security Policy, Invincible Security, Defense and Mahasutra, Meaning of Invincibility, Qualities of Invincibility, Basis of Defense of Invincibility.

Unit-4:
Meissner Effect, Universal Effect of Maharishi Ji, Principle of Power in Purity, Components of Invincibility, Forty Areas of Complete Knowledge.

Unit-5:
Verification of Physics from Veda Science, Verification of Veda Science on the basis of Physics, Chemistry, Mathematics and Physiology, Latest research and development till date, Comparison of Veda Science with Physics etc.

REFERENCE &TEXT BOOKS
Maharishi Sandesh Par tland II.
Chetna Vigyan by His Holiness Maharishi Mahesh Yogi Ji.
Dhyan Shailey by Brahmachari Dr. Girish Chandra Verma Ji.

Paper- II, Subject Code FC-II (II)
Subject Name – English Foundation Course-II

Course Outcomes–
The subject entitled „English-Foundation Course (Part-II) "has the following CO:
CO1: The courses hall enable the students to effectively communicate in both orally and verbally in English and improve their vocabulary..
CO2: Students will heighten their awareness of correct usage of English grammar in writing and speaking.
CO3: Students will improve their speaking ability in English both in terms of fluency and comprehensibility.
CO4: Students will enlarge their vocabulary by keeping a vocabulary journal
CO5: Students will strengthen their ability to write academic papers, essays and summaries using the process approach.
Course Contents

Unit-1:
1. Dandi Salt March–Louis Fischer
2. Aspects of Indian Constitution-M.C Chagla
3. Individual Freedom- Jawaharlal Nehru
4. Fundamental Duties
5. Delhiin1857-MirzaGhalib
6. Raja's Diamond-R.L Stevenson
7. Tree-Tina Morris

Unit-2:
PRECISWRITING

Unit-3:
REPORTWRITING

Unit-4:
NOTICE, AGEND AND MINUTES

Unit-5:
A. GRAMMAR
Articles, Prepositions, Gerund, Self-awareness forms and Possessives, Narration (Direct & Indirect), Voice(Active &Passive)

B. VOCABULARY (from the text)
Synonyms, Antonyms, Match the column, combined the sentences

REFERENCE &TEXTBOOKS:

1. ENGLISH LANGUAGE AND INDIAN CULTURE- MADHYAPRADESH HINDI GRANTH ACADEMY

Paper –III, Subject Code: BCA106,
Subject Name: Programming Methodology and C Programming

Course Outcomes–

CO-1.Describe the procedural and object oriented paradigm with concepts of streams, classes, functions, data and objects.
CO-2. Understand dynamic memory management techniques using pointers, constructors, destructors, etc CO-3 Describe the concept of function overloading, operator overloading, virtual functions and polymorphism.
CO-4 Demonstrate the use of various OOPs concepts with the help of programs.

Course Contents

Unit – I: C Programming Concepts

History of C language, C Language Character set. Tokens, Constant, Keywords and Identifiers, Variables Data Types Declaration and Assignment of Variables, Defining Symbolic Constants, Operators and Expressions: Types of Operators- Arithmetic, Relational and Logical Operators, Assignment and Conditional Operators Increment & Decrement Operators, Bitwise and Special Operators, Arithmetic Expression and its evaluation, Hierarchy of Arithmetic Operations- Evaluations, Precedence and Associatively- Mathematical Functions, Library functions: Getchar (), putchar (), printf (), scanf (), puts (), gets ().

Unit-II: Control and Branch Handling

Flow of control - if, if-else, while, do-while, for loop, Nested control structures - Switch, break and continue go to statements, Comma operator, The ? : Operators, Functions -Definition - prototypes - Passing arguments - Recursion- Storage Classes - Automatic, External, Static, Register Variables, Storage Classes and Character Strings: Automatic, Register, Static, External (Local and Global), Scope rules.

Unit - III: Arrays, String, Structures and Unions in C

Arrays - Defining and Processing, Single, Two Dimensional and Multi-dimensional arrays. Passing arrays to functions, Arrays and Strings, Handling of Character Set: Declaration & Initialization of String Variables, Structures and Unions: Definitions, Initialization and Assigning Values to Members, Arrays of Structures and Arrays Within Structures, Structure with in Structure, Unions- Size of Structures.

Unit-IV: Functions and Pointers

User Defined Functions: Form of "C" functions- Calling a Function - Nesting of Functions - Recursion - Functions with Arrays, Pointers: Declaration and Initialisation of Pointers, Pointer Expression, Operation on Pointers, Pointer and Arrays, Arrays of Pointers, Pointer and Character Strings, Pointers and Functions, Pointers and Structures, Pointer on Pointers.

Unit-V: File Maintenance in C

File Input/Output: Introduction, Defining, Opening and closing a file, Study of file I/O Operations: fopen (), fclose( ), fputs ( ), fgets ( ), fread ( ), fwriteQ, Input / Output Operations on a file, Random access to file, Command line arguments, Time, Date and Localization Functions, Dynamic Allocation Functions, Utility Functions, Wide-Character Functions.

REFERENCE &TEXTBOOKS

1. LET US C, Yashwant Kanetkar, BPB PUBLICATIONS
2. The Complete Reference C, Herbert Schildt, Tata McGraw HILL
3. PROGRAMMING IN ANSI C - by E. Balgurusamy - Tata McGraw HILL
4. PROGRAMMINGWITH C. Byron Govtfred, Tata McGraw HILL
5. The "C" Programming Language, Briain W. Kenigham & Dennis Ritchie, Pearson
6. The Spirit of "C"- Henry Mulish, Herbert L. Cooper.

Paper – IV, Subject Code : BCA107, Subject Name: Operating System

Course Outcomes–

On completion of the course, the student will be able to:
CO-1 Learn about operating systems, functions of operating systems, system calls.
CO-2. Learn about process coordination and process scheduling algorithms.
CO-3. Learn about memory management, critical section and deadlock handling algorithms.
CO-4. Learn about file management and disk scheduling algorithms.

Course Contents

Unit - I: Introduction to Operating System

What is an Operating System, Operating Systems Architecture, Operating Systems as an Extended Machine & Resource Manager, Process Model, Process States and Transitions, Types of System Calls, System Boot, Multi-Programming, Multi-Tasking, Multi-Threading; Operating Systems Classification: Simple Batch Systems, Multi-programmed Batches systems, Time-Sharing Systems, Parallel & Distributed Operating Systems.

Unit – II: Process Management

Processes: Process Scheduling, Cooperating Processes, Inter-process Communication, Threads, CPU Scheduling: Basic Concepts, Scheduling Criteria, Scheduling Algorithms, Multiple- Processor Scheduling, Process Synchronization: Background, The Critical-Section Problem, Synchronization Hardware, Semaphores, Classical Problems of Synchronization, Critical Regions, Monitors, Deadlocks: Deadlock Characterization, Methods for Handling Deadlocks, Deadlock Prevention, Deadlock Avoidance, Recovery from Deadlock, Combined Approach to Deadlock Handling.

Unit-III: Memory Management

Main Memory Management: Background, Logical versus Physical Address space, swapping, Contiguous allocation, Paging, Segmentation, Segmentation with Paging, Virtual Memory: Demand Paging, Page Replacement, Page replacement Algorithms, Performance of Demand Paging, Allocation of Frames, Thrashing, Demand Segmentation.

Unit-IV: Device and Storage Management

File-System Interface, Mass-Storage Structure, Device Management: Techniques for Device Management, Dedicated Devices, Shared Devices, Buffering, Multiple Paths, Secondary-Storage Structure: Disk Structure, Disk Scheduling, Disk Management.

Unit-V: File-System Implementation

A Simple File System, Logical & Physical File System, File-System Interface: Access Methods, Directory Structure, Protection, Free-Space Management, Directory Implementation.

REFERENCE &TEXTBOOKS

1. Operating System Concepts, Silbersachatz and Galvin, Pearson Education Pub.
2. Operating Systems, Madnick E., Donovan J., Tata McGraw Hill,
3. Operating Systems, A. S. Tannenbaum, PHI
4. Operating Systems Internals and Design Principle, William Stallings, Prentice Hall Publishers
5. Operating Systems- AConcept-Based Approach, Dhananjay M. Dhamdhere, McGraw-Hill

Paper- V, Subject Code : BCA108, Subject Name : Concept of Software

Course Outcomes–

CO-1. Learn about software.
CO-2. Understand the system Software and Assemblers and Macro processors.
CO-3. Understand the Loaders and Linkage Editors & Compilers.

Course Contents

Unit-I : Category of Software with example and brief features

Introduction to Software (s/w), Types of s/w: Application Software & System Software, Various Application Software s/w and their examples: Word Processing s/w, Spreadsheet s/w, Database s/w, Presentation s/w, Business s/w Suite, Project Management s/w, Personal Information Manager s/w, Business s/w for Phones, Accounting s/w, Document Management s/w, Enterprise Computing s/w; Graphics and Multimedia s/w, Computer-Aided Design s/w, Desktop Publishing s/w, Image Editing s/w, Video and Audio Editing s/w, Multimedia Authoring s/w, Web Page Authoring s/w; Software for Home, Personal, and Educational Use: Personal Finance s/w, Legal s/w, Tax Preparation s/w, Home Design/Landscaping s/w, Travel and Mapping s/w, Reference and Educational s/w, Entertainment s/w, Web Applications s/w, Application Software for Communications.

Unit- II : System Software

System Programming and System Programs, Needs of System Software, BIOS, POST sequence, Concept & introduction to various system s/w such as: Assemblers, Loaders, linkers ,macro processors, Macros, Compilers, Interpreters, Operating system and formula system, Translators and its types, Editor, Simulator, Emulator, Debugger, Device Drivers, Firmware.

Unit-III : Assemblers and Macro processors

Assemblers: Structure of assembler, Overview of the assembly process, Basic function, Machine dependent and machine independent features of assembler, Types of assemblers - single pass, multi-pass, cross assembler, Macros & Macro processors: Macro definition and examples, Basic Macro Processor Functions, Machine Independent Macro Processor Features, Concept of Parameterized Macro, Nested Macros, Conditional Macro Expansion, Recursive Macro. Symbolic debugger.

Unit – IV : Loaders and Linkage Editors

Basic Loader Functions, Linking and Concept of Static & Dynamic Relocation, Various loader schemes with their advantages and disadvantages, Other loader schemes - binders, Linking loaders, Dynamic binders, Machine dependent & Machine Independent Loader Features, Interpreters: use of interpreter, pure and impure interpreter.

Unit-V Compilers

Introduction to Compilers, Phases of a Compiler, Comparison of Compilers & Interpreters, Machine dependent & Machine Independent Compiler Features, Aspects of Compilation, Lexical Analysis, Syntax Analysis, Memory Allocation, Compilation of Expressions; Code optimization - local and global optimization, Study of LEX & YACC.

REFERENCE &TEXTBOOKS

1. System Programming- J. J. Donovan, Tata McGraw-Hill Education.
2. System Programming and Operating systems- D. M. Dhamdhere, Tata McGraw-Hill
3. System Software: An introduction to systems programming- Leland L. Beck, Pearson Education
4. Principles of Compiler Design-Aho and Ullman, Pearson Education.
5. Compiling Techniques, J P Bennett, TMH .
6. Modern Compiler Design, Dick Grune, Koen G.L, Henri Bal, Wiley India.
7. Compiler Construction, Principles and Practice, Kenneth C. Louden, Cengage Learning

Paper-VI, Subject Code: BCA109 ,
Subject Name: LAB:I –Lab of Programming in "C"

Course Outcomes–

CO-1. Solve basic binary math operations.
CO-2. Explain following function-**fopen (), fclose( ), fputs ( ), fgets ( ), fread ( ), fwrite( )**
CO-3. Use WAP to perform various operations

Course Contents

1) If a five digit number is input through the keyboard, write a program to reverse the number, print the sum and product of digit.
2) WAP to interchange the content of two variable (swapping).
3) WAP to convert and print the distance in meter, feet, inches and centimeter if distance is input through the keyboard.
4) WAP a to check whether a year entered through keyboard is a leap year or not.
5) WAP to check whether a number is even or odd.
6) WAP to determine whether entered character is a capital or small or digit or special symbol.
7) WAP to find the factorial value of any number entered through keyboard.
8) WAP to compute the sum of the first n terms of the following series
   S = 1+1/2+1/3+1/4+.....
9) WAP to compute the sum of the first n terms of the following series
   S =1-2+3-4+5.....
10) WAP to print all prime numbers from 1 to 100.
11) WAP to print a triangle of stars as follows (take number of lines from user):

```
*
***
*****
*******
```

12) Write a menu driven program using switch which has following option:
    I) Factorial of number
    II) Prime or Not
    III) Odd or Even
13) Write a function that checks whether a given string is Palindrome or not. Use this function to find whether the string entered by user is Palindrome or not.

14) Write a function to implement question number one (1) to seven (7) in above list.

15) WAP to perform following operations on strings:
    a) Concatenate two strings.
    b) Compare two strings
    c) Calculate length of the string
    d) Convert all lowercase characters to uppercase
    e) Convert all uppercase characters to lowercase
    f) Calculate number of vowels
    g) Reverse the string
16) Create a structure Student containing fields for Roll No., Name, Class, Year and Total Marks. Initialize the structure and print the initialized value on screen.
17) WAP to explain pointer arithmetic.
18) WAP to explain the concept of call by value and call by address mechanism.
19) WAP to read Content of file and print them on screen.
20) WAP to copy content of one file into another.
21) WAP to explain following function-
    fopen (), fclose( ), fputs ( ), fgets ( ), fread ( ), fwrite( )

Paper – VII, Subject Code: BCA110 ,
Subject Name: LAB: II – Lab of Software Packages

Course Outcomes–

CO-1. Develop solutions for a range of problems using Basic Elements of WINDOWS.
CO-2. Programs to demonstrate the implementation of MS Office.
CO-3. Understand generic editing, templates, file handling & formulas.

Course Contents

Section-A

WINDOWS : Basic Elements of WINDOWS, My Computer, Sharing Devices, Windows Explorer, Accessories: Entertainment, Communication, System Tools, Paint Brush, Calculator, Calendar, Clock, Note Pad, Word Pad Etc., Control Panel, Changing Color and Theme, Changing the Desktop Background, Screen Saver, Adjusting Display Settings, Adjusting Sound, Adjusting the Mouse, Changing the Date and Time.

Section-B

Introduction to MS Word: Menus, Shortcuts, Document types; Working with Documents: Opening Files - New & Existing, Saving Files, Formatting page and Setting Margins, Converting files to different formats- Importing, Exporting, Sending files to others, Editing text documents- Inserting, Deleting, Cut, Copy, paste, Undo, Redo, Find, Search, Replace, Using Tool bars, Ruler- Using Icons, Using help; Formatting Documents: Setting Font Styles, Setting Paragraph style, Setting Page Style, Setting Document Styles, Creating Tables, Drawing, Tools, Printing Documents.

Section-C

Introduction to MS Power Point: Opening new Presentation, Different presentation templates, Setting backgrounds, Selecting presentation layouts, Creating a presentation, Formatting a presentation-Adding style, Color, gradient fills, Arranging objects, Adding Header & Footer, Slide Background, Slide layout, Inserting pictures, movies, tables.

Section-D

Introduction to MS Excel: Introduction: Spreadsheet & its Applications, Opening spreadsheet, Menus & Toolbars & icons, Shortcuts, Working with Spreadsheets-Opening a File, Saving Files, Setting Margins, Converting files to different formats- Importing, Exporting and Sending files to others, Spreadsheet addressing, Entering and Editing Data, Computing data- Setting Formula, Finding total in a column or row, Mathematical operations, Formulas, Formatting Spreadsheets & Printing worksheet.

Section-E:

Introduction MS Access: Database concepts: Tables, Queries, Forms, Reports, Opening & Saving database files: Creating Tables, Table Design, Indexing, Entering data, Importing data, Creating Queries: SQL statements, Setting relationship, Creating Forms: GUI, Form, Creating & printing reports.

SEMESTER-III

PAPER- I, Subject Code: FC-III(I),

Subject Name: Foundation Course - Hindi -I

इकाई – 1 (क) पल्लवन परिभाषिक शब्दावली।

(ख)ईदगाह (कहानी) – मुंशी प्रेमचंद

इकाई – 2 (क) पत्र लेखन (निजी पत्र, व्यावहारिक पत्र, शासकीय पत्र, अर्द्धशासकीय पत्र आवेदन पत्र)

(ख) भारत वंदना (कविता) – सूर्यकांत त्रिपाठी निराला

इकाई – 3 (क) पर्यावाची, युग्म शब्द, शब्द शुद्धि, उपसर्ग, प्रत्यय, तत्सम, तदभव, महावरे–लोकोक्ति।

(ख) भोलाराम का जीव (व्यग) – हरिशंकर परसाई

इकाई – 4 देवनागरी लिपि एवं वर्तनी का मानक रूप, कम्प्यूटर में हिन्दी का अनुप्रयोग।

इकाई – 5 हिन्दी अपठित संक्षेपण।

सहायक पुस्तकें –

1. भारतीया के अमर स्वर – डॉ. धनंजय वर्मा
2. प्रयोजनमूलक हिन्दी – विनोद गोदरे
3. कम्प्यूटर भाषिक अनुप्रयोग – विजय कुमार मल्होत्रा
4. हिन्दी संक्षिप्त लेखन – रामप्रसाद किचलू
5. हिन्दी शब्द सामर्थ्य – शिवनारायण चतुर्वेदी
6. हिन्दी व्याकरण एवं रचना – म.प्र. हिन्दी ग्रंथ अकादमी भोपाल प्र.सं. 2013

PAPER- II, Subject Code: FC-IV (I),

Subject Name: Foundation Course : Environment Science -I

Course Outcomes–

The subject entitled 'Environmental Science (Part-I)'has the following CO:

CO1: Selecting and applying disciplinary knowledge to business situations in a local and global environment.

CO2: Identifying the research issues in business situations, analyse the issues, and propose appropriate and well justified solutions.

CO3: Identifying and assessing ethical, environmental and/or sustainability consideration since business decision making and practice,

CO4: Implying social and cultural aspects of business situations.

Course Contents-

Unit-1: Study of Environmental and Ecology:

(a) Definition and Importance
(b) Environmental Pollution and problem
(c) Public Participation and Public Awareness

Unit-2: Study of Environmental and Ecology:

(a) Air, water, noise, heat and nuclear pollution
(b) Causes, effect and prevention of pollution
(c) Disaster management–Flood, Earthquake, cyclones and and slides.

Unit-3: Environment and Social Problems:

(a) Development–non-sustainable to Sustainable.
(b) Energy problems of cities.
(c) Water preservation–rain-water collection.

Unit-4: Role of mankind in conserving natural resources:

(a) Food resources–World food problem.
(b) Energy resources–increasing demand for energy.
(c) Land resources–Land as resources.

Unit-5: Environment conservation laws:

(a) Conservation laws for air and water pollution.
(b) Wild life conservation laws.
(c) Role of information technology in protecting environment & health.

REFERENCE &TEXTBOOKS

1. Joshi: Ratan–Environmental Studies Shitya Bhawan Publication, Agra.
2. Shukla and Tiwari Environmental Studies Ram pasad and sans–Bhopal
3. Singh-Savindra–Environment Geography–Pravika Publication
4. MouryaS.D.–Environmental Studies Pravalika Publication Allhahabad.

Paper- III Subject Code BCA111
Subject Name- Digital Electronics and Microprocessor

Course Out Comes–

After Completion of this course, the student will be able to:

CO-1. Design any Logic circuit using basic concepts of Boolean algebra.

CO-2. Design any Logic circuit using basic concepts of PLDs.

CO-3. Design and develop any application using 8086 Microprocessor.
CO-4. Design and develop any application using 8051 Microcontroller.

Course Contents

Unit – I: Background of Digital Electronics

Digital Signals, Different Type of Numbering System: Decimal, Octal, Binary, Hexadecimal, Conversation from One Number System to Another System, Binary Addition, Binary Subtraction, Binary Complements. One's & Two's Complement, Binary Subtraction Using Two's Complement.

Unit – II: Logic Families

Logic Gate Basics: Or gate AND Gate, NOT Gate, Exclusive-OR (XOR) Gate, Truth Tables for Logic Gates, Truth Tables for Combinational Logic.

Types of Logic Family: Circuit of RTL, DTL, TTL and Working Function as a Gate, Emitter Coupled Logic (ECL) CMOS Logic Family, NMOS and PMOS Logic, Comparison of Different Logic Families.

Unit – III: Boolean Algebra and Karnaugh Maps

Boolean Algebra, Boolean Expression Of Combinational Logic, Laws of Boolean Algebra, Rule a of Boolean Algebra: NOT Rule, OR Rules, AND Rules, XOR Rules, Derivation of other rules Simplification, Demorgan's Theorem, Boolean Expression Formats: Sum-Of- Product, Product-Of-Sum, Converting SOP & POS to Truth Table & Truth Table to Expression, Karnaugh Maps.

Unit – IV: Combinational and Sequential Circuit

Decoders, Multiplexers, De-Multiplexers, State Machine Design Process: Mealy Versus Moore State Machines, S-R Latch/ Flip-Flop, D Latch, J-K Flip-Flop, Divide-By-Two Circuit, Registers, Counter Ripple (Asynchronous) Counter and Synchronous Counter, UP/DOWN Counters,

Unit – V: Microprocessor

Generic Architecture of Microprocessor, Pin Diagram & Pin Function of Intel 8085 Microprocessor, Instructions Set for Microprocessor, Definition and need of Addressing Mode, Addressing Modes of Intel 8085 & 8086 Microprocessor, Machine Cycle and Instruction Cycle of Microprocessor, Working of Microprocessor.

REFERENCE &TEXTBOOKS

1. Modern Digital Electronics, R. P. Jain, TMH
2. Digital Principles & Application, Leach & Malvino, TMH
3. Digital Logic Design, Morries Mano, PHI
4. Microprocessor – Architecture, Programming and Applications with the 8085, Ramesh S. Gaonkar
5. Digital Integreated Electronics, H. taub & D. Shilling, McGraw Hill
6. Digital Principles & Design, Givone, TMH
7. Digital Circiut & Design, S. Aligahanan, S. Aribazhangan, Bikas Publishing House.

Paper- IV, Subject Code BCA112
Subject Name- Computer Networks

Course Out Comes–

On completion of the course, the student will be able to:
CO-1. Explain how communication works in computer networks and to understand the basic terminology of computer networks
CO-2. Explain the role of protocols in networking and to analyze the services and features of the various layers in the protocol stack.

CO-3. Understand design issues in Network Security and to understand security threats, security services and mechanisms to counter

Course Contents

Unit - I
Introduction to Computer Network

Computer network Fundamental and types of Computer Network LAN,MAN,WAN, Wireless and Wired Network Broadcast and point to Point Network Topologies, ISO-OSI Reference Model, TCP/IP Model.

Unit – II: Data Link Layer

Functions at Data Link Layer, Framing and Correction Codes: Checksum, CRC, Hamming Code, Flow Control: Stop & Wait and Sliding Window Protocols, Data Link Protocols: HDLC and PPP, Medium Access Sub-Layer, LLC Protocol, IEEE Overview of IEEE 802.2, 802.3, 802.5 802.6.

Unit – III: Network Layer and Transport Layer

Functions of Network Layer, Networking & Internetworking Devices, Routing Protocols & Algorithms, Principles of Congestion Control, Ipv4 Address, Ipv4 Addressing, Ipv6 Address, Functions of Transport Layer, Flow Control & Buffering, Introduction To TCP/UDP Protocols and their Comparison.

Unit – IV: Common Network Architecture

Connection Oriented & Connectionless N/Ws, Frame Relay, Example of N/Ws-P2p, X.25, ATM Ethernet, Wireless LANS – 802.11, 802.11x, Gigabit, Broad Band Networks: Integrated Service Digital Networks (ISDN), Broad Band ISDN, ATM, Very Small Aperture Terminal(VSAT).

Unit – V: Internet and Protocols

World Wide Web (WWW), Domain Name System (DNS), E-Mail, File Transfer Protocol (FTP), Hyper Text Transfer Protocol (HTTP), E-Mail Protocols: Mime & SMTP, POP, IMAP, Telnet – Remote Communication Protocol, Proxy Server, Proxy Web Servers, Working Of Internet Applications.

REFERENCE &TEXTBOOKS

1. Computer Networks, Andrew S. Tanenbaum, PHI / Pearson Education Inc.
2. Data communication and Networking, Behrouz A. Forouzan, Tata McGraw-Hill.
3. Internet Law-Text and Materials, chris Reed, universal law Publishing co., new delhi
4. Data and computer communication, William stallings, pearson education.
5. Computer and communication networks, nader F. Mir, Pearson Education, 2007.
6. Data &computer communication, black, PHI.

Paper- V, Subject Code BCA113
Subject Name- Data Structure

Course Out Comes–

Upon successful completion of the course, a student will be able to:

CO-1. To access how the choices of data structure & algorithm methods impact the performance of program.

CO-2. To Solve problems based upon different data structure & also write programs.

CO-3. Choose an appropriate data structure for a particular problem

Course Contents

Unit-I: Introduction and Array

Data Types, Data Structure and its Classification, Arrays: Array concept (one dimension, two dimension), Operations for one dimension array (insertion, deletion, traversal), Examples.

Unit-II: Linked Lists

Concept of a linked list, Circular & Doubly linked list, Operations on linked lists, List Manipulation with Pointers, Insertion & Deletion of elements, Applications of linked lists.

Unit-III: Stacks-Queues and Binary Tree

Definitions and Structure, Representation using Array & Linked List, Application of Stack and Queues, Postfix and Prefix Conversion, Evolution of Arithmetic Expressions, Binary Trees: Definition, Memory Representation, Trees traversal algorithms (recursive and non-recursive), threaded trees, BFS, DFS.

Unit-IV: Searching and Sorting

Linear and Binary Search Algorithms, Complexity, Binary Search Trees (construction, insertion, deletion & search), Sorting Algorithms: Bubble Sort, Insertion Sort, Selection Sort, Tree sort, Heap Sort, Quick Sort, Merge Sort & Radix sort, External Sorting.

Unit-V: Analysis of Algorithm

Time and Space Complexity of Algorithms, Average Case & Worst Case Analysis, Asymptotic Notation, Big O notations, Analysis of sorting algorithms -Selection sort, Bubble sort, Insertion sort, Heap sort, Quick sort and Analysis of searching algorithms -Linear Search & Binary Search.

REFERENCE &TEXTBOOKS

1. Data Structures using C, A. M. Tenenbaum, Langsam, Moshe J. Augentem, PHI Pub.
2. Data Structures using C by A. K. Sharma, Pearson Education
3. Data Structures and Algorithms, A.V. Aho, J.E Hopcroft and T.D. Ullman, Addison-Wesley, Low Priced Edition.
4. Fundamentals of Data structures, Ellis Horowitz & Sartaj Sahni, AW Pub.
5. Fundamentals of computer algorithms, Horowitz Sahni and Rajasekaran, Pearson Edu.
6. Data Structures and Program Design in C, Robert Kruse, PHI of Data Structures, Jr. Symour Lipschetz, Schaum's outline by TMH.

Paper- IV, Subject Code BCA114
Subject Name- Basic Mathematics (Bridge Course)

Course Out Comes–

CO-1. To bridge up the gap between 12th standard (without math) and BCA Course.

CO-2. The students will be able to understand the subject matters of Mathematics and can able to express the fundamental ideas.

Course Out Comes–

CO-1. To bridge up the gap between 12th standard (without maths) and BCA Course.
CO-2. The students will be able to understand the subject matters of Mathematics and can able to express the fundamental ideas.

Course Contents

Unit-I

Number Systems - Irrational Number, Laws of Exponents for Real Numbers, Operations on Real Numbers, Real Numbers and Their Decimal Expansions , Representing Real Numbers on the Number Line.

Real Numbers.

Unit-II

Quadratic Equations -Standard form of a quadratic equation $ax2 + bx + c = 0$, $(a \neq 0)$. Solutions of quadratic equations (only real roots) by factorization, and by using quadratic formula.

Relationship between discriminant and nature of roots. Situational problems based on quadratic equations related to day to day activities to be incorporated.

Unit-III

Trigonometry -Trigonometric ratios of an acute angle of a right-angled triangle. Proof of their existence (well defined); motivate the ratios whichever are defined at 0o and 90o. Values of the trigonometric ratios of 300 , 450 and 600. Relationships between the ratios.

Unit-IV

Sets - Basic Concepts of Set Theory: Definitions, Inclusion, Equality of Sets, Cartesian product, The Power Set, Some operations on Sets, Venn Diagrams, Some Basic Set Identities

Relations and Functions - : Definition, Binary Relation, Representation, Domain, Range, Universal Relation, Void Relation, Union, Intersection, and Complement Operations on Relations, Properties of Binary Relations in a Set: Reflexive, Symmetric, Transitive, Anti-symmetric Relations, Relation Matrix and Graph of a Relation; Partition and Covering of a Set, Equivalence Relation, Equivalence Classes, Compatibility Relation, Maximum Compatibility Block, Composite Relation, Converse of a Relation, Transitive Closure of a Relation R in Set X Introduction & definition, Co-domain, range, image, value of a function; Examples, surjective, injective, bijective; examples; Composition of functions, examples; Inverse function, Identity map, condition of a function to be invertible, examples; Inverse of composite functions, Properties of Composition of functions.

Unit-V

Permutations and Combinations - Fundamental principle of counting. Factorial n. (n!) Permutations and combinations, derivation of Formula for nPr and nCr and their connections, simple applications..

REFERENCE &TEXTBOOKS

1."Engineering Mathematics Vol. II" by Kandasamy P and Gunavathy

2."Higher Engineering Mathematics" by Grewal B
3."Advanced Engineering Mathematics" by Kreyzig E
4."Advanced Engineering Mathematics" by Erwin Kreyszig

Paper- VII, Subject Code: BCA115
Subject Name- Lab 1 –Data Structure

1. Insertion operation, where we add data at the end of the array
2. Insertion operation, where we add data at the begning of the array
3. Insertion operation, where we add data at the any position of the array
4. deletion operation, where we add data at the begning of the array
5. Deletion operation, where we add data at the middle of the array
6. Deletion operation, where we add data at the end of the array
7. Searching operation in given array,
8. Pop operation in stack can be Implementation in C language,
9. Push operation in stack can be implementation in c language
10. enqueue operation in queue can be implementation in c language
11. dequeue operation in queue can be implementation in c language
12. Insertion operation in singly link-list from beginning .
13. Insertion operation in singly link-list from ending.
14. Insertion operation in singly link-list from any position
15. Deletion operation in singly link-list from beginning.
16. Deletion operation in singly link-list from ending.
17. Deletion operation in singly link-list from middle.

SEMESTER-IV

Paper-I, Subject FC-III(II),
Subject Name –Foundation Course - Hindi -II

इकाई – 1 निबंध–

महात्मा गांधी – सत्य और अहिंसा

विनोबा भावे – ग्राम सेवा

आचार्य नरेन्द्र देव – युवकों का समाज में स्थान

इकाई – 2 निबंध –

वासुदेवशरण अग्रवाल – मातृभूमि

भागवतशरण उपाध्याय – हिमालय की व्युत्पत्ति

हरि ठाकुर – डॉ. खूबचंद बघेल

इकाई – 3 हिन्दी भाषा और उसके विविध रूप–

सर्वजनात्मक भाषा, संचार भाषा, राजभाषा, माध्यम भाषा, मातृभाषा, कार्यालयीन भाषा, मीडिया की भाषा, वित्त एवं वाणिज्य की भाषा, तकनीकी भाषा।

इकाई – 4 अनुवाद

अनुवाद का स्वरूप, परिभाषा, क्षेत्र, प्रक्रिया। हिन्दी की प्रयोजनीयता में अनुवाद की भूमिका। व्यावहारिक अनुवाद अभ्यास।

इकाई – 5 समाचार लेखन (रिपोर्टिंग)

समाचार के प्रकार, समाचार–लेखन के महत्वपूर्ण अंग, समाचारों के उदाहरणों के अभ्यास।

सहायक पुस्तकें :–

1. हिन्दी भाषा और संस्कृति – सं. डॉ. राजेन्द्र मिश्रा
2. प्रयोगात्मक और प्रयोजनमूलक हिन्दी – डॉ. दिनेशगुप्ता
3. अनुवाद कला – डॉ. एन.इ. विश्वनाथ अय्यर
4. हिन्दी भाषा – महावीर प्रसाद द्विवेदी
5. बोलचाल की हिन्दी और संचार – मधु धवन

Paper-II, Subject FC-IV(II),

Subject Name- Foundation Course – Environmental Science-II

Course Outcomes–
The subject entitled "Environmental Science (Part-II)'has the following CO:
CO1: Understand core concepts and methods from ecological and physical sciences and their application in environmental problem-solving.
CO2: Appreciate key concepts from economic, political, and social analysis as they pertain to the design and evaluation of environmental policies and institutions.
CO3: Appreciate the ethical, cross-cultural, and historical context of environmental issues and the links between human and natural systems.

Course Contents-
Unit-1: Problem of natural resources
(a) Problem of water resources – Utilization of surface and ground water, over utilization, flood, drought, conflict saver water, dams-benefits and problem.
(b) Problem of forest resources – uses and over utilization, deforestation, utilization of timber, dams and its effect on forest sand trebles.
(c) Problem of land resource–Land as a source, erosion of land, man-induced landslides and desertification.

Unit-2: Problem of natural resources
(a) Value of bio-diversity–Consumable use: Productive use, Social, alter native amoral aesthetic and values.
(b) Indiaasanationofbio-diversityandmulti-diversityatglobal,national and local levels.
(c) Threats ofbio-diversity–Lossofhabitat,poachingofwildlife,man-wildlifeconflicts.

Unit-3: **Human Population and Environment**
(a) Population growth, disparities between countries.
(b) Population explosion, family welfare Programme.
(c) Environment and human health.

Unit-4: Multidisciplinary nature of environmental studies
(a) Natural resource.
(b) Social problems and the environment.
(c) Eco System

Unit-5: Environmental Wealth
(a) Rivers, ponds, fields and hills.
(b) Rural, industrial, Agricultural fields.
(c) Study of common plants, insects and birds.

REFERENCE &TEXTBOOKS

1. Joshi, Ratan – Enviromental Studies Shitya Bhawan Publication, Agra
2. Shukla and Tiwari Environmental Studies Rampasadandsans-Bhopal
3. Singh-Savindra- Environment Geography-PravalikaPublication
4. MoryaS.D.–Environmental Studies Pravaika Publication,Allahabad.

Paper- III Subject Code BCA116

Subject Name- Object Oriented Programming Using C++

Course Outcomes–

Upon completion of this course, students will be able to:

CO-1. Apply C++ features to program design and implementation

CO-2. Explain object-oriented concepts and describe how they are supported by C++ including identifying the features and peculiarities of the C++ programming language.

CO-3. Use C++ to demonstrate practical experience in developing object-oriented solutions. • Design and implement programs using C++ Programming language.

Course Contents

Unit-I

Features of C++, OOP vs. procedure-oriented programming, OOP Concepts: Abstraction, Inheritance, Polymorphism, Data Binding, Encapsulation, Classes, subclasses and Objects; Basics of C++: Data Types and sizes, Variable, Constants and its types, Use of « and » operators, Operators and Expressions: Operators:-Arithmetic, Relational, Assignment, Logical, Increment and Decrement Operators (++ and --), Operate-Assign' Operators, Expressions, Operator Precedence, Precedence and Order of Evaluation, Conditional Expression, Casting and type conversion.

Unit- II

Program Flow & Decision Control: if, if - else, if - else if, Loop Control: while, do - while, for, break, continue, Case Control: switch, goto; Functions/Procedures, Returning values from functions, Arguments Passed by Value, Passing Addresses of Arguments, Pointers and Arrays: Pointer Initialization, Pointer Operators, Pointer Arithmetic, Functions and pointers, Arrays, Initializing Arrays, Passing Arrays to Functions, Pointers and Arrays, Pointer to an Array, Array of pointers, Strings: String I/O, Arrays of Strings, Structures, Arrays of Structures.

Unit-III

Binding Data & Functions: Defining a Class, Creating an Object, Scope, Data Abstraction, Data Encapsulation, 'this' Pointer, Dynamic Creation of Objects, Constructors and Destructors: Parameterized & Copy constructor, Member Functions & Methods, Friend Class and Friendly Functions, Returning Objects, Arrays of Objects.

Unit-IV

Function and Operator Overloading, Rules for Overloading, Operator overloading and its uses: Overloading unary and binary operators, Overloading the Assignment Operator, Overloading the « Operator, Overloading the Increment & Decrement Operator, Converting data types: Basic to class type, Class to Basic Type, Class to Another Class Type.

Unit-V

Reusing Classes: Inheritance-Base and Derived classes, Inheritance types, Scope Resolution Operator, Access Modifiers, Multiple & Multilevel Inheritance, Calling Base Class Constructor, Overriding Base Class Members, Virtual functions and Polymorphism: Virtual & non-virtual Overriding, Rules for Virtual Functions, Pure Virtual Functions, Static and Dynamic Binding, Virtual Base Classes, Templates, Exception Handling, Throwing an exception.

REFERENCE &TEXTBOOKS

1. C++, The Complete Reference, 4th Edition, Herbert Schildt, TMH.
2. Object Oriented Programming in C++, 4th Edition, R.Lafore, SAMS, Pearson Education
3. An Introduction to OOP, 3rd Edition, T. Budd, Pearson Education,2008.
4. Programming Principles and Practice Using C++, B.Stroutstrup, Addison- Wesley, Pearson
5. Problem solving with C++, 6th Edition, Walter Savitch, Pearson Education,2007.
6. The Art, Philosophy and Science of OOP with C++, R.Miller,SPD. OP in C++,J3rd Edition, T.Gaddis, J.Walters and G.Muganda, Wiley DreamTech Press.

Paper- IV, Subject Code BCA117

Subject Name– Computer Graphics and Multimedia

Course Outcomes–

CO-1. Design scans conversion problems using C++ programming.
CO-2. Apply clipping and filling techniques for modifying an object.
CO-3. Understand the concepts of different type of geometric transformation of objects in 2D and 3D.
CO-4. Understand the practical implementation of modelling, rendering, viewing of objects in 2D
CO-5. Understand the basic concepts of computer graphics.

Course Contents

Unit-I: An Introduction Graphics System

Computer Graphics Fundamentals, Application of Computer Graphics, Display Devices: Cathode-Ray tubes, Raster-Scan Display & Random Scan Systems, Color CRT Monitors, Flat-Panel Displays, Input Devices, Graphics Software, Interactive devices. Video Card/display cards

Unit-II: Output Primitives

Line Drawing Algorithms: DDA Algorithm, Bresenham's Algorithm, Parallel Line Algorithm.
Circle generating Algorithm: Midpoint Circle generating algorithm.
Filled Area Primitives: Scan-Line Polygon Fill Algorithm, Inside-Outside tests, Boundary-Fill Algorithm, Flood Fill Algorithm, Aliasing and Anti aliasing

Unit-III: 2D Transformations

2-D Viewing and Clipping: Viewing Transformations, Point Clipping & Line Clipping Algorithms, Polygon Clipping algorithms, 2D Geometric Transformations: Basic transformations (Translation, Rotation, Scaling), Matrix Representation & Homogeneous Coordinates, Composite transformations, Reflection and Shear.

Unit-IV: 3D transformations

3D Viewing Transformation, Projections: Parallel Projection (Orthographic & Oblique Projections, Isometric Projections), Perspective Projections, 3D Geometric Transformations: Translation, Rotation, Scaling, Matrix Representation, 3D Object Representations: Polygon Surface and Polygon table, Bezier curves and surfaces.

Unit-V: Multimedia, Photoshop s/w& CorelDraw

Fundamentals of Multimedia, Animation,
Adobe Photoshop CS4: Menus and panels, Exploring the Toolbox, Working with Images Adjusting Canvas Size & Canvas Rotation, Creating, Selecting, Linking & Deleting Layers, Painting with Selections, Red Eye Tool.
CorelDraw: Command Bars & Tools, Drawing Area-Objects-Lines, Working with Text & Artistic Media Tool, Fills & Modifying Outlines, Templates, Drawing and Editing Curves and Lines, Working with Layers & Creating a Master Layer, Brush Tools and Adding Objects, Interactive Tools.

REFERENCE &TEXTBOOKS

1. Procedural Elements for Computer Graphics, D.F. Rogers, Tata McGraw Hill
2. Fundamentals of Interactive Computer Graphics, J.D. Foley and A.D. Van, Addison-Wesley.
3. How to Do Everything Adobe Photoshop CS4, Chad Perkins, Tata McGraw Hil
4. Corel Draw X4: The Official Guide, (Paperback), Gary David Bouton, Tata McGraw Hill
5. Mathematical Elements for Computer Graphics,, Rogers and Adam, Tata McGraw Hill.
6. Theory & Problem of Computer Graphics, Plastock, Schaum Series.
7. Computer Graphics, Tosijasu, L.K., Springer-verleg
8. Principles of Interactive Computer Graphics, Newman, Tata McGraw Hill.

Paper- V, Subject Code BCA118

Subject Name- Computer Organization and Architecture

Course Outcomes–

CO-1. Explain the organization of basic computer , its design and the design of control unit.
CO-2. Demonstrate the working of central processing unit and RISC and CISC Architecture.
CO-3. Describe the operations and language f the register transfer, micro operations and input-output organization.
CO-4. Understand the organization of memory and memory management hardware.
CO-5.Elaborate advanced concepts of computer architecture, Parallel Processing, inter processor communication and synchronization.

Course Contents

Unit-I : Pipeline:
Linear: pipeline processor, Non linear pipeline processor, Instruction pipeline design, Mechanisms, Dynamic instruction scheduling, Arithmetic pipeline design, Super-scalar processors, VLIW architecture.

Unit-II: Memory Hierarchy and I/O Organization On:
Cache memories, Cache coherence, High bandwidth memories, high bandwidth I/O, Disk I/O, Bus specifications and standards.

Unit-III: Parallel Computer Models & Program parallelism:
Classification of Machines, SISD, SIMD & MIMD, Condition of parallelism, data and resource dependencies, Program partitioning & scheduling, grain size latency, control flow versus data control, data flow architecture.

Unit-IV: Synchronous Parallel Processing:
Vector instruction types, vector access memory schemes, vector and symbolic processors, SIMD architecture, SIMD parallel algorithms, SIMD computers and performance enhancements.

Unit-V: System Interconnection:
Network properties and routing, static interconnection networks, dynamic interconnection networks, Multiprocessor system interconnection, Multistage & combining networks.

REFERENCE &TEXTBOOKS

1. Flynn Computer Architecture: Pipelined and parallel processor design, JB, Boston.
2. Computer Architecture & Parallel processing - Kai Hwang 7 Briggs. (MGH).
3. Computer System Architecture, M. Morris Mano, PHI/Pearson Education.
4. Computer Organization, C Hamacher, Z Vranesic, SafwatZaky, McGraw Hill.
5. Computer Architecture and Organization, J. P. Hayes, Tata McGraw-Hill.
6. Parallel Computer Arch.& Algo, R.W. Hockney, C.R. Jesshope, Adam Hilger.
7. Structured Computer Organization, A. S. Tanenbaum, Pearson Education.
8. Fundamentals of Computer Organization, P. Dandamudi , Springer.

Paper- VI Subject Code BCA119

Subject Name - LAB: I – Programming Lab Using C++

Course Outcomes–

On completion of the course, the student will be able to:

CO-1. Understand fundamental constructs of OOP.

CO-2. Get the knowledge of UML with skills to draw UML diagrams.

CO-3. Get the knowledge of different forms of OO Implementation.

CO-4. Apply object oriented programming concepts in problem solving through C++.

Course Contents

List of Sample Problems/Experiments:

1. Write a C++ program to find the sum of individual digits of a positive integer.
2. A Fibonacci sequence is defined as follows: the first and second terms in the sequence are 0 and 1. Subsequent terms are found by adding the preceding two terms in the sequence.
3. Write a C++ program to generate the first n terms of the sequence.
4. Write a C++ program to generate all the prime numbers between 1 and n , where n is a value supplied by the user.
5. Write C++ programs that use both recursive and non-recursive functions
   a) To find the factorial of a given integer,
   b) To find the GCD of two given integers,
   c) To find the n^{th} Fibonacci number.
6. Write a C++ program that uses a recursive function for solving Towers of Hanoi problem.
7. Write a C++ program to find both the largest and smallest number in a list of integers.
8. Write a C++ program to implement the matrix ADT using a class. The operations supported by this ADT are:
   a) Reading a matrix,
   b) Printing a matrix,
   c) Addition of matrices
   d) Subtraction of matrices.
   e) Multiplication of matrices.
9. Write a C++ Program to Explain concept of CLASS & OBJECT.
10. Write a C++ program to explain function overloading.
11. Write a C++ program to overload + operator.
12. Write a C++ program to explain Constructor,parameterized Constructor,Copy Constructor.
13. Write a C++ program to explain Destructor.
14. Write a C++ program to explain Inheritance.
15. Write a C++ program to implement polymorphism.

Paper- VII, Subject Code BCA120
Subject Name LAB: II – Multimedia Lab

Course Outcomes–

After completion of the course the students are expected to be able to:

CO-1. Understand how to generate line, circle and ellipse also how to create 2D object and various transformation techniques.

CO-2. Understand various 3D Transformation techniques using OpenGL.

CO-3. Understand multimedia compression techniques and applications.

Course Contents

Series of Practical Curriculums

Photoshop:

1. (i) Handling different file formats and interchanging them, changing the resolution, color, grayscales and size of the images
   (ii) Using, brushes and creating multicolor real life images. Cropping, rotating, overlapping, superimposing, pasting photos on a page, Creation of a single image from selected portions of many, Developing a commercial brochure with background tints, Creating an image with multi-layers of images and texts. Applying masks and filtering on images.

CorelDRAW X4 Part 1

- Getting Started with CorelDRAW
- Starting CorelDRAW
- Working with Command Bars
- Working with Layers
- Examining a Master Page
- Creating a Master Layer
- Working with Layers
- Using Brush Tools and Adding Objects
- Working with Interactive Tools
- Using Advanced Techniques for Text Manipulation
- Working with Paragraph Text
- The PowerClip Feature and the Envelope Tool
- Creating Bulleted Lists
- Working with Vector and Bitmap Graphics
- Converting Vector Objects to Bitmaps
- Working with Bitmap Graphics
- Introduction to CorelTRACE
- Advanced Output Options
- Preparing a Document For Printing
- Other Printing Options

Semester -V

Paper- I, Subject Code BCA121

Subject Name - Numerical Analysis

Course Outcomes–
After completion of the course the students are expected to be able to:
CO-1. Apply numerical methods to obtain approximate solutions to mathematical problems
CO-2. Analyse and evaluate the accuracy of common numerical methods.
CO-3. Write efficient, well-documented Matlab code and present numerical results in an informative way

Course Contents

Unit-I: Solution of Polynomial and Transcendental Algebraic Equations
Bisection method, Regula falsi method & Newton Raphson Method, Secant Method, Iteration Method, Solution of Cubic & Biquadratic Equation.

Unit-II: Simultaneous Equations and Matrix
Gauss – Elimination Method, Gauss -Gordon Method and Pivoting. Gauss Seidel Iterative Method, Reduction to lower or upper Triangular forms , Inversion of matrix , method of partitioning , Characteristics equation of matrix , Power methods , Eigen values of matrix , Transformation to diagonal forms.

Unit –III: Interpolation - Single Variable Functions
Newton's Interpolation formula, Newton's Forward and Backward Difference Interpolation Formula, Langranges Interpolation formula, Newton's Divided Difference Interpolation Formula.

Unit –IV : Numerical Differentiation and Integration
Newton - cotes integration formula, Trapezoidal Rule, Simpson's One-Third and Three-Eight Rule, Waddle's Rule.

Unit-V : Numerical Solution of Ordinary Differential and Integral Equation
Numerical Solution of first order Ordinary Differential Equations, one step method, Euler's, Picard's and Taylor's series Methods, Picard's Methods for successive approximations, Runga-Kutta Method.

REFERENCE &TEXTBOOKS

2. Numerical methods, B.S. Garewal,
3. Introduction to Numerical Methods, S. Shastri, TMH.
4. Numerical methods for Science and Engineering, Jain M.K.

Paper-II Subject Code BCA122
Course Name – Software Engineering and Project Management

Course Outcomes–

Upon completion of this course, students will be able to:

Co-1. Understand the process of Software development.

Co-2. Understand and plane the Software development.

CO-3.Understand and implement the Coding.

CO-4. Debug a software. Test a software.

Course Contents

Unit-I: Software Engineering and Process models

Software myths, Software engineering- A layered technology, Software Development Life Cycle, Process models: waterfall model, Incremental process models, Evolutionary process models, The Unified process; Software Requirements: Functional and non-functional requirements, User requirements, System requirements, Interface specification, software requirements document.

Unit II: Requirements and Design Engineering

Feasibility studies, Requirements elicitation and analysis, Requirements . validation, Requirements management, System models: Context Models, Behavioral models, Data models, Object models, Design concepts, the design model, software architecture, Data design, Architectural styles and patterns, Architectural Design.

Unit-III: Testing Strategies and Product metrics

A strategic approach to software testing, test strategies for conventional software, Black-Box and White-Box testing, Validation testing, System testing, the art of Debugging, Software Quality, Metrics for Analysis Model, Metrics for Design Model, Metrics for source code, Metrics for testing, Metrics for maintenance.

Unit –IV: Plans for testing

Snooping for information, Coping with complexity through teaming, Testing plan focus areas, Testing for recoverability, Planning for troubles, Preparing for the tests: Software Reuse, Developing good test programs , Data corruption, Tools, Test Execution .Testing with a virtual computer, Simulation and Prototypes, Managing the Test, Customer's role in testing

Unit-V: Software Project Management

Evolution of Software Economics, Life Cycle Phases and Process artifacts, Model based software architectures, Software process workflows, quality indicators, life-cycle expectations, CCPDS-R Case Study and Future Software Project Management Practices.

REFERENCE &TEXTBOOKS

1. Fundamentals of Software Engineering, Rajib Mall, PHI Learning Pvt. Ltd.
2. Software Engineering, Ian Sommerville, Pearson Education Inc., New Delhi.
3. Software Engineering: A Practitioner's Approach. Roger S. Pressman, Tata McGraw-Hill
4. Software Project Management, Walker Royce, Pearson Education.
5. Software Engineering, Shari L, Joanne M. Atlee, Pearson Education, Inc. New Delhi.
6. Software Engineering, Pankaj Jalote, Wiley India Pvt. Ltd., New Delhi.
7. Software Engineering, Dines Bjorner, Springer India Pvt. Ltd . New Delhi
8. Managing the Software Process, *Watts S. Humphrey*, Pearson Education.
9. Software Project Management, Bob Hughes & Mike Cotterell, fourth edition, TMH.
10. Applied Software Project Management, Andrew Stellman & Jennifer Greene, O'Reilly.

Paper-III, Subject Code BCA123
Subject Name – Database Design and RDBMS

Course Outcomes–

Upon completion of this course, students will be able to:

CO-1. Understand the importance of Database.
CO-2. Understand the Architecture & Modelling of Database.
CO-3. Understand the concept of RDBMS.
CO-3. Learn brief introduction to Structured Query Language.
CO-4. Learn and implement Backup and Recovery of databases.

Course Contents

Unit-I: Introduction to DBMS

Data & Information, File systems versus Database systems, Data Models, Schemas and Instances, Data Abstraction, Data Independence, Database languages and Interfaces, DBMS Architecture, Data Independence, Database Characteristics: Data modeling using Entity - Relationship (ER) Model: Entity sets, attributes and keys, Relationship types, sets, roles and structural constraints, Weak Entity types. Data Models: Relational, Network, Hierarchical and Object Oriented, Enhanced E-R Modeling.

Unit-II: Relational Model and RDBMS

Relational data model concepts, Codd's 12 rules, Relational model constraints and schemas, Relational Algebra and Relational calculus, Relational database design by ER & EER to Relational Mapping, Overview & Architecture of commercial RDBMSs: Oracle, SQL Server. My SQL etc., Database Language: SQL, SQL Programming Techniques: DDL, DML, DCL query statements, Constraints and Triggers, Views and Indexes, SQL in Server Environment.

Unit –III: Database Design Concepts

Data dependency, Armstrong's Axioms, Functional dependencies and Normalization of Relational Databases, First, Second and Third Normal forms, Boyce-Codd Normal form (BCNF), Relational Database design Algorithms and further dependencies, De-normalization.

Unit-IV : Transaction Processing

ACID Properties of Transactions, Concurrency control, Serializability and Recoverability, Transaction support in SQL, Locking Techniques. Time Stamp ordering, Validation Techniques, Granularity of Data Items, Database recovery techniques - Shadow paging, Log Based Recovery, ARIES recovery algorithm, Database Security: Access control, Statistical Database Security, Deadlock: Detection, Avoidance and Recovery.

Unit –V: Special Purpose Databases

Semi-structured Data Model, OO Data Model, OODBMS, Object-Based Databases, Object Relational Databases: XML and Web Databases, Structure of XML, Temporal Databases, Distributed Databases, Deductive Databases, Mobile Databases, Multimedia Databases, GIS Databases, Spatial Databases.

REFERENCE &TEXTBOOKS

1. Fundamentals of Database Systems, R Elmasri & S B. Navathe, Pearson Education.
2. Database Systems Concepts, A Silberschatz, H F. Korth & S. Sudarshan, McGraw-Hill.
3. Fundamentals of Database Management Systems, Mark L. Gillenson, Wiley India Pvt.
4. Introduction To Database Systems, C.J.Date, Longman, Pearson Education
5. Database Systems: A Complete Book, Molina, Ullman, J. Widom, Pearson Education.
6. Database Systems: Design, Implementation, and Management, Peter Rob & Carlos Coronel, CENGAGE Learning India Pvt. Ltd., New Delhi.
7. Database Systems Using Oracle, Nilesh Shah, PHI Learning Pvt. Ltd., New Delhi.

Paper-IV, Code BCA124
Subject Name- Introduction to AI and Expert System

Course Outcomes–

Learners will be able to

CO-1. Identify and appreciate Artificial Intelligence and describe its applications in daily life.

CO-2. Relate, apply and reflect on the Human-Machine Interactions to identify and interact with the three domains of AI: Data, Computer Vision and Natural Language Processing and Undergo assessment for analysing their progress towards acquired AI-Readiness skills.

CO-3. Imagine, examine and reflect on the skills required for futuristic job opportunities.

Course Contents

Unit-I: Overview of Artificial Intelligence

Definition & Importance of AI, Intelligent Agents: Agents & Environments, Emergence of Intelligent Agents, PEAS Representation for an Agent, Types of Agents; Knowledge: General Concepts: Introduction, Definition and Importance of Knowledge, Knowledge-Based Systems and Representation of Knowledge, Knowledge Organization, Knowledge Manipulation and Acquisition of Knowledge.

Unit-II: Problem Solving and Search Strategies

Solving Problems by Searching, Examples of Search Problems, Problem Formulation, Uninformed Search Techniques- DFS, BFS, Iterative Deepening, Comparing Different Techniques, Informed search methods - heuristic Functions, Hill Climbing, Simulated Annealing, A*, Searching And-Or Graphs, Constrained Satisfaction Problems: Various CSP problems, map, Coloring, Crypt Arithmetic, Backtracking for CSP, Local Search, Adversarial Search: Games, Minimax Algorithm, Alpha Beta pruning.

Unit-III: Knowledge Representation, Reasoning and Structured Knowledge

Syntax and Semantics for Propositional logic, Syntax and Semantics for FOPL, Properties of Wffs, Unification, Forward and backward chaining, Conversion to Clausal Form, Inference Structured Knowledge: Graphs, Semantic Net. Associative Networks, Frames, Frame Structures, Conceptual Dependencies and Scripts.

Unit –IV: Learning and Planning

Learning from Observations, General Model of Learning Agents, Inductive learning, learning Decision Trees, Introduction to neural networks, Perceptrons, Multilayer feed forward network, Application of ANN, Planning problem, Planning with State Space Search, Partial Order Planning, Hierarchical Planning, Conditional Planning

Unit-V: Expert Systems Architectures

Introduction, Rule Based System Architecture. Non-Production System Architecture, Dealing with uncertainty. Knowledge Acquisition and Validation, Knowledge System Building Tools

REFERENCE &TEXTBOOKS

1. Artificial Intelligence: A Modern Approach, S Russell & P Norvig, Pearson Publication
2. Principles of Artificial Intelligence, Nils J. Nilsson, Narosa Publication.
3. Introduction to Artificial Intelligence and Expert System, Dan W. Patterson.PHI.
4. Artificial Intelligence, Elaine Rich, Kevin Knight, Tata McGraw Hill.
5. AI-Structures & Strategies for Complex Problem Solving, G Lugar. Pearson Educations
6. Artificial Intelligence: an Engineering approach, Robert J Schalkolf, McGraw Hill.
7. Artificial Intelligence, Patrick H Winston, 3rd edition, Pearson Educations
8. Decision Support Systems and Intelligent Systems, Efraim Turban Jay E.Aronson. PHI.
9. Artificial Intelligence-A System Approach, M.Tim Jones, Infinity Science Press
10. Artificial Intelligence - Strategies, Applications, and Models through Search, Christopher Thornton and Benedict du Boulay, New Age International Publications.

Paper-V, Subject BCA125,
Subject Name- Lab -1 - Lab -1 - DBMS Practical (SQL)

1: Create a table STUDENT with under mentioned structure by using SQLStatement

StdID	StdName	Sex	Percentage	Class	Sec	Stream	DOB
1001	AKSHRA AGARWAL	FEMALE	70	11	A	Science	10/11/1996
1002	ANJANI SHARMA	FEMALE	75	11	A	Commerce	18/09/1996
1003	ANSHUL SAXENA	MALE	78	11	A	Commerce	19/11/1996
1004	AISHWARYA SINGH	FEMALE	79	11	A	Commerce	1/11/1996
1005	AKRITI SAXENA	FEMALE	76	11	A	Commerce	20/09/1996
1006	KHUSHI AGARWAL	FEMALE	77	11	A	Commerce	14/09/2003
1007	MAAHI AGARWAL	FEMALE	74	11	A	Science	21/04/1997
1008	MITALI GUPTA	FEMALE	78	12	A	Science	26/11/1997
1009	NIKUNJ AGARWAL	MALE	58	12	A	Science	12/7/1997
1010	PARKHI	FEMALE	59	12	A	Commerce	20/12/1997
1011	PRAKHAR TIWARI	MALE	43	12	A	Science	22/04/1997
1012	RAGHAV GANGWAR	MALE	58	12	A	Commerce	21/12/1997
1013	SAHIL SARASWAT	MALE	57	12	A	Commerce	13/08/1997
1014	SWATI MISHRA	FEMALE	98	11	A	Science	13/08/1996
1015	HARSH AGARWAL	MALE	58	11	B	Science	28/08/2003
1016	HARSHIT KUMAR	MALE	98	11	B	Science	22/05/2003
1017	JAHANVI KAPOOR	MALE	65	11	B	Science	10/1/1997
1018	STUTI MISHRA	MALE	66	11	C	Commerce	10/1/1996
1019	SURYANSH KUMAR AGARWAL	MALE	85	11	C	Commerce	22/08/2007
1020	TANI RASTOGI	FEMALE	75	12	C	Commerce	15/01/1998
1021	TANISHK GUPTA	MALE	55	12	C	Science	11/4/1998
1022	TANMAY AGARWAL	MALE	57	11	C	Commerce	28/06/1998
1023	YASH SAXENA	MALE	79	11	C	Science	13/3/1998
1024	YESH DUBEY	MALE	85	12	C	Commerce	3/4/1998

2: Open school database, then select student table and use following SQL statements.(SOLVE 1 TO 5)

1. To display all the records form STUDENT table.

2. To display only name and date of birth from the table STUDENT.

3. To display all students record where percentage is greater of equal to 80 FROM student table.

4. To display student name, stream and percentage where percentage of student is more than 80

5. To display all records of science students whose percentage is more than 75 form student table.

3: Open school database, then select student table and use following SQL statements. .(SOLVE 1 TO 6)

1. To display the STUDENT table structure.

2. To add a column (FIELD) in the STUDENT table, for example TeacherID as VARCHAR(20);

3. Press enter key, now note the difference in table structure.

4. Type the statement and press enter key, note the new field that you have added as TeacherID

5. To modify the TeacherID data type form character to integer.

Semester VI

Paper-I, Subject BCA126,
Subject Name- .Net Technology

Course Outcomes–

CO-1 Understand the .NET framework.

CO-2. Provide a consistent, object-oriented programming environment whether object code is stored and executed locally, executed locally but web distributed or executed remotely Develop a proficiency in the C# programming language.

CO- 3. Make the developer experience consistent across widely varying types of apps, such as Windows based apps and Web-based apps. Proficiently develop ASP.NET web applications using C#.

Course Contents

Unit-I: .NET framework &programming with C#.

.Net definition, Development of .net, .net framework, Framework versions, Features of .net.
Inside a C# programming language ,Data Types, Boxing & Un-Boxing. Defining a class in C#. Conditional statements, Looping Construct, Arrays. Exploring Visual Studio NET,
Object oriented Programming Concepts: Class, Objects, Inheritance, Polymorphism

Unit-II : Advance topics in C# & Windows Programming.

Interface, structure, Properties, Constructor, Destructor, indexers, Delegates, Events. Namespaces, collections. Exception and Exception Handling.
Windows Programming basic, developing a Windows Application under Visual Studio, Properties, Events, Working with Control:Form,Button,TextBox,CheckBox,RadioButton,Treeview,Listview,ListBox,Timer etc...
Data binding to Controls, Advanced Database Programming using ADO.net.

Unit-III: Programming with ASP.net

Introduction to ASP, Building a Web Application, Examples Using Standard Controls, Using HTML Controls, Validating Form Input Controls using Validation Controls(Required Field, Compare, Range, Regular Exp,Custom validation control) Navigation Controls: Understanding Site Maps, Site Map Path Control, Formatting the Site Map Path Control, Menu Control, Creating a Layout Using Master Pages, Membership and Role Management, Login Controls, Securing Applications, Using Crystal Reports in Web Forms.

Unit-IV: Database and ASP.NET Technology:

Binding to Databases using Controls, Data Management with ADO.net ,SQL data source, Entity Data Model, Binding Grid View.
Data Access with LINQ to SQL : Creating LINQ to SQL Entities, Performing standard database commands with LINQ to SQL. ASP.NET Configuration, Configuration Setting,ASP.NET Security: Authentication, Windows based, Form based, Passport authentication,Authorization.,ASP.NET membership Concept. State Management. Caching Application Pages and Data

Unit-V: Advanced Applications with .NET Technology

XML Web Services: Setting Web Method Attribute, Setting Web Services Attribute, Invoking an XML Web Service with HTTP-Get, HTTP-Post & SOAP, XML Web Services Behaviour, AJAX(Asynchronous JavaScript and XML): Server Side & Client Side Ajax, Ajax Toolkit, Setting up and implementing Ajax, SQL Server Administration: Setup Database server of a website, Converting data between MDF to DBO,DBO to XLS or in any other format, Backup and Restore of data, FTP Management, Setting up FTP Server (Live), Sending Emails, Designing email panel, How to send an email to various users, Sending auto emails.

REFERENCE &TEXTBOOKS

1. Professional Visual Studio 2013, Bruce Johnson, Wrox Publication
2. Beginning ASP.NET 4.5.1: in C# and VB, Imar Spaanjaars, Wrox Publication
3. Professional C# 5.0 and .NET 4, C. Nagel, J Glynn, Morgan Skinner, Wrox Publication
4. Pro ASP.NET 3.5 in C# 2008, Matthew MacDonald and Mario S, Wrox Publication
5. Pro ASP.NET MVC 3 Framework, Adam Freeman; Steven Sanderson, Apress
6. Professional ASP.NET MVC 3, Jon Galloway; Phil H; Brad Wilson; K. Scott Allen, Wrox
7. Pro ASP.NET 4 in C# 2010, Matthew Mac Donald; Adam Freeman; Mario S, Apress
8. Microsoft® ASP.NET 4 Step by Step, George Shepherd, Microsoft Press

Paper-II, Code BCA127,
Subject Name- Data Mining and Warehousing

Course Outcomes–

CO-1.Understand the functionality of the various data mining and data warehousing component
CO-2 Appreciate the strengths and limitations of various data mining and data warehousing models
CO-3 Explain the analyzing techniques of various data
CO-4 Describe different methodologies used in data mining and data ware housing.
CO-5 Compare different approaches of data ware housing and data mining with various technologies

Course Contents

Unit-I: Overview and Concepts:
Need for data warehousing, basic elements of data warehousing, Trends in data warehousing. Planning And Requirements: Project planning and management, Collecting the requirements. Architecture And Infrastructure: Architectural components, Infrastructure and metadata.

Unit-II: Data Design and Data Representation:
Principles of dimensional modelling, Dimensional modelling advanced topics, data extraction, transformation and loading, data quality.

Unit-III : Information Access and Delivery:
Matching information to classes of users, OLAP in data warehouse, Data warehousing and the web. Implementation and Maintenance: Physical design process, data warehouse deployment, growth and maintenance.

Unit-IV: Data Mining Introduction:
Basics of data mining, related concepts, Data mining techniques Data Mining Algorithms: Classification, Clustering, Association rules. Knowledge Discovery: KDD Process.

Unit –V: Web Mining:
Content Mining, Web Structure Mining, Web Usage mining. Advanced Topics: Spatial mining, Temporal mining. Visualization: Data generalization and summarization-based characterization, Analytical characterization: analysis of attribute relevance, Mining class comparisons: Discriminating between different classes, Mining descriptive statistical measures in large databases Data Mining Primitives, Languages, and System Architectures: Data mining primitives, Query language, Designing GUI based on a data mining query language, Architectures of data mining systems Application and Trends in Data Mining: Applications, Systems products and research prototypes, Additional themes in data mining, Trends in data mining

REFERENCE &TEXTBOOKS

1. Data Mining-Concepts & Techniques, J. Han & M Kamber, Morgan Kaufmann Pub
2. Introduction to Data Mining. P N Tan, M. Steinbach & Vipin Kumar, Pearson education
3. Data Mining Techniques - Arun K Pujari,2nd edition, Universities Press
4. Data Warehousing in the Real World - Sam Aanhory & Dennis Murray Pearson Edn
5. Insight into Data Mining.K P.Soman,S.Diwakar.V.Ajay,PHI,2008
6. Data Warehousing Fundamentals - Paulraj Ponnaiah Wiley student Edition
7. Data Mining Introductory and Advanced Topics, Margaret H.Dunham, Pearson Education 2004
8. Principles of Data Mining, David Hand, Heikki Manila, Padhraic Symth, PHI 2004
9. Building the Data Warehouse. W.H.Inmon, Wiley, 2003.
10. Data Warehousing, Data Mining & OLAP, Alex Bezon, Stephen J Smith, MeGraw-Hill.

Paper-III, Subject Code BCA128,
Subject Name- Current Trends and Technology in Computer Science

Course Outcomes–

CO-1. To understand the Current Trends and Technology in Computer Science like Machine Learning, Grid Computing & Monitoring& Big Data

CO-2. Learn the Cluster Computing and Cloud Computing

Course Contents

Unit-I : Machine Learning:

Concept of Machine Learning, Applications of Machine Learning, Key elements of Machine Learning, Supervised vs. Unsupervised Learning.

Neural Network: Introduction, Architecture, Model Representation, Application.

Unit-II: Grid Computing& Monitoring

Grid Architecture and Service modelling, Grid resource management, Grid Application trends, Characterization of Grids, Organizations and their Roles, Grid Computing Road Maps, Review of Web Services-OGSA-WSRF.

Grid Monitoring: Grid Monitoring Architecture (GMA) - An Overview of Grid Monitoring Systems-GridICE - JAMM -MDS-Network Weather Service-R-GMA-Other Monitoring Systems- Ganglia and GridM.

Unit-III: Big Data

Big Data and its importance, Characteristics of Big Data, What Comes Under Big Data, Who's Generating Big Data, Challenges in Handling Big Data, How Big Data Impact on IT, Big Data Analytics, Big data applications, Future of Big Data, Risks of Big Data.

Unit-IV: Cluster Computing

Introduction: Overview of Cluster Computing, The Role of Clusters, Definition and Taxonomy Of Parallel Computing, Hardware System Structure, Node Software, Resource Management, Distributed Programming, Limitations, Cluster Planning, Architecture , Node Hardware and Node Software, Design Decisions.

Unit-V: Cloud Computing

Cloud Computing services models and features in Saas, Paas and Iaas; Service oriented architecture and web services; Features of cloud computing architectures and simple case studies, Virtualization- Characteristic features, Taxonomy Hypervisor, Virtualization and Cloud Computing, Pros and Cons of Cloud Computing, Technology Examples/Case Studies.

REFERENCE &TEXTBOOKS

1. Distributed and Cloud Computing, Kaittwang Geoffrey C.Fox and Jack J Dongrra, Elsevier India 2012.
2. Mastering Cloud Computing- Raj Kumar Buyya, Christian Vecchiola and S Tanurai Selvi, TMH, 2012.
3. Beowulf Cluster Computing with Linux, William Gropp, Ewing Lusk, Thomas Sterling, MIT Press, 2003
4. Grid Computing, Joshy Joseph and Craig Fellenstein, Pearson Education 2004. 5. The Grid Core Technologies, Maozhen Li, Mark Baker, John Wiley and Sons , 2005.
5. "Understanding Big data", Chris Eaton, Dirk deroos et al., McGraw Hill, 2012.
6. Neural network and Learning Machines, Simon Haykin, Pearson Education, 2011.
7. Cloud Computing, John W. Ritting House and James F Ramsome, CRC Press, 2012Enterprise Cloud Computing, Gautam Shroff, Cambridge University Press, 2012.

Paper-IV, Subject Code BCA129,
Subject Name- Lab 1: Practical based on .NET Technology

Course Outcomes–

At the end of this Lab course students will be able to:

CO-1.Create user interactive web pages using ASP.Net.

CO-2.Create simple data binding applications using ADO.Net connectivity.

CO-3. Performing Database operations for Windows Form and web applications

Course Contents

1. Write a C# program to explain Conditional statement.
2. Write a C# program to explain every loop construct available in C#.
3. Write a C# program to explain boxing & un-boxing.
4. Write a C# program to explain concept of CLASS & Object.
5. Write a C# program to explain Array Class.
6. Write a C# program to explain properties.
7. Write a C# program to explain Constructor & Destructor.
8. Write a C# program to explain Exception Handling.
9. Write a C# program to explain Collection.
10. Write a C# program to Build a Windows form. Insert various controls in the form.
11. Create a Web Page & Insert basic html Control & explain working of every control.
12. Explain Validation control Using ASP.NET validation control.
13. Explain Navigation control by creating web page by ASP.NET
14. Explain Login control by suitable ASP.NET web page.
15. Create web site using master page.
16. Create web site and explain various Form input control.
17. Create a web site and bind the control using sqldatasource.
18. Create a web site and bind the control using EDM.
19. Create a web site and perform some database operation (insert,update,delete) by using your own code.
20. Create a web site and insert various AJAX control.
21. Design an E-mail Panel.

Paper-V, Subject BCA130,
Project: Major Project

It is compulsory, that students would have group of maximum of two students and project should be done under Government Sectors/ Public Sector / Pvt. Limited SAA/ Company/ Software Technology Park of India/ ISO 9001 certified company only.

The students should not make any project under local or private institutions.
The students should make project themselves and project will not be copy of other project.

Steps for Live Project

1 Getting customer's requirements
2. Designs, database and business logics
2. Developing software application project
3. Testing and implementing the project
4. Troubleshooting the project application after Implementation

GUIDELINES FOR PROJECT WORK

A project report has to be submitted as per the rules described.

Number of Copies:

The student should submit two hardbound copy of the Project Report with one RW/CD/DVD.

Acceptance / Rejection of Project Report:

The student must submit a project report to the Head of Department/Project Guide for approval. The Head of Department/Project Guide holds the right to accept the project or suggest modifications for resubmission.

Format of the Project Report:

The student must adhere strictly to the following format for the submission of the Project Report

a. Paper

The Report shall be typed on white paper, A4 size or continuous computer stationary bond, for the final submission. The Report to be submitted to the University must be original and subsequent copies may be photocopied on any paper.

b. Typing

The typing shall be of standard letter size, double-spaced and on one side of the paper only, using black ribbons and black carbons.

c. Margins

The typing must be done in the following margins

Left ----- 35mm, Right ----- 20mm

Top ----- 35mm, Bottom ----- 20mm

d. Binding

The Report shall be Rexene bound in black. Plastic and spiral bound Project Reports not be accepted.

e. Front Cover:

The front cover should contain the following details:

TOP : The title in block capitals of 6mm to 15mm letters.

CENTER: Full name in block capitals of 6mm to 10mm letters.

BOTTOM: Name of the University, year of submission- all in block capitals of 6mm to 10mm letters on Separate lines with proper spacing and cantering.

f. Blank Sheets

At the beginning and end of the report, two white black bound papers should be provided, one for the purpose of binding and other to be left blank.

Abstract

Every report should have an Abstract following the Institute"s Certificate. The abstract shall guide the reader by highlighting the important material contained in the individual chapters, section, subsection etc.

Name of modules :

1. DECLARATION
2. CERTIFICATE
3. ACKNOWLEDGEMENT
4. ABOUT THE UNIVERSITY
5. INDEX
6. INTRODUCTION
7. HARDWARE/SOFTWARE REQUIREMENT
8. SURVEY REPORT
9. PROBLEM STATEMENT
10. PROPOSED WORK
11. METHODOLOGY
12. DFD
13. ERDIAGRAM
14. IMPLEMENTATION
15. TOOL/TECHNOLOGY
16. FRONT-END AND BACK-END DATABASE DESCRIPTION
17. CONCLUSION/FUTURE WORK

Format of Front Page

(BELOW)

Maharishi University of Management & Technology
Mangla, Bilaspur (CG)

A PROJECT REPORT

ON

"..... TITLE OF THE PROJECT....."

SUBMITTED

TO

DEPARTMENT

OF

COMPUTER SCIENCE AND INFORMATION TECHNOLOGY

SESSION

IN

PARTIAL FULFILLMENT OF THE REQUIREMENS

FOR THE AWARD OF THE DEGREE/DIPLOMA

BECHLORE OF COMPUTER APPLICATION / PGDCA

Project Guide Name	HOD	Submitted BY
NAME...	NAME...	Name of Student-
		Enrollment No. –
		Roll No. –
		Sem.-

****

SYLLABUS

2021-22

BCA

Introduction of Program

NameoftheProgramme:	**BACHELOROFCOMPUTER APPLICATION(BCA)**
AimoftheProgramme:	The basic objective of the programme is to open a channel of admission for computing courses for students, who have done the 10+2 and are interested in taking computing/IT as a career. After acquiring the Bachelor's Degree (BCA) at MUMT, there is a further educational opportunity to go for an MCA or Master's Programme. Also after completing BCA Programme, a student should be able to get an entry-level jobs in the field of Information Technology or ITES.
AllottedSeats:	**60(sixty)**
Eligibility:	Candidatesshouldhavepassedthe12thexams fromarecognizededucation board.
MediumofInstruction:	English&Hindi

Programme Outcome: BCA programme has been designed to prepare graduates for attaining the following specific outcomes:

PO-1. An ability to apply knowledge of mathematics, computer science and management in practice.
PO-2. An ability to enhance not only comprehensive understanding of the theory but its application too in diverse field.
PO-3. The program prepares the young professional for a range of computer applications, computer organization, techniques of Computer Networking, Software Engineering, Web development, Database management and Advance Java
PO-4. An ability to design a computing system to meet desired needs within realistic constraints such as safety, security and applicability in multidisciplinary teams with positive attitude.
PO-5. An ability to communicate effectively
PO-6. In order to enhance programming skills of the young IT professionals, the program has introduced the concept of project development in each language/technology learnt during

Programme Specific Outcome:

After completion of the course, candidates will be equipped with:-
PSO-1. Equip themselves to potentially rich & employable field of computer applications.
PSO-2. Pursue higher studies in the area of Computer Science/Applications.
PSO-3. Take up self-employment in Indian & global software market.
PSO-4. Meet the requirements of the Industrial standards.

SYLLABUS FOR BACHELOR OF COMPUTER APPLICATION (BCA) 2021-22

S.No.	Paper Code	Paper No.	Name of the Paper	Marks
			Semester – I	
1.	BCA101	I	Foundation Hindi-I	100
2.	BCA102	II	English Foundation Course-I	100
3.	BCA103	III	Computer Fundamental	100
4.	BCA104	IV	Discrete Mathematics	100
5.	BCA105	V	PC Software Package	100
6.	BCA106	VI	Environment Science-I	100
7.	BCA107	VII	Maharishi Vedic Science-I	100
8.	BCA108	VIII	Practical Computer Fundamental	100
9.	BCA109	IX	Practical Pc software	100
			Semester – II	
10.	BCA110	I	Programming Methodology and C Programming	100
11.	BCA111	II	Operating System	100
12.	BCA112	III	Concept of Software	100
13.	BCA113	IV	Lab-I of Programming in "C"	100
14.	BCA114	V	Lab-II of Software Packages	100
			SEM I AND SEM II TOTAL	1400
			Semester – III	
15.	BCA115	I	Digital Electronics and Microprocessor	100
16.	BCA116	II	Computer Networks	100
17.	BCA117	III	Data Structure	100
18.	BCA118	IV	Basic Mathematics (Bridge Course)	100
			Semester – IV	
19.	BCA119	I	Object Oriented Programming Using C++	100
20.	BCA120	II	Computer Graphics and Multimedia	100
21.	BCA121	III	Computer Organization and Architecture	100
22.	BCA122	IV	Lab-I Programming Lab Using C++	100
23.	BCA123	V	Lab-II Multimedia Lab	100
			SEM III AND SEM IV TOTAL	900

			Semester – V	
24.	BCA124	I	Maharishi Vedic Science- II	100
25.	BCA125	II	Foundation English-II	100
26.	BCA126	III	Numerical Analysis	100
27.	BCA127	IV	Software Engineering and Project Management	100
28.	BCA128	V	Database Design and RDBMS	100
29.	BCA129	VI	Introduction to AI and Expert System	100
			Semester – VI	
30.	BCA130	I	Foundation Hindi-II	100
31.	BCA131	II	Foundation Environment-II	100
32.	BCA132	III	Net Technology	100
33.	BCA133	IV	Data Mining and Warehousing	100
34.	BCA134	V	Current Trends and Technology in Computer Science	100
35	BCA135	VI	Lab-I Practical based on .NET Technology	100
36	BCA136	VII	Lab-II Project: Major Project	100
			SEM V AND SEM VI TOTAL	1300
			GRAND TOTAL	3600

Scheme of Examinations: Practical Paper
Internal assessment/ Assignment: 30 marks.
External evaluation: 70 marks.
For theory Papers:
Internal Assessment/Assignment: 30 marks.
External Evaluation: 70 marks.
For practical Papers: 100

SEMESTER I

PAPER- I

Course Code: BCA101, Course Name: Hindi-Foundation Course-I

इकाई – 1 (क) पल्लवन परिभाषिक शब्दावली।

(ख)ईदगाह (कहानी) – मुंशी प्रेमचंद

इकाई – 2 (क) पत्र लेखन (निजी पत्र, व्यावहारिक पत्र, शासकीय पत्र, अर्द्धशासकीय पत्र आवेदन पत्र)

(ख) भारत वंदना (कविता) – सूर्यकांत त्रिपाठी निराला

इकाई – 3 (क) पर्यावाची, युग्म शब्द, शब्द शुद्धि, उपसर्ग, प्रत्यय, तत्सम, तदभव, महावरे–लोकोक्ति।

(ख) भोलाराम का जीव (व्यंग) – हरिशंकर परसाई

इकाई – 4 देवनागरी लिपि एवं वर्तनी का मानक रूप, कम्प्यूटर में हिन्दी का अनुप्रयोग।

इकाई – 5 हिन्दी अपठित संक्षेपण।

सहायक पुस्तकें –

1. भारतीया के अमर स्वर – डॉ. धनंजय वर्मा
2. प्रयोजनमूलक हिन्दी – विनोद गोदरे
3. कम्प्यूटर भाषिक अनुप्रयोग – विजय कुमार मल्होत्रा
4. हिन्दी संक्षिप्त लेखन – रामप्रसाद किचलू
5. हिन्दी शब्द सामर्थ्य – शिवनारायण चतुर्वेदी
6. हिन्दी व्याकरण एवं रचना – म.प्र. हिन्दी ग्रंथ अकादमी भोपाल प्र.सं. 2013

PAPER- II

Course Code: BCA102 English Foundation Course-I

Course Out Comes–

On completion of the course the student should be able to:
CO-1. Develop the student's ability to use English language accurately and effectively by enhancing their communication skills
CO-2. Mastering the art of a professional business presentation
CO-3. Distinguish different communication process and its practical application
CO-4. More effective written communication

Course Contents

Unit-1:

1. Where the Mind is without Fear – Rabindranath Tagore
2. The Ideal Indian Art – K. Bharatha Iyer
3. The Wonder that was India – A.L. Basham
4. The Heritage of Indian Art – Kapila Vatsyayan
5. Life in Vedic Literature – Krishna Chaitanya
6. Preface to the Mahabharata – C. Rajagopalachari
7. Freedom Movement in India – Sudhir Chandra

Unit - 2:

Comprehension: Unseen Passage

Unit - 3:

(a) Composition: Paragraph Writing.
(b) Letter Writing: With internal choice (One Formal & one Informal)

Unit-4:

Language Skills: Vocabulary A. Synonyms, Antonyms B. Prefix and Suffix C. Match the Column D. Make Sentence, etc.

Unit-5:

Grammar and Language Skills Based on Text Book: The Tense forms, Determiners and Countable/ Uncountable Nouns, Verbs, Articles, Conditional Sentences, Modals.

REFERENCE & TEXT BOOKS

1. Dr. Pankak Ku. Singh & Dr Aswini Joshi, 'English Language & Indian Culture'- Thakur Publication
2. Essential English Grammar- Raymond Murphy, Cambrige University Press
3. Practical English Grammar Exercises 1- A.J. Thomson & A.V. Martinet, Oxford India.
4. Bala subramanyam: Business Communication; Vikas Publishing House, Delhi. (Englishmedium)

PAPER- III

Course Code BCA103 Course Name- Computer Fundamental

Course Out Comes–
The subject entitled **Computer Fundamental** has the following CO :
CO-1. Familiar with parts of computer
CO-2. Understand the input and output devices.
CO-3. Basic ideas of storage devices, computer Networks and Operating System

Course Contents

Unit-I: Basics of Computer
Brief History of Computers, Technical Evolution of Computers, Computer Pioneers, Categories/Types of Computers, Computer Hardware, Computer Software, CPU and its components; Mother board, Microprocessor, Expansion slots, Input/output Ports, Memory; Types of Computer Memory, Memory modules viz. SIMM, DIMM, EDO, RDRAM, SDRAM, DDRRAM, etc

Unit-II: Input, Hard/Soft copy Devices, Storage Devices:
Input Concepts, Input Devices viz. Keyboard, Mouse, Joystick, Track Ball, Touch Screen, Light pen, MICR, OMR, OBR, OCR, Voice Input, Smart Cards, Bar Code readers, Digitizer, Scanner, etc. Graphic Display Devices: DVST, Graphical input devices, three dimensional input devices; Voice output systems. Hard copy Devices viz. Printer, Types of printers, Features of printers; Plotter, Types of plotters, Features of plotters; Soft copy devices viz VDU and it's types, Types of Cards (brief) viz. CGA, MGA/MDA, EGA, VGA, SVGA, etc. Storage devices viz. Fixed Disk or Hard Disk, Floppy Diskette, Data Retrieval and Characteristics; Optical Technology; CD-ROM, CD-ROM operation, CD-ROM standards, Origins of CD-ROM; Hard Disk Drive, Floppy disk drive, CD-Drive, DVD-Drive, Tape drive, Zip drive,, Pen drive, etc.

Unit – III: Operating Systems and MS-DOS:
Custom made software, Pre-written software, Computer processing techniques, Functions of operating system (only list), Compiler, Assembler, Interpreter, Debugger, Loader, and Linker; Machine language, Assembly language, High level languages, Fourth generation languages; Booting process(with BIOS & POST), Auto executing programs, Setting parameters of config.sys; Internal and External commands of MS-DOS along with their syntax and different options.

Unit-IV: Program Planning & Computer Languages:
Planning the computer program: algorithm, representation of algorithms, flowchart, flowchart symbols, advantages and limitations of flowchart, Pseudocode: definition, pseudocodes for basic control structures, advantages and limitations of pseudocode.

Introduction and evolution of programming language, Types of programming language, characteristics of a good programming language, programming paradigms: procedural oriented and object oriented programming

Unit – V: Internet & Application:
Internet: Definition, history of internet, basic services of internet, uses of internet, internet search engine; Internet security: firewall, encryption.

Application of IT, Latest IT trends: Artificial intelligence, Data mining, Cloud computing, Big Data.

REFERENCE & TEXT BOOKS

1. "Computer Fundamentals", P.K. Sinha, BPB Publication
2. Fundamental of Computers, Raja Raman V., Prentice Hall of India, New Delhi.
3. Introduction to Computers, Norton, Peter, , Mc-Graw-Hill.
4. Computer Fundamentals, B. Ram, New Age International Pvt. Ltd.
5. A+ Certification All-in-One Desk Reference for Dummies, Glen Clarke
6. BM PC & Clones: Hardware Trouble Shooting and Maintenance, B. Govindarajalu, Tata McGraw Hill
7. Pc Upgrade & Repair Bible , Wiley India

PAPER- IV

Course Code BCA104 Course Name- Discrete Mathematics

Course Out Comes–

After completion of course students are expected to be able to:
CO-1. Understand, analyze and create mathematical arguments.
CO-2. Understand sets, perform operations and algebra on sets, and describe sequences and summations.
CO-3. Understand basic concepts of number theory and familiarize public and private key cryptosystems.
CO-4. Determine properties of relations identify equivalence and partial order relations, sketch relations.

Course Contents

Unit-I

Recall of statements and logical connectives, tautologies and contradictions, logical equivalence, algebra of propositions quantifiers, existential quantifiers and universal quantifiers.

Unit -II

Boolean algebra and its properties, algebra of propositions as an example, De Morgan's Laws, partial order relations G.L.B., L.U.B. Algebra of electric circuits and its applications. Design of simple automatic control system.

Unit-III

Boolean functions - disjunctive and conjugative normal forms. Boolean's expansion theorem, fundamental forms. Many terminal Networks.

Unit -IV

Arbitrary Cartesian product of sets. Equivalence relations, partition of sets, injective, surjective, bijective maps, binary operations, countable, uncountable sets.

Unit-V

Basic Concept of Graph Theory, Sub graphs, Trees and their properties, Binary Trees, Spanning Trees, Directed Trees, Planar graphs, Euler Circuit, Hamiltonian Graph. Chromatic number.

REFERENCE & TEXT BOOKS

1. Boolean Algebra and Its Applications, J. Eldon Whitesitt, Addison-Wesley.
2. A Textbook of Discrete Mathematics, Swapan Kumar Sarkar, S. Chand.
3. Discrete Math with Proof, Eric Gossett, Pearson.
4. Discrete Math Workbook: Interactive Exercises, James R Bush, Pearson.
5. Discrete Mathematics, Prof. H K Pathak, Shiksha Sahitya Prakashan
6. Discrete Maths, C.L.Liu, T McGraw Hill

PAPER- V

Course Code BCA105 Course Name- *PC Software Package*

Course Out Comes–

After completion of course students are expected to be able to:

CO-1. Understand, analyse windows.

CO-2. Understand the MS Word, Excel, Power Point & Access.

CO-3. Able to work on MS Word, Excel, Power Point & Access.

Course Contents

Unit-I: Windows

Installing WINDOWS, Basic Elements of WINDOWS, My Computer, Sharing Devices. Windows Explorer (Files and Folder Operations), Accessories like Accessibility, Entertainment, Communication, System Tools, Paint Brush, Calculator, Calendar, Clock, Note Pad, Word Pad Etc., Control Panel, Changing Color and Theme, Changing the Desktop Background, Screen Saver, Adjusting Display Settings, Adjusting Sound, Adjusting the Mouse, Changing the Date and Time, Changing Language and Region Options, Customizing Folder View Options, Connecting to the Internet: Dial-Up Connections, Broadband Connections, Installing New Hardware & Printer, Installing & Removing Software, Power Settings.

Unit- II: Introduction to MS Word

Menus, Shortcuts, Document types; Working with Documents: Opening Files - New & Existing, Saving Files, Formatting page and Setting Margins, Converting files to different formats- Importing, Exporting, Sending files to others, Editing text documents- Inserting, Deleting, Cut, Copy, paste, Undo, Redo, Find, Search, Replace, Using Tool bars, Ruler- Using Icons, Using help; Formatting Documents: Setting Font Styles, Setting Paragraph style, Setting Page Style, Setting Document Styles, Creating Tables, Drawing, Tools, Printing Documents, Mail Merge.

Unit-III: Introduction to MS Power Point

Creating new Presentation, Different presentation templates, Setting backgrounds, Selecting presentation layouts, Formatting a presentation-Adding style, Color, gradient fills, Arranging objects, Adding Header & Footer, Slide Background, Slide layout, Inserting pictures, movies, tables etc. into the presentation, Drawing Pictures using Draw, Setting Animation & transition effect, Adding audio and video, Printing Handouts. Generating standalone presentation viewer.

Unit-IV: Introduction to MS Excel

Introduction: Spreadsheet & its Applications, Opening spreadsheet, Menus & Toolbars & icons, Shortcuts, Working with Spreadsheets-Opening, Saving Files, Setting Margins, Converting files to different formats- Importing, Exporting and Sending files to others. Entering and Editing Data, Computing data: Formula. Formatting Spreadsheets- Cell, row, column & Sheet, Alignment, Font, Border & shading. Highlighting values, Hiding/Locking Cells: Worksheet- Sheet Name, Row & Column Headers, Row Height, Column Width and Worksheet Sheet Formatting & style background, Graphs, Printing worksheet.

Unit-V: Introduction MS Access

Database concepts Tables, Queries, Forms, Reports, Opening & Saving database files: Creating Tables, Table Design, Indexing, Entering data, Importing data, Creating Queries: SQL statements, Setting relationship, Creating Forms: GUI, Form, Creating & printing reports.

REFERENCE & TEXT BOOKS

1. Comdex Computer Course Kit (windows 7 with office 2010), Gupta Vikas. Dreamtech Publication
2. Mastering MS Office 2000, Professional Edition by Courier, BPB Publication
3. MS Office 2000 Training Guide by Maria, BPB Publications
4. MS Office complete by SYBEX.

PAPER- VI

Course Code: BCA106, Course Name: Environment Science-I

Course Outcomes–

The subject entitled 'Environmental Science (Part-I)'has the following CO:

CO1: Selecting and applying disciplinary knowledge to business situations in a local and global environment.

CO2: Identifying the research issues in business situations, analyse the issues, and propose appropriate and well justified solutions.

CO3: Identifying and assessing ethical, environmental and/or sustainability consideration since business decision making and practice,

CO4: Implying social and cultural aspects of business situations.

Course Contents-

Unit-1: Study of Environmental and Ecology:

(a) Definition and Importance
(b) Environmental Pollution and problem
(c) Public Participation and Public Awareness

Unit-2: Study of Environmental and Ecology:

(a) Air, water, noise, heat and nuclear pollution
(b) Causes, effect and prevention of pollution
(c) Disaster management–Flood, Earthquake, cyclones and and slides.

Unit-3: Environment and Social Problems:

(a) Development–non-sustainable to Sustainable.
(b) Energy problems of cities.
(c) Water preservation–rain-water collection.

Unit-4: Role of mankind in conserving natural resources:

(a) Food resources–World food problem.
(b) Energy resources–increasing demand for energy.
(c) Land resources–Land as resources.

Unit-5: Environment conservation laws:

(a) Conservation laws for air and water pollution.
(b) Wild life conservation laws.
(c) Role of information technology in protecting environment & health.

REFERENCE &TEXTBOOKS

1. Joshi: Ratan–Environmental Studies Shitya Bhawan Publication, Agra.
2. Shukla and Tiwari Environmental Studies Ram pasad and sans–Bhopal
3. Singh-Savindra–Environment Geography–Pravika Publication
4. MouryaS.D.–Environmental Studies Pravalika Publication Allhahabad.

PAPER-VII
Course Code: BCA107, FC-I(I),
Course Name: Maharishi Vedic Science(Part-I)

Course Outcomes–

The subject entitled 'Maharishi Vedic Science' has the following CO:

CO1: The study of Maharishi Vedic Science develops the full potential of the knower and lays the foundation forcomplete knowledge of any discipline, while it fosters evolution to higher states of consciousness and progressive and fulfilling action and accomplishment in life.

CO2: Maharishi Vedic Science is the systematic study, experience, and development of the full range of life, both individual and cosmic, and its applications to create a better world.

CO3: Its principles and technologies are based on the direct experience and understanding of the most vital element in life – the unbounded field of consciousness that is the inner intelligence at the basis of every individual and the entire universe.

Course Contents

Unit-1: Guru Worship and importance of Guru, meditation, mind, intellect, mind, ego, thought, Maharishi Transcendental Meditation, benefits of Transcendental Meditation, Siddhi program, yogic flight etc.

Unit- 2: Vedas and Vedic literature, form of Vedic literature, description of forty regions like Rigveda, consciousness and levels of consciousness, states of consciousness.

Unit- 3: Maharishi Yoga, definition and characteristics of Ashtanga Yoga, types of Yogasanas, usefulness of Yogasanas in human life, benefits from Yogasanas.

Unit-4: Maharishi Astrology, Origin of Astrology, Introduction to Triskandha Astrology, (Siddhanta, Sanhita and Hora), Definition and Introduction of Panchang (Tithi, Vaar, Nakshatra, Yoga and Karana), Human Life and Astrology, External and Internal Personality, Planets and Introduction to expressions etc.

Unit-5: Introduction of Maharishi Sthapatyaveda, purpose of the book, origin of Vastu Purush, tradition of Vastu Shastra, natural development from Vastu, progress from Vastu, symptoms of auspicious Vastu, inauspicious Vastu symptoms, usefulness of home, when to do Vastu Puja etc.

REFERENCE & TEXT BOOKS

1. Maharishi Sandesh Part I and II.
2. Chetna Vigyan by His Holiness Maharishi Mahesh Yogi Ji.
3. Dhyan Shailey by Brahmachari Dr.Girish Chandra Verma Ji

Paper –VIII Paper Code- BCA108
Paper – LAB-I
Practical Computer Fundamental

Paper – IX Paper Code- BCA109
Paper – LAB-II
Practical PC Software

SEMESTER-II

Paper – I, Subject Code: BCA110, CourseName: Programming Methodology and C Programming

Course Outcomes–

CO-1.Describe the procedural and object oriented paradigm with concepts of streams, classes, functions, data and objects.
CO-2. Understand dynamic memory management techniques using pointers, constructors, destructors, etc CO-3 Describe the concept of function overloading, operator overloading, virtual functions and polymorphism.
CO-4 Demonstrate the use of various OOPs concepts with the help of programs.

Course Contents

Unit – I: C Programming Concepts

History of C language, C Language Character set. Tokens, Constant, Keywords and Identifiers, Variables Data Types Declaration and Assignment of Variables, Defining Symbolic Constants, Operators and Expressions: Types of Operators- Arithmetic, Relational and Logical Operators, Assignment and Conditional Operators Increment & Decrement Operators, Bitwise and Special Operators, Arithmetic Expression and its evaluation, Hierarchy of Arithmetic Operations- Evaluations, Precedence and Associatively- Mathematical Functions, Library functions: Getchar (), putchar (), printf (), scanf (), puts (), gets ().

Unit-II: Control and Branch Handling

Flow of control - if, if-else, while, do-while, for loop, Nested control structures - Switch, break and continue go to statements, Comma operator, The ? : Operators, Functions -Definition - prototypes - Passing arguments - Recursion- Storage Classes - Automatic, External, Static, Register Variables, Storage Classes and Character Strings: Automatic, Register, Static, External (Local and Global), Scope rules.

Unit - III: Arrays, String, Structures and Unions in C

Arrays - Defining and Processing, Single, Two Dimensional and Multi-dimensional arrays. Passing arrays to functions, Arrays and Strings, Handling of Character Set: Declaration & Initialization of String Variables, Structures and Unions: Definitions, Initialization and Assigning Values to Members, Arrays of Structures and Arrays Within Structures, Structure with in Structure, Unions- Size of Structures.

Unit-IV: Functions and Pointers

User Defined Functions: Form of "C" functions- Calling a Function - Nesting of Functions - Recursion - Functions with Arrays, Pointers: Declaration and Initialisation of Pointers, Pointer Expression, Operation on Pointers, Pointer and Arrays, Arrays of Pointers, Pointer and Character Strings, Pointers and Functions, Pointers and Structures, Pointer on Pointers.

Unit-V: File Maintenance in C

File Input/Output: Introduction, Defining, Opening and closing a file, Study of file I/O Operations: fopen (), fclose( ), fputs ( ), fgets ( ), fread ( ), fwriteQ, Input / Output Operations on a file, Random access to file, Command line arguments, Time, Date and Localization Functions, Dynamic Allocation Functions, Utility Functions, Wide-Character Functions.

REFERENCE &TEXTBOOKS

1. LET US C, Yashwant Kanetkar, BPB PUBLICATIONS
2. The Complete Reference C, Herbert Schildt, Tata McGraw HILL
3. PROGRAMMING IN ANSI C - by E. Balgurusamy - Tata McGraw HILL
4. PROGRAMMINGWITH C. Byron Govtfred, Tata McGraw HILL
5. The "C" Programming Language, Briain W. Kenigham & Dennis Ritchie, Pearson
6. The Spirit of "C"- Henry Mulish, Herbert L. Cooper.

Paper – II, Subject Code:BCA111, Subject Name: Operating System

Course Outcomes–

On completion of the course, the student will be able to:
CO-1 Learn about operating systems, functions of operating systems, system calls.
CO-2. Learn about process coordination and process scheduling algorithms.
CO-3. Learn about memory management, critical section and deadlock handling algorithms.
CO-4. Learn about file management and disk scheduling algorithms.

Course Contents

Unit - I: Introduction to Operating System
What is an Operating System, Operating Systems Architecture, Operating Systems as an Extended Machine & Resource Manager, Process Model, Process States and Transitions, Types of System Calls, System Boot, Multi-Programming, Multi-Tasking, Multi-Threading; Operating Systems Classification: Simple Batch Systems, Multi-programmed Batches systems, Time-Sharing Systems, Parallel & Distributed Operating Systems.

Unit – II: Process Management
Processes: Process Scheduling, Cooperating Processes, Inter-process Communication, Threads, CPU Scheduling: Basic Concepts, Scheduling Criteria, Scheduling Algorithms, Multiple- Processor Scheduling, Process Synchronization: Background, The Critical-Section Problem, Synchronization Hardware, Semaphores, Classical Problems of Synchronization, Critical Regions, Monitors, Deadlocks: Deadlock Characterization, Methods for Handling Deadlocks, Deadlock Prevention, Deadlock Avoidance, Recovery from Deadlock, Combined Approach to Deadlock Handling.

Unit-III: Memory Management
Main Memory Management: Background, Logical versus Physical Address space, swapping, Contiguous allocation, Paging, Segmentation, Segmentation with Paging, Virtual Memory: Demand Paging, Page Replacement, Page replacement Algorithms, Performance of Demand Paging, Allocation of Frames, Thrashing, Demand Segmentation.

Unit-IV: Device and Storage Management
File-System Interface, Mass-Storage Structure, Device Management: Techniques for Device Management, Dedicated Devices, Shared Devices, Buffering, Multiple Paths, Secondary-Storage Structure: Disk Structure, Disk Scheduling, Disk Management.

Unit-V: File-System Implementation
A Simple File System, Logical & Physical File System, File-System Interface: Access Methods, Directory Structure, Protection, Free-Space Management, Directory Implementation.

REFERENCE &TEXTBOOKS

1. Operating System Concepts, Silbersachatz and Galvin, Pearson Education Pub.
2. Operating Systems, Madnick E., Donovan J., Tata McGraw Hill,
3. Operating Systems, A. S. Tannenbaum, PHI
4. Operating Systems Internals and Design Principle, William Stallings, Prentice Hall Publishers
5. Operating Systems- AConcept-Based Approach, Dhananjay M. Dhamdhere, McGraw-Hill

Paper- III, Subject Code:BCA112, Subject Name : Concept of Software

Course Outcomes–

CO-1. Learn about software.
CO-2. Understand the system Software and Assemblers and Macro processors.
CO-3. Understand the Loaders and Linkage Editors & Compilers.

Course Contents

Unit-I : Category of Software with example and brief features

Introduction to Software (s/w), Types of s/w: Application Software & System Software, Various Application Software s/w and their examples: Word Processing s/w, Spreadsheet s/w, Database s/w, Presentation s/w, Business s/w Suite, Project Management s/w, Personal Information Manager s/w, Business s/w for Phones, Accounting s/w, Document Management s/w, Enterprise Computing s/w; Graphics and Multimedia s/w, Computer-Aided Design s/w, Desktop Publishing s/w, Image Editing s/w, Video and Audio Editing s/w, Multimedia Authoring s/w, Web Page Authoring s/w; Software for Home, Personal, and Educational Use: Personal Finance s/w, Legal s/w, Tax Preparation s/w, Home Design/Landscaping s/w, Travel and Mapping s/w, Reference and Educational s/w, Entertainment s/w, Web Applications s/w, Application Software for Communications.

Unit- II : System Software

System Programming and System Programs, Needs of System Software, BIOS, POST sequence, Concept & introduction to various system s/w such as: Assemblers, Loaders, linkers ,macro processors, Macros, Compilers, Interpreters, Operating system and formula system, Translators and its types, Editor, Simulator, Emulator, Debugger, Device Drivers, Firmware.

Unit-III : Assemblers and Macro processors

Assemblers: Structure of assembler, Overview of the assembly process, Basic function, Machine dependent and machine independent features of assembler, Types of assemblers - single pass, multi-pass, cross assembler, Macros & Macro processors: Macro definition and examples, Basic Macro Processor Functions, Machine Independent Macro Processor Features, Concept of Parameterized Macro, Nested Macros, Conditional Macro Expansion, Recursive Macro. Symbolic debugger.

Unit – IV : Loaders and Linkage Editors

Basic Loader Functions, Linking and Concept of Static & Dynamic Relocation, Various loader schemes with their advantages and disadvantages, Other loader schemes - binders, Linking loaders, Dynamic binders, Machine dependent & Machine Independent Loader Features, Interpreters: use of interpreter, pure and impure interpreter.

Unit-V Compilers

Introduction to Compilers, Phases of a Compiler, Comparison of Compilers & Interpreters, Machine dependent & Machine Independent Compiler Features, Aspects of Compilation, Lexical Analysis, Syntax Analysis, Memory Allocation, Compilation of Expressions; Code optimization - local and global optimization, Study of LEX & YACC.

REFERENCE &TEXTBOOKS

1. System Programming- J. J. Donovan, Tata McGraw-Hill Education.
2. System Programming and Operating systems- D. M. Dhamdhere, Tata McGraw-Hill
3. System Software: An introduction to systems programming- Leland L. Beck, Pearson Education
4. Principles of Compiler Design-Aho and Ullman, Pearson Education.
5. Compiling Techniques, J P Bennett, TMH .
6. Modern Compiler Design, Dick Grune, Koen G.L, Henri Bal, Wiley India.
7. Compiler Construction, Principles and Practice, Kenneth C. Louden; Cengage Learning

Paper-IV, Subject Code:BCA113 ,
Subject Name: LAB:I –Lab of Programming in "C"

Course Outcomes–

CO-1. Solve basic binary math operations.
CO-2. Explain following function-**fopen (), fclose( ), fputs ( ), fgets ( ), fread ( ), fwrite( )**
CO-3. Use WAP to perform various operations

Course Contents

1) If a five digit number is input through the keyboard, write a program to reverse the number, print the sum and product of digit.
2) WAP to interchange the content of two variable (swapping).
3) WAP to convert and print the distance in meter, feet, inches and centimeter if distance is input through the keyboard.
4) WAP a to check whether a year entered through keyboard is a leap year or not.
5) WAP to check whether a number is even or odd.
6) WAP to determine whether entered character is a capital or small or digit or special symbol.
7) WAP to find the factorial value of any number entered through keyboard.
8) WAP to compute the sum of the first n terms of the following series
   S = 1+1/2+1/3+1/4+.....
9) WAP to compute the sum of the first n terms of the following series
   S =1-2+3-4+5.....
10) WAP to print all prime numbers from 1 to 100.
11) WAP to print a triangle of stars as follows (take number of lines from user):

```
*
***
*****
*******
*********
```

12) Write a menu driven program using switch which has following option:
    I) Factorial of number
    II) Prime or Not
    III) Odd or Even
13) Write a function that checks whether a given string is Palindrome or not. Use this function to find whether the string entered by user is Palindrome or not.

14) Write a function to implement question number one (1) to seven (7) in above list.

15) WAP to perform following operations on strings:
    a) Concatenate two strings.
    b) Compare two strings
    c) Calculate length of the string
    d) Convert all lowercase characters to uppercase
    e) Convert all uppercase characters to lowercase
    f) Calculate number of vowels
    g) Reverse the string
16) Create a structure Student containing fields for Roll No., Name, Class, Year and Total Marks. Initialize the structure and print the initialized value on screen.
17) WAP to explain pointer arithmetic.
18) WAP to explain the concept of call by value and call by address mechanism.
19) WAP to read Content of file and print them on screen.
20) WAP to copy content of one file into another.
21) WAP to explain following function-
    fopen (), fclose( ), fputs ( ), fgets ( ), fread ( ), fwrite( )

Paper – V, Subject Code:BCA114 ,
Subject Name: LAB: II – Lab of Software Packages

Course Outcomes–

CO-1. Develop solutions for a range of problems using Basic Elements of WINDOWS.
CO-2. Programs to demonstrate the implementation of MS Office.
CO-3. Understand generic editing, templates, file handling & formulas.

Course Contents

Section-A

WINDOWS : Basic Elements of WINDOWS, My Computer, Sharing Devices, Windows Explorer, Accessories: Entertainment, Communication, System Tools, Paint Brush, Calculator, Calendar, Clock, Note Pad, Word Pad Etc., Control Panel, Changing Color and Theme, Changing the Desktop Background, Screen Saver, Adjusting Display Settings, Adjusting Sound, Adjusting the Mouse, Changing the Date and Time.

Section-B

Introduction to MS Word: Menus, Shortcuts, Document types; Working with Documents: Opening Files - New & Existing, Saving Files, Formatting page and Setting Margins, Converting files to different formats- Importing, Exporting, Sending files to others, Editing text documents- Inserting, Deleting, Cut, Copy, paste, Undo, Redo, Find, Search, Replace, Using Tool bars, Ruler- Using Icons, Using help; Formatting Documents: Setting Font Styles, Setting Paragraph style, Setting Page Style, Setting Document Styles, Creating Tables, Drawing, Tools, Printing Documents.

Section-C

Introduction to MS Power Point: Opening new Presentation, Different presentation templates, Setting backgrounds, Selecting presentation layouts, Creating a presentation, Formatting a presentation-Adding style, Color, gradient fills, Arranging objects, Adding Header & Footer, Slide Background, Slide layout, Inserting pictures, movies, tables.

Section-D

Introduction to MS Excel: Introduction: Spreadsheet & its Applications, Opening spreadsheet, Menus & Toolbars & icons, Shortcuts, Working with Spreadsheets-Opening a File, Saving Files, Setting Margins, Converting files to different formats- Importing, Exporting and Sending files to others, Spreadsheet addressing, Entering and Editing Data, Computing data- Setting Formula, Finding total in a column or row, Mathematical operations, Formulas, Formatting Spreadsheets & Printing worksheet.

Section-E:

Introduction MS Access: Database concepts: Tables, Queries, Forms, Reports, Opening & Saving database files: Creating Tables, Table Design, Indexing, Entering data, Importing data, Creating Queries: SQL statements, Setting relationship, Creating Forms: GUI, Form, Creating & printing reports.

SEMESTER-III

Paper- I Subject Code BCA115
Subject Name- Digital Electronics and Microprocessor

Course Out Comes–

After Completion of this course, the student will be able to:
CO-1. Design any Logic circuit using basic concepts of Boolean algebra.
CO-2. Design any Logic circuit using basic concepts of PLDs.
CO-3. Design and develop any application using 8086 Microprocessor.
CO-4. Design and develop any application using 8051 Microcontroller.

Course Contents

Unit – I: Background of Digital Electronics

Digital Signals, Different Type of Numbering System: Decimal, Octal, Binary, Hexadecimal, Conversation from One Number System to Another System, Binary Addition, Binary Subtraction, Binary Complements. One's & Two's Complement, Binary Subtraction Using Two's Complement.

Unit – II: Logic Families

Logic Gate Basics: Or gate AND Gate, NOT Gate, Exclusive-OR (XOR) Gate, Truth Tables for Logic Gates, Truth Tables for Combinational Logic.

Types of Logic Family: Circuit of RTL, DTL, TTL and Working Function as a Gate, Emitter Coupled Logic (ECL) CMOS Logic Family, NMOS and PMOS Logic, Comparison of Different Logic Families.

Unit – III: Boolean Algebra and Karnaugh Maps

Boolean Algebra, Boolean Expression Of Combinational Logic, Laws of Boolean Algebra, Rule a of Boolean Algebra: NOT Rule, OR Rules, AND Rules, XOR Rules, Derivation of other rules Simplification, Demorgan's Theorem, Boolean Expression Formats: Sum-Of- Product, Product-Of-Sum, Converting SOP & POS to Truth Table & Truth Table to Expression, Karnaugh Maps.

Unit – IV: Combinational and Sequential Circuit

Decoders, Multiplexers, De-Multiplexers, State Machine Design Process: Mealy Versus Moore State Machines, S-R Latch/ Flip-Flop, D Latch, J-K Flip-Flop, Divide-By-Two Circuit, Registers, Counter Ripple (Asynchronous) Counter and Synchronous Counter, UP/DOWN Counters,

Unit – V: Microprocessor

Generic Architecture of Microprocessor, Pin Diagram & Pin Function of Intel 8085 Microprocessor, Instructions Set for Microprocessor, Definition and need of Addressing Mode, Addressing Modes of Intel 8085 & 8086 Microprocessor, Machine Cycle and Instruction Cycle of Microprocessor, Working of Microprocessor.

REFERENCE &TEXTBOOKS

1. Modern Digital Electronics, R. P. Jain, TMH
2. Digital Principles & Application, Leach & Malvino, TMH
3. Digital Logic Design, Morries Mano, PHI
4. Microprocessor – Architecture, Programming and Applications with the 8085, Ramesh S. Gaonkar
5. Digital Integreated Electronics, H. taub & D. Shilling, McGraw Hill
6. Digital Principles & Design, Givone, TMH
7. Digital Circiut & Design, S. Aligahanan, S. Aribazhangan, Bikas Publishing House.

Paper- II, Subject Code BCA116
Subject Name- Computer Networks

Course Out Comes–

On completion of the course, the student will be able to:
CO-1. Explain how communication works in computer networks and to understand the basic terminology of computer networks
CO-2. Explain the role of protocols in networking and to analyze the services and features of the various layers in the protocol stack.
CO-3. Understand design issues in Network Security and to understand security threats, security services and mechanisms to counter

Course Contents

Unit – II: Data Link Layer

Functions at Data Link Layer, Framing and Correction Codes: Checksum, CRC, Hamming Code, Flow Control: Stop & Wait and Sliding Window Protocols, Data Link Protocols: HDLC and PPP, Medium Access Sub-Layer, LLC Protocol, IEEE Overview of IEEE 802.2, 802.3, 802.5 802.6.

Unit – III: Network Layer and Transport Layer

Functions of Network Layer, Networking & Internetworking Devices, Routing Protocols & Algorithms, Principles of Congestion Control, Ipv4 Address, Ipv4 Addressing, Ipv6 Address, Functions of Transport Layer, Flow Control & Buffering, Introduction To TCP/UDP Protocols and their Comparison.

Unit – IV: Common Network Architecture

Connection Oriented & Connectionless N/Ws, Frame Relay, Example of N/Ws-P2p, X.25, ATM Ethernet, Wireless LANS – 802.11, 802.11x, Gigabit, Broad Band Networks: Integrated Service Digital Networks (ISDN), Broad Band ISDN, ATM, Very Small Aperture Terminal(VSAT).

Unit – V: Internet and Protocols

World Wide Web (WWW), Domain Name System (DNS), E-Mail, File Transfer Protocol (FTP), Hyper Text Transfer Protocol (HTTP), E-Mail Protocols: Mime & SMTP, POP, IMAP, Telnet – Remote Communication Protocol, Proxy Server, Proxy Web Servers, Working Of Internet Applications.

REFERENCE &TEXTBOOKS

1. Computer Networks, Andrew S. Tanenbaum, PHI / Pearson Education Inc.
2. Data communication and Networking, Behrouz A. Forouzan, Tata McGraw-Hill.
3. Internet Law-Text and Materials, chris Reed, universal law Publishing co., new delhi
4. Data and computer communication, William stallings, pearson education.
5. Computer and communication networks, nader F. Mir, Pearson Education, 2007.
6. Data &computer communication, black, PHI.

Paper- III, Subject Code BCA117
Subject Name- Data Structure

Course Out Comes–

Upon successful completion of the course, a student will be able to:
CO-1. To access how the choices of data structure & algorithm methods impact the performance of program.
CO-2. To Solve problems based upon different data structure & also write programs.
CO-3. Choose an appropriate data structure for a particular problem

Course Contents

Unit-I: Introduction and Array
Data Types, Data Structure and its Classification, Arrays: Array concept (one dimension, two dimension), Operations for one dimension array (insertion, deletion, traversal), Examples.

Unit-II: Linked Lists
Concept of a linked list, Circular & Doubly linked list, Operations on linked lists, List Manipulation with Pointers, Insertion & Deletion of elements, Applications of linked lists.

Unit-III: Stacks-Queues and Binary Tree
Definitions and Structure, Representation using Array & Linked List, Application of Stack and Queues, Postfix and Prefix Conversion, Evolution of Arithmetic Expressions, Binary Trees: Definition, Memory Representation, Trees traversal algorithms (recursive and non-recursive), threaded trees, BFS, DFS.

Unit-IV: Searching and Sorting
Linear and Binary Search Algorithms, Complexity, Binary Search Trees (construction, insertion, deletion & search), Sorting Algorithms: Bubble Sort, Insertion Sort, Selection Sort, Tree sort, Heap Sort, Quick Sort, Merge Sort & Radix sort, External Sorting.

Unit-V: Analysis of Algorithm
Time and Space Complexity of Algorithms, Average Case & Worst Case Analysis, Asymptotic Notation, Big O notations, Analysis of sorting algorithms -Selection sort, Bubble sort, Insertion sort, Heap sort, Quick sort and Analysis of searching algorithms -Linear Search & Binary Search.

REFERENCE &TEXTBOOKS

1. Data Structures using C, A. M. Tenenbaum, Langsam, Moshe J. Augentem, PHI Pub.
2. Data Structures using C by A. K. Sharma, Pearson Education
3. Data Structures and Algorithms, A.V. Aho, J.E Hopcroft and T.D. Ullman, Addison- Wesley, Low Priced Edition.
4. Fundamentals of Data structures, Ellis Horowitz & Sartaj Sahni, AW Pub.
5. Fundamentals of computer algorithms, Horowitz Sahni and Rajasekaran, Pearson Edu.
6. Data Structures and Program Design in C, Robert Kruse, PHI of Data Structures, Jr. Symour Lipschetz, Schaum's outline by TMH.

Paper- IV, Subject Code BCA118
Subject Name- Basic Mathematics (Bridge Course)

Course Out Comes–

CO-1. To bridge up the gap between 12th standard (without math) and BCA Course.

CO-2. The students will be able to understand the subject matters of Mathematics and can able to express the fundamental ideas.

Course Contents

Ser No.	Topic
Unit-I	
1	Number Systems
2	Real Numbers
3	Polynomials
4	Pair of Linear Equations in Two Variables
Unit-II	
5	Quadratic Equations
6	Arithmetic Progressions
Unit-III	
7	Triangles
8	Quadrilaterals
9	Trigonometry
Unit-IV	
10	Sets
11	Relations and Functions
12	Permutations and Combinations
Unit-V	
13	Binomial Theorem
14	Calculus
	TOTAL

SEMESTER-IV

Paper- I Subject Code BCA119
Subject Name- Object Oriented Programming Using C++
Course Outcomes–

Upon completion of this course, students will be able to:
CO-1. Apply C++ features to program design and implementation.
CO-2. Explain object-oriented concepts and describe how they are supported by C++ including identifying the features and peculiarities of the C++ programming language.
CO-3. Use C++ to demonstrate practical experience in developing object-oriented solutions. • Design and implement programs using C++ Programming language.

Course Contents

Unit-I

Features of C++, OOP vs. procedure-oriented programming, OOP Concepts: Abstraction, Inheritance, Polymorphism, Data Binding, Encapsulation, Classes, subclasses and Objects; Basics of C++: Data Types and sizes, Variable, Constants and its types, Use of « and » operators, Operators and Expressions: Operators:-Arithmetic, Relational, Assignment, Logical, Increment and Decrement Operators (++ and --), Operate-Assign' Operators, Expressions, Operator Precedence, Precedence and Order of Evaluation, Conditional Expression, Casting and type conversion.

Unit- II

Program Flow & Decision Control: if, if - else, if - else if, Loop Control: while, do - while, for, break, continue, Case Control: switch, goto; Functions/Procedures, Returning values from functions, Arguments Passed by Value, Passing Addresses of Arguments, Pointers and Arrays: Pointer Initialization, Pointer Operators, Pointer Arithmetic, Functions and pointers, Arrays, Initializing Arrays, Passing Arrays to Functions, Pointers and Arrays, Pointer to an Array, Array of pointers, Strings: String I/O, Arrays of Strings, Structures, Arrays of Structures.

Unit-III

Binding Data & Functions: Defining a Class, Creating an Object, Scope, Data Abstraction, Data Encapsulation, 'this' Pointer, Dynamic Creation of Objects, Constructors and Destructors: Parameterized & Copy constructor, Member Functions & Methods, Friend Class and Friendly Functions, Returning Objects, Arrays of Objects.

Unit-IV

Function and Operator Overloading, Rules for Overloading, Operator overloading and its uses: Overloading unary and binary operators, Overloading the Assignment Operator, Overloading the « Operator, Overloading the Increment & Decrement Operator, Converting data types: Basic to class type, Class to Basic Type, Class to Another Class Type.

Unit-V

Reusing Classes: Inheritance-Base and Derived classes, Inheritance types, Scope Resolution Operator, Access Modifiers, Multiple & Multilevel Inheritance, Calling Base Class Constructor, Overriding Base Class Members, Virtual functions and Polymorphism: Virtual & non-virtual Overriding, Rules for Virtual Functions, Pure Virtual Functions, Static and Dynamic Binding, Virtual Base Classes, Templates, Exception Handling, Throwing an exception.

REFERENCE &TEXTBOOKS

1. C++, The Complete Reference, 4th Edition, Herbert Schildt, TMH.
2. Object Oriented Programming in C++, 4th Edition, R.Lafore, SAMS, Pearson Education
3. An Introduction to OOP, 3rd Edition, T. Budd, Pearson Education,2008.
4. Programming Principles and Practice Using C++, B.Stroutstrup, Addison- Wesley, Pearson
5. Problem solving with C++, 6th Edition, Walter Savitch, Pearson Education,2007.
6. The Art, Philosophy and Science of OOP with C++, R.Miller,SPD. OP in C++,J3rd Edition, T.Gaddis, J.Walters and G.Muganda, Wiley DreamTech Press.

Paper- II, Subject Code BCA120
Subject Name– Computer Graphics and Multimedia

Course Outcomes–

CO-1. Design scans conversion problems using C++ programming.
CO-2. Apply clipping and filling techniques for modifying an object.
CO-3. Understand the concepts of different type of geometric transformation of objects in 2D and 3D.
CO-4. Understand the practical implementation of modelling, rendering, viewing of objects in 2D
CO-5. Understand the basic concepts of computer graphics.

Course Contents

Unit-I: An Introduction Graphics System
Computer Graphics Fundamentals, Application of Computer Graphics, Display Devices: Cathode-Ray tubes, Raster-Scan Display & Random Scan Systems, Color CRT Monitors, Flat-Panel Displays, Input Devices, Graphics Software, Interactive devices. Video Card/display cards

Unit-II: Output Primitives
Line Drawing Algorithms: DDA Algorithm, Bresenham's Algorithm, Parallel Line Algorithm.
Circle generating Algorithm: Midpoint Circle generating algorithm.
Filled Area Primitives: Scan-Line Polygon Fill Algorithm, Inside-Outside tests, Boundary-Fill Algorithm, Flood Fill Algorithm, Aliasing and Anti aliasing

Unit-III: 2D Transformations
2-D Viewing and Clipping: Viewing Transformations, Point Clipping & Line Clipping Algorithms, Polygon Clipping algorithms, 2D Geometric Transformations: Basic transformations (Translation, Rotation, Scaling), Matrix Representation & Homogeneous Coordinates, Composite transformations, Reflection and Shear.

Unit-IV: 3D transformations
3D Viewing Transformation, Projections: Parallel Projection (Orthographic & Oblique Projections, Isometric Projections), Perspective Projections, 3D Geometric Transformations: Translation, Rotation, Scaling, Matrix Representation, 3D Object Representations: Polygon Surface and Polygon table, Bezier curves and surfaces.

Unit-V: Multimedia, Photoshop s/w& CorelDraw
Fundamentals of Multimedia, Animation,
Adobe Photoshop CS4: Menus and panels, Exploring the Toolbox, Working with Images Adjusting Canvas Size & Canvas Rotation, Creating, Selecting, Linking & Deleting Layers, Painting with Selections, Red Eye Tool.
CorelDraw: Command Bars & Tools, Drawing Area-Objects-Lines, Working with Text & Artistic Media Tool, Fills & Modifying Outlines, Templates, Drawing and Editing Curves and Lines, Working with Layers & Creating a Master Layer, Brush Tools and Adding Objects, Interactive Tools.

REFERENCE &TEXTBOOKS

1. Procedural Elements for Computer Graphics, D.F. Rogers, Tata McGraw Hill
2. Fundamentals of Interactive Computer Graphics, J.D. Foley and A.D. Van, Addison-Wesley.
3. How to Do Everything Adobe Photoshop CS4, Chad Perkins, Tata McGraw Hil
4. Corel Draw X4: The Official Guide, (Paperback), Gary David Bouton, Tata McGraw Hill
5. Mathematical Elements for Computer Graphics,, Rogers and Adam, Tata McGraw Hill.
6. Theory & Problem of Computer Graphics, Plastock, Schaum Series.
7. Computer Graphics, Tosijasu, L.K., Springer-verleg
8. Principles of Interactive Computer Graphics, Newman, Tata McGraw Hill.

Paper- III, Subject Code BCA121

Subject Name- Computer Organization and Architecture

Course Outcomes–

CO-1. Explain the organization of basic computer , its design and the design of control unit.
CO-2. Demonstrate the working of central processing unit and RISC and CISC Architecture.
CO-3. Describe the operations and language f the register transfer, micro operations and input- output organization.
CO-4. Understand the organization of memory and memory management hardware.
CO-5.Elaborate advanced concepts of computer architecture, Parallel Processing, inter processor communication and synchronization.

Course Contents

Unit-I : Pipeline:
Linear: pipeline processor, Non linear pipeline processor, Instruction pipeline design, Mechanisms, Dynamic instruction scheduling, Arithmetic pipeline design, Super-scalar processors, VLIW architecture.

Unit-II: Memory Hierarchy and I/O Organization On:
Cache memories, Cache coherence, High bandwidth memories, high bandwidth I/O, Disk I/O, Bus specifications and standards.

Unit-III: Parallel Computer Models & Program parallelism:
Classification of Machines, SISD, SIMD & MIMD, Condition of parallelism, data and resource dependencies, Program partitioning & scheduling, grain size latency, control flow versus data control, data flow architecture.

Unit-IV: Synchronous Parallel Processing:
Vector instruction types, vector access memory schemes, vector and symbolic processors, SIMD architecture, SIMD parallel algorithms, SIMD computers and performance enhancements.

Unit-V: System Interconnection:
Network properties and routing, static interconnection networks, dynamic interconnection networks, Multiprocessor system interconnection, Multistage & combining networks.

REFERENCE &TEXTBOOKS

1. Flynn Computer Architecture: Pipelined and parallel processor design, JB, Boston.
2. Computer Architecture & Parallel processing - Kai Hwang 7 Briggs. (MGH).
3. Computer System Architecture, M. Morris Mano, PHI/Pearson Education.
4. Computer Organization, C Hamacher, Z Vranesic, SafwatZaky, McGraw Hill.
5. Computer Architecture and Organization, J. P. Hayes, Tata McGraw-Hill.
6. Parallel Computer Arch.& Algo, R.W. Hockney, C.R. Jesshope, Adam Hilger.
7. Structured Computer Organization, A. S. Tanenbaum, Pearson Education.
8. Fundamentals of Computer Organization, P. Dandamudi , Springer.

Paper- IV Subject Code BCA122
Subject Name - LAB: I – Programming Lab Using C++

Course Outcomes–

On completion of the course, the student will be able to:
CO-1. Understand fundamental constructs of OOP.
CO-2. Get the knowledge of UML with skills to draw UML diagrams.
CO-3. Get the knowledge of different forms of OO Implementation.
CO-4. Apply object oriented programming concepts in problem solving through C++.

Course Contents

List of Sample Problems/Experiments:

1. Write a C++ program to find the sum of individual digits of a positive integer.
2. A Fibonacci sequence is defined as follows: the first and second terms in the sequence are 0 and 1. Subsequent terms are found by adding the preceding two terms in the sequence.
3. Write a C++ program to generate the first n terms of the sequence.
4. Write a C++ program to generate all the prime numbers between 1 and n , where n is a value supplied by the user.
5. Write C++ programs that use both recursive and non-recursive functions
   a) To find the factorial of a given integer,
   b) To find the GCD of two given integers,
   c) To find the n^{th} Fibonacci number.
6. Write a C++ program that uses a recursive function for solving Towers of Hanoi problem.
7. Write a C++ program to find both the largest and smallest number in a list of integers.
8. Write a C++ program to implement the matrix ADT using a class. The operations supported by this ADT are:
   a) Reading a matrix,
   b) Printing a matrix,
   c) Addition of matrices
   d) Subtraction of matrices.
   e) Multiplication of matrices.
9. Write a C++ Program to Explain concept of CLASS & OBJECT.
10. Write a C++ program to explain function overloading.
11. Write a C++ program to overload + operator.
12. Write a C++ program to explain Constructor,parameterized Constructor,Copy Constructor.
13. Write a C++ program to explain Destructor.
14. Write a C++ program to explain Inheritance.
15. Write a C++ program to implement polymorphism.

Paper- V, Subject Code BCA123
Subject Name LAB: II – Multimedia Lab

Course Outcomes–

After completion of the course the students are expected to be able to:
CO-1. Understand how to generate line, circle and ellipse also how to create 2D object and various transformation techniques.
CO-2. Understand various 3D Transformation techniques using OpenGL.
CO-3. Understand multimedia compression techniques and applications.

Course Contents

Series of Practical Curriculums

Photoshop:

1. (i) Handling different file formats and interchanging them, changing the resolution, color, grayscales and size of the images
   (ii) Using, brushes and creating multicolor real life images. Cropping, rotating, overlapping, superimposing, pasting photos on a page, Creation of a single image from selected portions of many, Developing a commercial brochure with background tints, Creating an image with multi-layers of images and texts. Applying masks and filtering on images.

CorelDRAW X4 Part 1

- Getting Started with CorelDRAW
- Starting CorelDRAW
- Working with Command Bars
- Working with Layers
- Examining a Master Page
- Creating a Master Layer
- Working with Layers
- Using Brush Tools and Adding Objects
- Working with Interactive Tools
- Using Advanced Techniques for Text Manipulation
- Working with Paragraph Text
- The PowerClip Feature and the Envelope Tool
- Creating Bulleted Lists
- Working with Vector and Bitmap Graphics
- Converting Vector Objects to Bitmaps
- Working with Bitmap Graphics
- Introduction to CorelTRACE
- Advanced Output Options
- Preparing a Document For Printing
- Other Printing Options

Semester -V

Paper- I, Subject Code BCA124
Subject Name: Maharishi Vedic Science-II

Course Outcomes–
The subject entitled „Maharishi Vedic Science" has the following CO:
CO1: The study of Maharishi Vedic Science develops the full potential of the knower and lays the foundation for complete knowledge of any discipline, while it fosters evolution to higher states of consciousness and progressive and fulfilling action and accomplishment in life.
CO2: Maharishi Vedic Science is the systematic study, experience, and development of the full range of life, both individual and cosmic, and its applications to create a better world.
CO3: Its principles and technologies are based on the direct experience and understanding of the most vital element in life – the unbounded field of consciousness that is the inner intelligence at the basis of every individual and the entire universe.

Course Contents-

Unit-1:
Maharishi General Introduction to Ayurveda, Definition of Ayurveda, Tradition of Ayurveda, Departments of Ayurveda Samhita,AyurvedaandHealth,AshtangaAyurveda,Purposeof Ayurveda,TridoshainAyurveda.

Unit-2:
Routine, getting up in the morning, defecation, teething, exercise, morning walk, bath, worship, breakfast, food, earning livelihood, evening meal,sleeping etc.

Unit-3:
Introduction to Maharishi Complete Security Policy, Principles of Security Policy, Opinions of Scholars on Maharishi Complete Security Policy, Invincible Security, Defense and Mahasutra, Meaning of Invincibility, Qualities of Invincibility, Basis of Defense of Invincibility.

Unit-4:
Meissner Effect, Universal Effect of Maharishi Ji, Principle of Power in Purity, Components of Invincibility, Forty Areas of Complete Knowledge.

Unit-5:
Verification of Physics from Veda Science, Verification of Veda Science on the basis of Physics, Chemistry, Mathematics and Physiology, Latest research and development till date, Comparison of Veda Science with Physics etc.

REFERENCE &TEXT BOOKS
Maharishi Sandesh Par tland II.
Chetna Vigyan by His Holiness Maharishi Mahesh Yogi Ji.
Dhyan Shailey by Brahmachari Dr. Girish Chandra Verma Ji.

Paper- II, Subject Code BCA125
Subject Name – Foundation English-II

Course Outcomes–
The subject entitled „English-Foundation Course (Part-II) "has the following CO:
CO1: The courses hall enable the students to effectively communicate in both orally and verbally in English and improve their vocabulary..
CO2: Students will heighten their awareness of correct usage of English grammar in writing and speaking.
CO3: Students will improve their speaking ability in English both in terms of fluency and comprehensibility.
CO4: Students will enlarge their vocabulary by keeping a vocabulary journal
CO5: Students will strengthen their ability to write academic papers, essays and summaries using the process approach.

Course Contents

Unit-1:
1. Dandi Salt March–Louis Fischer
2. Aspects of Indian Constitution-M.C Chagla
3. Individual Freedom- Jawaharlal Nehru
4. Fundamental Duties
5. Delhiin1857-MirzaGhalib
6. Raja's Diamond-R.L Stevenson
7. Tree-Tina Morris

Unit-2:
PRECISWRITING

Unit-3:
REPORTWRITING

Unit-4:
NOTICE, AGEND AND MINUTES

Unit-5:
A. GRAMMAR
Articles, Prepositions, Gerund, Self-awareness forms and Possessives, Narration (Direct & Indirect), Voice(Active &Passive)

B. VOCABULARY (from the text)
Synonyms, Antonyms, Match the column, combined the sentences

REFERENCE &TEXTBOOKS:

1. ENGLISH LANGUAGE AND INDIAN CULTURE- MADHYAPRADESH HINDI GRANTH ACADEMY

Paper- III, Subject Code BCA126
Subject Name - Numerical Analysis

Course Outcomes–

After completion of the course the students are expected to be able to:
CO-1. Apply numerical methods to obtain approximate solutions to mathematical problems
CO-2. Analyse and evaluate the accuracy of common numerical methods.
CO-3. Write efficient, well-documented Matlab code and present numerical results in an informative way

Course Contents

Unit-I: Solution of Polynomial and Transcendental Algebraic Equations
Bisection method, Regula falsi method & Newton Raphson Method, Secant Method, Iteration Method, Solution of Cubic & Biquadratic Equation.

Unit-II: Simultaneous Equations and Matrix
Gauss – Elimination Method, Gauss -Gordon Method and Pivoting. Gauss Seidel Iterative Method, Reduction to lower or upper Triangular forms , Inversion of matrix , method of partitioning , Characteristics equation of matrix , Power methods , Eigen values of matrix , Transformation to diagonal forms.

Unit –III: Interpolation - Single Variable Functions
Newton's Interpolation formula, Newton's Forward and Backward Difference Interpolation Formula, Langranges Interpolation formula, Newton's Divided Difference Interpolation Formula.

Unit –IV : Numerical Differentiation and Integration
Newton - cotes integration formula, Trapezoidal Rule, Simpson's One-Third and Three-Eight Rule, Waddle's Rule.

Unit-V : Numerical Solution of Ordinary Differential and Integral Equation
Numerical Solution of first order Ordinary Differential Equations, one step method, Euler's, Picard's and Taylor's series Methods, Picard's Methods for successive approximations, Runga-Kutta Method.

REFERENCE &TEXTBOOKS

2. Numerical methods, B.S. Garewal,
3. Introduction to Numerical Methods, S. Shastri, TMH.
4. Numerical methods for Science and Engineering, Jain M.K.

Paper- III, Subject Code BCA126
Subject Name - Numerical Analysis

Course Outcomes–

After completion of the course the students are expected to be able to:
CO-1. Apply numerical methods to obtain approximate solutions to mathematical problems
CO-2. Analyse and evaluate the accuracy of common numerical methods.
CO-3. Write efficient, well-documented Matlab code and present numerical results in an informative way

Course Contents

Unit-I: Solution of Polynomial and Transcendental Algebraic Equations
Bisection method, Regula falsi method & Newton Raphson Method, Secant Method, Iteration Method, Solution of Cubic & Biquadratic Equation.

Unit-II: Simultaneous Equations and Matrix
Gauss – Elimination Method, Gauss -Gordon Method and Pivoting. Gauss Seidel Iterative Method, Reduction to lower or upper Triangular forms , Inversion of matrix , method of partitioning , Characteristics equation of matrix , Power methods , Eigen values of matrix , Transformation to diagonal forms.

Unit –III: Interpolation - Single Variable Functions
Newton's Interpolation formula, Newton's Forward and Backward Difference Interpolation Formula, Langranges Interpolation formula, Newton's Divided Difference Interpolation Formula.

Unit –IV : Numerical Differentiation and Integration
Newton - cotes integration formula, Trapezoidal Rule, Simpson's One-Third and Three-Eight Rule, Waddle's Rule.

Unit-V : Numerical Solution of Ordinary Differential and Integral Equation
Numerical Solution of first order Ordinary Differential Equations, one step method, Euler's, Picard's and Taylor's series Methods, Picard's Methods for successive approximations, Runga-Kutta Method.

REFERENCE &TEXTBOOKS

2. Numerical methods, B.S. Garewal,
3. Introduction to Numerical Methods, S. Shastri, TMH.
4. Numerical methods for Science and Engineering, Jain M.K.

Paper-IV Subject Code BCA127
Course Name – Software Engineering and Project Management

Course Outcomes–

Upon completion of this course, students will be able to:
Co-1. Understand the process of Software development.
Co-2. Understand and plane the Software development.
CO-3.Understand and implement the Coding.
CO-4. Debug a software. Test a software.

Course Contents

Unit-I: Software Engineering and Process models
Software myths, Software engineering- A layered technology, Software Development Life Cycle, Process models: waterfall model, Incremental process models, Evolutionary process models, The Unified process; Software Requirements: Functional and non-functional requirements, User requirements, System requirements, Interface specification, software requirements document.

Unit II: Requirements and Design Engineering
Feasibility studies, Requirements elicitation and analysis, Requirements . validation, Requirements management, System models: Context Models, Behavioral models, Data models, Object models, Design concepts, the design model, software architecture, Data design, Architectural styles and patterns, Architectural Design.

Unit-III: Testing Strategies and Product metrics
A strategic approach to software testing, test strategies for conventional software, Black-Box and White-Box testing, Validation testing, System testing, the art of Debugging, Software Quality, Metrics for Analysis Model, Metrics for Design Model, Metrics for source code, testing, Metrics for maintenance.

Unit –IV: Plans for testing
Snooping for information, Coping with complexity through teaming, Testing plan focus areas, Testing for recoverability, Planning for troubles, Preparing for the tests: Software Reuse, Developing good test programs, Data corruption, Tools, Test Execution.Testing with a virtual computer, Simulation and Prototypes, Managing the Test, Customer's role in testing

Unit-V: Software Project Management
Evolution of Software Economics, Life Cycle Phases and Process artifacts, Model based software architectures, Software process workflows, quality indicators, life-cycle expectations, CCPDS-R Case Study and Future Software Project Management Practices.

REFERENCE &TEXTBOOKS

1. Fundamentals of Software Engineering, Rajib Mall, PHI Learning Pvt. Ltd.
2. Software Engineering, Ian Sommerville, Pearson Education Inc., New Delhi.
3. Software Engineering: A Practitioner's Approach. Roger S. Pressman, Tata McGraw-Hill
4. Software Project Management, Walker Royce, Pearson Education.
5. Software Engineering, Shari L, Joanne M. Atlee, Pearson Education, Inc. New Delhi.
6. Software Engineering, Pankaj Jalote, Wiley India Pvt. Ltd., New Delhi.
7. Software Engineering, Dines Bjorner, Springer India Pvt. Ltd . New Delhi
8. Managing the Software Process, *Watts S. Humphrey*, Pearson Education.
9. Software Project Management, Bob Hughes & Mike Cotterell, fourth edition, TMH.
10. Applied Software Project Management, Andrew Stellman & Jennifer Greene, O'Reilly.

Paper-V, Subject Code BCA128
Subject Name – Database Design and RDBMS

Course Outcomes–

Upon completion of this course, students will be able to:
CO-1. Understand the importance of Database.
CO-2. Understand the Architecture & Modelling of Database.
CO-3. Understand the concept of RDBMS.
CO-3. Learn brief introduction to Structured Query Language.
CO-4. Learn and implement Backup and Recovery of databases.

Course Contents

Unit-I: Introduction to DBMS
Data & Information, File systems versus Database systems, Data Models, Schemas and Instances, Data Abstraction, Data Independence, Database languages and Interfaces, DBMS Architecture, Data Independence, Database Characteristics: Data modeling using Entity - Relationship (ER) Model: Entity sets, attributes and keys, Relationship types, sets, roles and structural constraints, Weak Entity types. Data Models: Relational, Network, Hierarchical and Object Oriented, Enhanced E-R Modeling.

Unit-II: Relational Model and RDBMS
Relational data model concepts, Codd's 12 rules, Relational model constraints and schemas, Relational Algebra and Relational calculus, Relational database design by ER & EER to Relational Mapping, Overview & Architecture of commercial RDBMSs: Oracle, SQL Server. My SQL etc., Database Language: SQL, SQL Programming Techniques: DDL, DML, DCL query statements, Constraints and Triggers, Views and Indexes, SQL in Server Environment.

Unit –III: Database Design Concepts
Data dependency, Armstrong's Axioms, Functional dependencies and Normalization of Relational Databases, First, Second and Third Normal forms, Boyce-Codd Normal form (BCNF), Relational Database design Algorithms and further dependencies, De-normalization.

Unit-IV : Transaction Processing
ACID Properties of Transactions, Concurrency control, Serializability and Recoverability, Transaction support in SQL, Locking Techniques. Time Stamp ordering, Validation Techniques, Granularity of Data Items, Database recovery techniques - Shadow paging, Log Based Recovery, ARIES recovery algorithm, Database Security: Access control, Statistical Database Security, Deadlock: Detection, Avoidance and Recovery.

Unit –V: Special Purpose Databases
Semi-structured Data Model, OO Data Model, OODBMS, Object-Based Databases, Object Relational Databases: XML and Web Databases, Structure of XML, Temporal Databases, Distributed Databases, Deductive Databases, Mobile Databases, Multimedia Databases, GIS Databases, Spatial Databases.

REFERENCE &TEXTBOOKS

1. Fundamentals of Database Systems, R Elmasri & S B. Navathe, Pearson Education.
2. Database Systems Concepts, A Silberschatz, H F. Korth & S. Sudarshan, McGraw-Hill.
3. Fundamentals of Database Management Systems, Mark L. Gillenson, Wiley India Pvt.
4. Introduction To Database Systems, C.J.Date, Longman, Pearson Education
5. Database Systems: A Complete Book, Molina, Ullman, J. Widom, Pearson Education.
6. Database Systems: Design, Implementation, and Management, Peter Rob & Carlos Coronel, CENGAGE Learning India Pvt. Ltd., New Delhi.
7. Database Systems Using Oracle, Nilesh Shah, PHI Learning Pvt. Ltd., New Delhi.

Paper-VI, Code BCA129
Subject Name- Introduction to AI and Expert System

Course Outcomes–

Learners will be able to

CO-1. Identify and appreciate Artificial Intelligence and describe its applications in daily life.

CO-2. Relate, apply and reflect on the Human-Machine Interactions to identify and interact with the three domains of AI: Data, Computer Vision and Natural Language Processing and Undergo assessment for analysing their progress towards acquired AI-Readiness skills.

CO-3. Imagine, examine and reflect on the skills required for futuristic job opportunities.

Course Contents

Unit-I: Overview of Artificial Intelligence

Definition & Importance of AI, Intelligent Agents: Agents & Environments, Emergence of Intelligent Agents, PEAS Representation for an Agent, Types of Agents; Knowledge: General Concepts: Introduction, Definition and Importance of Knowledge, Knowledge-Based Systems and Representation of Knowledge, Knowledge Organization, Knowledge Manipulation and Acquisition of Knowledge.

Unit-II: Problem Solving and Search Strategies

Solving Problems by Searching, Examples of Search Problems, Problem Formulation, Uninformed Search Techniques- DFS, BFS, Iterative Deepening, Comparing Different Techniques, Informed search methods - heuristic Functions, Hill Climbing, Simulated Annealing, A*, Searching And-Or Graphs, Constrained Satisfaction Problems: Various CSP problems, map, Coloring, Crypt Arithmetic, Backtracking for CSP, Local Search, Adversarial Search: Games, Minimax Algorithm, Alpha Beta pruning.

Unit-III: Knowledge Representation, Reasoning and Structured Knowledge

Syntax and Semantics for Propositional logic, Syntax and Semantics for FOPL, Properties of Wffs, Unification, Forward and backward chaining, Conversion to Clausal Form, Inference Structured Knowledge: Graphs, Semantic Net. Associative Networks, Frames, Frame Structures, Conceptual Dependencies and Scripts.

Unit –IV: Learning and Planning

Learning from Observations, General Model of Learning Agents, Inductive learning, learning Decision Trees, Introduction to neural networks, Perceptrons, Multilayer feed forward network, Application of ANN, Planning problem, Planning with State Space Search, Partial Order Planning, Hierarchical Planning, Conditional Planning

Unit-V: Expert Systems Architectures

Introduction, Rule Based System Architecture. Non-Production System Architecture, Dealing with uncertainty. Knowledge Acquisition and Validation, Knowledge System Building Tools

REFERENCE &TEXTBOOKS

1. Artificial Intelligence: A Modern Approach, S Russell & P Norvig, Pearson Publication
2. Principles of Artificial Intelligence, Nils J. Nilsson, Narosa Publication.
3. Introduction to Artificial Intelligence and Expert System, Dan W. Patterson.PHI.
4. Artificial Intelligence, Elaine Rich, Kevin Knight, Tata McGraw Hill.
5. AI-Structures & Strategies for Complex Problem Solving, G Lugar. Pearson Educations
6. Artificial Intelligence: an Engineering approach, Robert J Schalkolf, McGraw Hill.
7. Artificial Intelligence, Patrick H Winston, 3rd edition, Pearson Educations
8. Decision Support Systems and Intelligent Systems, Efraim Turban Jay E.Aronson. PHI.
9. Artificial Intelligence-A System Approach, M.Tim Jones, Infinity Science Press
10. Artificial Intelligence - Strategies, Applications, and Models through Search, Christopher Thornton and Benedict du Boulay, New Age International Publications.

Semester VI

Paper-I, Subject BCA130, Subject Name - Foundation Hindi-II

इकाई – 1 निबंध

महात्मा गांधी – सत्य और अहिंसा

विनोबा भावे – ग्राम सेवा

आचार्य नरेन्द्र देव – युवकों का समाज में स्थान

इकाई – 2 निबंध –

वासुदेवशरण अग्रवाल – मातृभूमि

भागवतशरण उपाध्याय – हिमालय की व्युत्पत्ति

हरि ठाकुर – डॉ. सूबसंद बघेल

इकाई – 3 हिन्दी भाषा और उसके विविध रूप–

सर्वजनात्मक भाषा, संचार भाषा, राजभाषा, माध्यम भाषा, मातृभाषा, कार्यालयीन भाषा, मीडिया की भाषा, वित्त एवं वाणिज्य की भाषा, तकनीकी भाषा।

इकाई – 4 अनुवाद

अनुवाद का स्वरूप, परिभाषा, क्षेत्र, प्रक्रिया। हिन्दी की प्रयोजनीयता में अनुवाद की भूमिका। व्यावहारिक अनुवाद अभ्यास।

इकाई – 5 समाचार लेखन (रिपोर्टिंग)

समाचार के प्रकार, समाचार–लेखन के महत्वपूर्ण अंग, समाचारों के उदाहरणों के अभ्यास।

सहायक पुस्तकें :–

1. हिन्दी भाषा और संस्कृति – सं. डॉ. राजेन्द्र मिश्रा
2. प्रयोगात्मक और प्रयोजनमूलक हिन्दी – डॉ. दिनेशगुप्ता
3. अनुवाद कला – डॉ. एन.इ. विश्वनाथ अय्यर
4. हिन्दी भाषा – महावीर प्रसाद द्विवेदी
5. बोलचाल की हिन्दी और संचार – मधु धवन

Paper-II, Subject BCA131,
Subject Name- Foundation Environment-II

Course Outcomes–
The subject entitled "Environmental Science (Part-II)'has the following CO:
CO1: Understand core concepts and methods from ecological and physical sciences and their application in environmental problem-solving.
CO2: Appreciate key concepts from economic, political, and social analysis as they pertain to the design and evaluation of environmental policies and institutions.
CO3: Appreciate the ethical, cross-cultural, and historical context of environmental issues and the links between human and natural systems.

Course Contents-
Unit-1: Problem of natural resources
(a) Problem of water resources – Utilization of surface and ground water, over utilization, flood, drought, conflict saver water, dams-benefits and problem.
(b) Problem of forest resources – uses and over utilization, deforestation, utilization of timber, dams and its effect on forest sand trebles.
(c) Problem of land resource–Land as a source, erosion of land, man-induced landslides and desertification.

Unit-2: Problem of natural resources
(a) Value of bio-diversity–Consumable use: Productive use, Social, alter native amoral aesthetic and values.
(b) Indiaasanationofbio-diversityandmulti-diversityatglobal,national and local levels.
(c) Threats ofbio-diversity–Lossofhabitat,poachingofwildlife,man-wildlifeconflicts.

Unit-3: **Human Population and Environment**
(a) Population growth, disparities between countries.
(b) Population explosion, family welfare Programme.
(c) Environment and human health.

Unit-4: Multidisciplinary nature of environmental studies
(a) Natural resource.
(b) Social problems and the environment.
(c) Eco System

Unit-5: Environmental Wealth
(a) Rivers, ponds, fields and hills.
(b) Rural, industrial, Agricultural fields.
(c) Study of common plants, insects and birds.

REFERENCE &TEXTBOOKS

1. Joshi, Ratan – Enviromental Studies Shitya Bhawan Publication, Agra
2. Shukla and Tiwari Environmental Studies Rampasadandsans-Bhopal
3. Singh-Savindra- Environment Geography-PravalikaPublication
4. MoryaS.D.–Environmental Studies Pravaika Publication,Allahabad.

Paper-III, Subject BCA132, Subject Name- .Net Technology

Course Outcomes–

CO-1 Understand the .NET framework.
CO-2 Provide a consistent, object oriented programming environment whether object code is stored and executed locally, executed locally but web distributed or executed remotely Develop a proficiency in the C# programming language.
CO- 3 Make the developer experience consistent across widely varying types of apps, such as Windows based apps and Web-based apps. Proficiently develop ASP.NET web applications using C#.

Course Contents

Unit-I: .NET framework &programming with C#.
.Net definition, Development of .net, .net framework, Framework versions, Features of .net. Inside a C# programming language ,Data Types, Boxing & Un-Boxing. Defining a class in C#. Conditional statements, Looping Construct, Arrays. Exploring Visual Studio NET,
Object oriented Programming Concepts: Class, Objects, Inheritance, Polymorphism

Unit-II : Advance topics in C# & Windows Programming.
Interface, structure, Properties, Constructor, Destructor, indexers, Delegates, Events. Namespaces, collections Exception and Exception Handling.
Windows Programming basic, developing a Windows Application under Visual Studio, Properties, Events, Working with Control:Form,Button,TextBox,CheckBox,RadioButton,Treeview,Listview,ListBox,Timer etc...
Data binding to Controls, Advanced Database Programming using ADO.net.

Unit-III: Programming with ASP.net
Introduction to ASP, Building a Web Application, Examples Using Standard Controls, Using HTML Controls, Validating Form Input Controls using Validation Controls(Required Field, Compare, Range, Regular Exp,Custom validation control) Navigation Controls: Understanding Site Maps, Site Map Path Control, Formatting the Site Map Path Control, Menu Control, Creating a Layout Using Master Pages, Membership and Role Management, Login Controls, Securing Applications, Using Crystal Reports in Web Forms.

Unit-IV: Database and ASP.NET Technology:
Binding to Databases using Controls, Data Management with ADO.net ,SQL data source, Entity Data Model, Binding Grid View.
Data Access with LINQ to SQL : Creating LINQ to SQL Entities, Performing standard database commands with LINQ to SQL. ASP.NET Configuration, Configuration Setting,ASP.NET Security: Authentication, Windows based, Form based, Passport authentication,Authorization.,ASP.NET membership Concept.
State Management. Caching Application Pages and Data

Unit-V: Advanced Applications with .NET Technology
XML Web Services: Setting Web Method Attribute, Setting Web Services Attribute, Invoking an XML Web Service with HTTP-Get, HTTP-Post & SOAP, XML Web Services Behaviour, AJAX(Asynchronous JavaScript and XML): Server Side & Client Side Ajax, Ajax Toolkit, Setting up and implementing Ajax, SQL Server Administration: Setup Database server of a website, Converting data between MDF to DBO,DBO to XLS or in any other format, Backup and Restore of data, FTP Management, Setting up FTP Server (Live), Sending Emails, Designing email panel, How to send an email to various users, Sending auto emails.

REFERENCE &TEXTBOOKS

1. Professional Visual Studio 2013, Bruce Johnson, Wrox Publication
2. Beginning ASP.NET 4.5.1: in C# and VB, Imar Spaanjaars, Wrox Publication
3. Professional C# 5.0 and .NET 4, C. Nagel, J Glynn, Morgan Skinner, Wrox Publication
4. Pro ASP.NET 3.5 in C# 2008, Matthew MacDonald and Mario S, Wrox Publication
5. Pro ASP.NET MVC 3 Framework, Adam Freeman; Steven Sanderson, Apress
6. Professional ASP.NET MVC 3, Jon Galloway; Phil H; Brad Wilson; K. Scott Allen, Wrox
7. Pro ASP.NET 4 in C# 2010, Matthew Mac Donald; Adam Freeman; Mario S, Apress
8. Microsoft® ASP.NET 4 Step by Step, George Shepherd, Microsoft Press

Paper-IV, Code BCA133,
Subject Name- Data Mining and Warehousing

Course Outcomes–

CO-1 Understand the functionality of the various data mining and data warehousing component
CO-2 Appreciate the strengths and limitations of various data mining and data warehousing models
CO-3 Explain the analyzing techniques of various data
CO-4 Describe different methodologies used in data mining and data ware housing.
CO-5 Compare different approaches of data ware housing and data mining with various technologies

Course Contents

Unit-I: Overview and Concepts:
Need for data warehousing, basic elements of data warehousing, Trends in data warehousing. Planning And Requirements: Project planning and management, Collecting the requirements. Architecture And Infrastructure: Architectural components, Infrastructure and metadata.

Unit-II: Data Design and Data Representation:
Principles of dimensional modelling, Dimensional modelling advanced topics, data extraction, transformation and loading, data quality.

Unit-III : Information Access and Delivery:
Matching information to classes of users, OLAP in data warehouse, Data warehousing and the web. Implementation and Maintenance: Physical design process, data warehouse deployment, growth and maintenance.

Unit-IV: Data Mining Introduction:
Basics of data mining, related concepts, Data mining techniques Data Mining Algorithms: Classification, Clustering, Association rules. Knowledge Discovery: KDD Process.

Unit –V: Web Mining:
Content Mining, Web Structure Mining, Web Usage mining. Advanced Topics: Spatial mining, Temporal mining. Visualization: Data generalization and summarization-based characterization, Analytical characterization: analysis of attribute relevance, Mining class comparisons: Discriminating between different classes, Mining descriptive statistical measures in large databases Data Mining Primitives, Languages, and System Architectures: Data mining primitives, Query language, Designing GUI based on a data mining query language, Architectures of data mining systems Application and Trends in Data Mining: Applications, Systems products and research prototypes, Additional themes in data mining, Trends in data mining

REFERENCE &TEXTBOOKS

1. Data Mining-Concepts & Techniques, J. Han & M Kamber, Morgan Kaufmann Pub
2. Introduction to Data Mining. P N Tan, M. Steinbach & Vipin Kumar, Pearson education
3. Data Mining Techniques - Arun K Pujari,2nd edition, Universities Press
4. Data Warehousing in the Real World - Sam Aanhory & Dennis Murray Pearson Edn
5. Insight into Data Mining.K P.Soman,S.Diwakar.V.Ajay,PHI,2008
6. Data Warehousing Fundamentals - Paulraj Ponnaiah Wiley student Edition
7. Data Mining Introductory and Advanced Topics, Margaret H.Dunham, Pearson Education 2004
8. Principles of Data Mining, David Hand, Heikki Manila, Padhraic Symth, PHI 2004
9. Building the Data Warehouse. W.H.Inmon, Wiley, 2003.
10. Data Warehousing, Data Mining & OLAP, Alex Bezon, Stephen J Smith, MeGraw-Hill.

Y. K.

Paper-V, Subject Code BCA134, Subject Name- Current Trends and Technology in Computer Science

Course Outcomes–

CO-1. To understand the Current Trends and Technology in Computer Science like Machine Learning, Grid Computing & Monitoring& Big Data
CO-2. Learn the Cluster Computing and Cloud Computing

Course Contents

Unit-I : Machine Learning:
Concept of Machine Learning, Applications of Machine Learning, Key elements of Machine Learning, Supervised
vs. Unsupervised Learning.
Neural Network: Introduction, Architecture, Model Representation, Application.

Unit-II: Grid Computing& Monitoring
Grid Architecture and Service modelling, Grid resource management, Grid Application trends, Characterization of Grids, Organizations and their Roles, Grid Computing Road Maps, Review of Web Services-OGSA-WSRF.
Grid Monitoring: Grid Monitoring Architecture (GMA) - An Overview of Grid Monitoring Systems- GridICE - JAMM -MDS-Network Weather Service-R-GMA-Other Monitoring Systems- Ganglia and GridM.

Unit-III: Big Data
Big Data and its importance, Characteristics of Big Data, What Comes Under Big Data, Who's Generating Big Data, Challenges in Handling Big Data, How Big Data Impact on IT, Big Data Analytics, Big data applications, Future of Big Data, Risks of Big Data.

Unit-IV: Cluster Computing
Introduction: Overview of Cluster Computing, The Role of Clusters, Definition and Taxonomy Of Parallel Computing, Hardware System Structure, Node Software, Resource Management, Distributed Programming, Limitations, Cluster Planning, Architecture , Node Hardware and Node Software, Design Decisions.

Unit-V: Cloud Computing
Cloud Computing services models and features in Saas, Paas and Iaas; Service oriented architecture and web services; Features of cloud computing architectures and simple case studies, Virtualization-Characteristic features, Taxonomy Hypervisor, Virtualization and Cloud Computing, Pros and Cons of Cloud Computing, Technology Examples/Case Studies.

REFERENCE &TEXTBOOKS

1. Distributed and Cloud Computing, Kaittwang Geoffrey C.Fox and Jack J Dongrra, Elsevier India 2012.
2. Mastering Cloud Computing- Raj Kumar Buyya, Christian Vecchiola and S Tanurai Selvi, TMH, 2012.
3. Beowulf Cluster Computing with Linux, William Gropp, Ewing Lusk, Thomas Sterling, MIT Press, 2003
4. Grid Computing, Joshy Joseph and Craig Fellenstein, Pearson Education 2004. 5. The Grid Core Technologies, Maozhen Li, Mark Baker, John Wiley and Sons , 2005.
5. "Understanding Big data", Chris Eaton, Dirk deroos et al., McGraw Hill, 2012.
6. Neural network and Learning Machines, Simon Haykin, Pearson Education, 2011.
7. Cloud Computing, John W. Ritting House and James F Ramsome, CRC Press, 2012Enterprise Cloud Computing, Gautam Shroff, Cambridge University Press, 2012.

Paper-VI, Subject Code BCA135,
Subject Name- Lab 1: Practical based on .NET Technology

Course Outcomes–

At the end of this Lab course students will be able to:
CO-1.Create user interactive web pages using ASP.Net.
CO-2.Create simple data binding applications using ADO.Net connectivity.
CO-3. Performing Database operations for Windows Form and web applications

Course Contents

1. Write a C# program to explain Conditional statement.
2. Write a C# program to explain every loop construct available in C#.
3. Write a C# program to explain boxing & un-boxing.
4. Write a C# program to explain concept of CLASS & Object.
5. Write a C# program to explain Array Class.
6. Write a C# program to explain properties.
7. Write a C# program to explain Constructor & Destructor.
8. Write a C# program to explain Exception Handling.
9. Write a C# program to explain Collection.
10. Write a C# program to Build a Windows form. Insert various controls in the form.
11. Create a Web Page & Insert basic html Control & explain working of every control.
12. Explain Validation control Using ASP.NET validation control.
13. Explain Navigation control by creating web page by ASP.NET
14. Explain Login control by suitable ASP.NET web page.
15. Create web site using master page.
16. Create web site and explain various Form input control.
17. Create a web site and bind the control using sqldatasource.
18. Create a web site and bind the control using EDM.
19. Create a web site and perform some database operation (insert,update,delete) by using your own code.
20. Create a web site and insert various AJAX control.
21. Design an E-mail Panel.

Paper-VII, Subject BCA136,
Subject Name - Project

It is compulsory, that students would have group of maximum of two students and project should be done under Government Sectors/ Public Sector / Pvt. Limited SAA/ Company/ Software Technology Park of India/ ISO 9001 certified company only.

The students should not make any project under local or private institutions.
The students should make project themselves and project will not be copy of other project.

Steps for Live Project

1. Getting customer's requirements
2. Designs, database and business logics
2. Developing software application project
3. Testing and implementing the project
4. Troubleshooting the project application after Implementation

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MAHARISHI UNIVERSITY OF MANAGEMENT AND TECHNOLOGY

MAHARISHI ROAD, MANGLA, BILASPUR (C.G)

BOARD OF STUDIES MEETING - MINUTES

DATE OF THE MEETINGS – 6th July 2023

For the Approval of Syllabus of Program

PGDCA

Venue: Hall in the Administrative building,

Maharshi University of Management & Technology

Mangla, Bilaspur

MAHARISHI UNIVERSITY OF MANAGEMENT AND TECHNOLOGY

MAHARISHI ROAD, MANGLA, BILASPUR (C.G.)

Department of Computer Science & information & Technology

Board of Studies Meeting

Date: 06/ 07 / 2023

Agenda

Welcome Address	:	**Ms. Rama Soni** **Assistant Professor** **Department of CSIT** **MUMT, Bilaspur (C.G)**
Introduction of the Members	:	**External Members and Internal Members**
Presentation of Syllabus and Curriculum	:	**Mr. Suman Laha** **Head, Dept. of Computer Science & IT** **MUMT, Bilaspur (C.G)**
Programme Name	:	**PGDCA**
Full Course Name	:	**Post Graduate Diploma in Computer Application**
Vote of Thanks	:	**Ms. Kajal Sen** **Assistant Professor** **Department of CSIT** **MUMT, Bilaspur (C.G)**

MAHARISHI UNIVERSITY OF MANAGEMENT AND TECHNOLOGY

MAHARISHI ROAD, MANGLA, BILASPUR (C.G.)

Date: 06/ 07 / 2023

The Board of studies meeting of **Department of Computer Science & information & Technology** held on ...06.../...July.../..2023... at conference Hall of Maharishi University of Management and Technology, Maharishi Road, Mangla, Bilaspur (C.G.)

Members Presented:

Mr. Suman Laha - **Chairman**
Head, Dept. of Computer Science & IT
MUMT, Bilaspur (C.G)

Dr Sumati Pathak - **External Member**
Assistant Professor, Computer Science
Govt. Bilasa Girls PG College,
Bilaspur, 495 001, C.G.

Ms Monika Yadav - **External Member**
Assistant Professor,
Chouksey College of Science & Commerce,
B Lalkhadan, Masturi Road
Bilaspur, 495 004, C.G.

Dr. Shilpa Sarkar - Internal Member
Assistant Professor
MUMT, Bilaspur (C.G)

Ms. Rama Soni - Internal Member
Assistant Professor
Department of Computer Science & IT
MUMT, Bilaspur (C.G)

Special Invitees

Dr. Yogendra Sharma
Assistant Professor
MUMT, Bilaspur (C.G)

MAHARISHI UNIVERSITY OF MANAGEMENT AND TECHNOLOGY
MAHARISHI ROAD, MANGLA, BILASPUR

BOARD OF STUDIES – Department of Computer Science & information & Technology

Minutes of the Meeting

Date: 06/ 07 / 2023

The Board of studies meeting of **Department of Computer Science & information & Technology** held on ...06.../...July.../..2023... at conference Hall of Maharishi University of Management And Technology, Maharishi Road, Mangla, Bilaspur (C.G.)

Members Presented:

Mr. Suman Laha - **Chairman**
Head, Department of Computer Science & IT (I/c)
MUMT, Bilaspur (C.G)

Dr Sumati Pathak - **External Member**
Assistant Professor, Computer Science
Govt. Bilasa Girls PG College,
Bilaspur, 495 001, C.G.

Ms Monika Yadav - **External Member**
Assistant Professor,
Chouksey College of Science & Commerce,
B Lalkhadan, Masturi Road
Bilaspur, 495 004, C.G.

Dr. Shilpa Sarkar - Internal Member
Assistant Professor
Department of English
MUMT, Bilaspur (C.G)

Ms. Rama Soni - Internal Member
Assistant Professor
Department of Computer Science & IT
MUMT, Bilaspur (C.G)

Special Invitees

Dr. Yogendra Sharma
Assistant Professor
MUMT, Bilaspur (C.G)

The following points have been discussed and recommended for academic council approval.

1. The PGDCA (2023-24) Curriculum and syllabus was presented by Mr. Suman Laha and recommended for academic council for approval.
2. Permission for seat increment if number of candidates increases.

Mr. Suman Laha 

Dr Sumati Pathak 

Ms Monika Yadav 

Dr. Shilpa Sarkar 

Ms. Rama Soni 

Special Invitees

Dr. Yogendra Sharma 

Maharishi University of Management & Technology
Mangla Bilaspur (Chhattisgarh)

FACULTY OF COMPUTER SCIENCE & INFORMATION TECHNOLOGY (CSIT)

Syllabus

Post Graduate Diploma in Computer Applications (PGDCA)

2023-24

Introduction of the Programme

Name of the Programme: - PGDCA

The broad **objectives** of the programme are:

- To train students in the latest trends of Application Development, Programming Languages and Database Management.
- To enhance their career opportunities in the software development and maintenance sector in the state.
- To expose the students to Open-Source Technologies so that they become familiar with it and can seek appropriate opportunity in trade and industry.
- To give hands on experience to students while developing real life IT application as part of the study.
- To augment the knowledge base of the students, through various activities which will be complementary to the theoretical studies.

Aim of the Programme: PGDCA programme has been designed to prepare graduates for attaining the following specific **outcomes**:

- Anability to apply knowledge of computer applications and office automation in practice.
- An ability to enhance not only comprehensive understanding of the theory but its application too in diverse field.
- The ability to work in an environment where a range of computer applications or techniques are being applied in form of Networking, Software Engineering, Web development, Database management etc.
- An ability to design a computing system to meet desired needs within realistic constraints such as safety, security, and applicability n multidisciplinary teams with positive attitude.
- Anability to communicate effectively in relevant fields.
- In order to enhance programming skills of the young IT professionals, the program has introduced the concept of project development in each language/technology learnt during semester.

Seats: 60 (sixty)
Eligibility: Graduation
Medium of Instruction: English

Syllabus
w.e.f. Session 2023-24

PGDCA SEMESTER–I

S.No	Paper Code	Paper No.	Name of Paper	Marks
1	FC-I(I)	I	Maharishi Vedic Science-I	100
2	PGDCA101	II	Fundamentals of Computer and Information Technology	100
3	PGDCA102	III	PC packages and Tally ERP	100
4	PGDCA103	IV	Programming in C++	100
5	PGDCA104	V	Internet and HTML	100
6	PGDCA105	VI	System Analysis & Design	100
7	PGDCA106	VII	Practical PGDCA102, 103, 104	100
Total Marks				**700**

PGDCA SEMESTER–II

S.No	Paper Code	Paper No.	Name of Paper	Marks
1.	FC-I(II)	I	Maharishi Vedic Science-II	100
2.	PGDCA107	II	Data Communication and Computer Network	100
3.	PGDCA108	III	Relational Database Management System (Oracle)	100
4.	PGDCA109	IV	Unix Fundamentals and Shell Programming	100
5.	PGDCA110	V	Programming Using VB.Net	100
6.	PGDCA111	VI	Practical PGDCA 108, 109 & 110	100
7.	PGDCA112	VII	Project Work Assessment	100
Total Marks				**700**

Scheme of Examinations:
For theory Papers, Internal Assessment/Assignment 30 marks.
External Evaluation: 70 marks.

Practical Paper

Maharishi Vedic Science-I

Code: **FC-I(I)**

Objective:

To specifically groom a generation of experts who can perform independent and application-oriented study of Vedic concepts for modern times.

To explore the strength and scope of Vedic Education study through interdisciplinary learning

Course Outcomes:

The subject entitled 'Maharishi Vedic Science' has the following CO:

CO1: The study of Maharishi Vedic Science develops the full potential of the knower and lays the foundation for complete knowledge of any discipline, while it fosters evolution to higher states of consciousness and progressive and fulfilling action and accomplishment in life.

CO2: Maharishi Vedic Science is the systematic study, experience, and development of the full range of life, both individual and cosmic, and its applications to create a better world.

CO3: Its principles and technologies are based on the direct experience and understanding of the most vital element in life – the unbounded field of consciousness that is the inner intelligence at the basis of every individual and the entire universe.

Unit-1: Guru Worship and importance of Guru, meditation, mind, intellect, mind, ego, thought, Maharishi Transcendental Meditation, benefits of Transcendental Meditation, Siddhi program, yogic flight etc.

Unit- 2: Vedas and Vedic literature, form of Vedic literature, description of forty regions like Rigveda, consciousness and levels of consciousness, states of consciousness.

Unit- 3: Maharishi Yoga, definition and characteristics of Ashtanga Yoga, types of Yogasanas, usefulness of Yogasanas in human life, benefits from Yogasanas.

Unit-4: Maharishi Astrology, Origin of Astrology, Introduction to Triskandha Astrology, (Siddhanta, Sanhita and Hora), Definition and Introduction of Panchang (Tithi, Vaar, Nakshatra, Yoga and Karana), Human Life and Astrology, External and Internal Personality, Planets and Introduction to expressions etc.

Unit-5: Introduction of Maharishi Sthapatyaveda, purpose of the book, origin of Vastu Purush, tradition of Vastu Shastra, natural development from Vastu, progress from Vastu, symptoms of auspicious Vastu, inauspicious Vastu symptoms, usefulness of home, when to do Vastu Puja etc.

Reference Books:

1. Maharishi Sandesh Part I and II.
2. Chetna Vigyan by His Holiness Maharishi Mahesh Yogi Ji.
3. Dhyan Shailey by BrahmachariDr.Girish Chandra Verma Ji

Fundamentals of Computer and Information Technology
Code: **PGDCA-101**

Objective: The objectives of this course are to make the student understand basics of computer fundamental, concepts of basic input/output device reading parts of computer, storage devices After completion of this course the student is expected to analyze the working of computer system The main emphasis of the course will be on familiar with the computer system.

Course Outcomes:
Students will be able to
1. Aware of parts of computer
2. Understand the input and output devices.
3. Gain the basic ideas of storage devices, computer Networks and Operating System.

UNIT - I
Introduction to Computer and information technology: Brief history of development of computer and generations of computer. Computer system characteristics, Advantages and disadvantages of a computer, Block diagram of computer, Types of computer - Analog, Hybrid, digital, Micro, Mini, Mainframe, Super computer, Personal Computer, Types of PCs desktop, Laptop, Notebook, Palmtop, etc., Number systems (Binary, Octal, Decimal, Hexadecimal), Computer codes - ASCII, EBCDIC.

UNIT - II
Input devices : Keyboard, Mouse, Monitor, Trackball, Joystick, Electronic Pen, Touch Screen, Image Scanner, MICR, OCR, OMR, Bar Code reader, Digitizer, Electronic Card Reader, Voice Recognition, Vision Input System,
Output Devices: Monitors, Printers, Plotters, Screen Image Projector, voice response system.

UNIT - III
Main Memory (RAM, ROM, EPROM, Cache memory).
Secondary storage devices (Sequential and Direct Access Devices), Magnetic tapes, Magnetic Disk, Optical Disk, CD-ROM, DVD

UNIT-IV
Types of Software (System software, Application Software, Firmware), Computer Language (Machine, Assembly, High level), Assemblers, Compliers, and Interpreter. Types of assemblers- Single pass and Double pass.

UNIT-V
Computer Network and Security: Types of networks (LAN, MAN, WAN etc.), Network Models, Protocols and Architecture, Topology, OSI reference model, TCP/IP reference model. Virus definition, type, effects, symptoms, Anti-virus program, virus prevention.

Reference Books:
1. Fundamentals of Computers by Reema Thareja, Oxford University Press
2. Computer Fundamentals,6 th edition by Pradeep K.Sinha, Priti Sinha, BPB Publications
3. Computers Today by A.Ravichandran, Khanna Book Publishing.

PC Packages and Tally ERP
Code: PGDCA-102

Objective:
The objectives of this course are to make the student understand and hands on practice on office packages comprises word processor, spreadsheet, presentation maker and acquire concepts of accounting in establishments. After completion of this course the student is expected to work on office automation and accounting software like Tally.

Course Out Comes–
CO- 1. To make aware of creating, saving, opening documents and editing documents.
CO- 2. Helps to use advanced feature of MS Word and checking grammar, spelling and formatting of files.
CO- 3. Understanding Ms excel, basics of worksheet and drafting emails.
CO- 4. To able to work on accounting software like Tally.

UNIT - I
Fundamentals of DOS and windows, Fundamental of DOS Booting process, POST Internal commands of DOS : Directory and file commands, date, time, ver., prompt, cls. External commands : x-copy, disk- copy, format, attrib, tree, move, Creating and executing batch files.

UNIT - II
Graphical User Interface, Windows as an operating system, Features of Windows, Version of windows, Components of widows desktop, Working with desktop icons, Changing the properties of desktop, Creating files and Folders in Windows, Performing file and folder operations (Creating, Reaming, Opening and viewing, copying and moving, deleting,)
Windows Accessories (paint, calendar, calculator, notepad, Word Pad)
Introduction to word processing (MS-Word) : Advantages of word processing, Main features of MS-Word, Creating, Opening and saving a word document.
Applying text formatting (Changing Font and font size, Applying bold, Italic and Underline, Strikethrough, Subscript, Superscript, Changing colour text.)
Applying paragraph formatting (Setting Indent for paragraph, Adding a paragraph border, bullets) Printing the documents, Previewing a document, Inserting picture, Find, replace, Using mail merge, Working with tables.

UNIT - III
Introduction to Spreadsheet (MS-Excel) : Definition and advantages of electronic worksheet, Understanding workbook and worksheets, Exploring the Ms-Excel, user interface (Title Bar, Minimize/ Maximize, Close buttons, Formula Bar, Worksheet, Scroll bars, Status Bar etc.), Entering data in worksheet, saving and opening a workbook, managing worksheets in workbook, renaming, deleting worksheet, Inserting and deleting rows and columns, Using Cut, Copy, Paste. Formatting Cell (font, text alignment etc.), auto calculate, auto complete, creating Lists, series, fill handle, Working with charts and Functions like SUM, ROUND, AVERAGE, CONCATENATE, LEN, LOWER, UPPER, FIND, NOW, TODAY, ABS, INT, MOD, SQRT, COUNT MAX, MIN.
Introduction to Power Point, Main components of power point interface (Title Bar, Minimize/ Maximize, Close buttons, Working Area, Scroll bars, Status Bar, Slide Pane, etc), creating presentations in different ways, Inserting new slide, Moving and deleting slides, saving presentation, Inserting image, shapes working with animations and transition effects, adding a transition style and sound, working with tables.
Introduction to MS-Access, database objects-Tables, Queries, Forms and Reports. Creating table, working with fields in a table, Inserting a new field, Entering records in a table.

UNIT-IV
Basic concept of Accounting, Financial statements, Financial Statement Analysis, Cost Center, basic Concepts of Inventory, Tally Configuration & INI Setup, data Directory & folders configuration, Single & multiple user , Tally Screen Areas, Quitting Tally, maintain Company data, basic Company Details- Create/Alter/ Select load/ Close a Company, Chart of Accounts, Company Features, and Configuration.
Create later & Display groups and ledgers, all accounting voucher Types, Accounting Voucher transactions, Account invoice Transactions, Excise Invoice, Import invoices, Transaction using bill wise details.

UNIT-V
Reports like balance sheet, profit & loss account, ratio analysis, trial balance, accounts books like cash/bank book, All ledgers group summary & vouchers, sales, purchase & journal registers.
Create, alter & display Stock groups and stock items, all inventory vouchers types and transaction inventory details in accounting vouchers.
Cheque printing, common printing options, different printing formats etc.

Reference Books:
1. Windows 8.1 Plain & Simple by Joli Ballew, Nancy Muir, PHI
2. Learning Microsoft Office 2013 by Ramesh Bangia, Khanna Book Publishing.
3. Accounting with Tally, Nandhini K.K., BPB Publications.

Programming in C++

Code: **PGDCA-103**

Objective: To be familiar with object-oriented programming language and basic understanding of C++. Students will be ready to code in C++ and aware of the fundamentals of programming with object-oriented techniques.

Course Out Comes:

CO- 1. Making aware of program concept in the Object-Oriented environment, its characteristics and various programming techniques.

CO- 2. Develop ability to understand C++-language, its standards, and features.

CO- 3. Understanding to create and compile C++ programs.

UNIT – I

Basic concepts of Object-Oriented Programming: Objects, Classes, Data abstraction and Encapsulation, Polymorphism, Dynamic Binding, Message Passing, Procedure Oriented vs. Object Oriented Programming, Benefits and applications of OPP.

UNIT - II

Graduating to C++: Program features and Structure of C++ program, C++ Tokens : Keywords, Identifiers, Constants, Strings, Operators C++ data types : Basic (Built-in) data types, User defined data types, Operators and operator precedence, Control Structures (Sequence, Selection, Loop), switch case, break, continue, arrays, pointers, operators overloading.

UNIT - III:

Classes in C++:

Structure, specifying class, creating objects, accessing class members, Defining member functions, constructors, destructors.

UNIT - IV

Functions:

Function prototyping, call by reference, return by reference, Inline functions, Default arguments, function overload, string handling functions.

UNIT-V

Inheritance:

Forms of inheritance: Single inheritance, Multiple Inheritance, Hierarchical Inheritance, Multilevel Inheritance, Hybrid Inheritance, virtual base class, Polymorphism, static and dynamic binding, Virtual functions, abstract class, void pointer, friend class, friend function.

Reference Books:

1. C++ The Complete Reference by Herbert Schildt, TMH Publication
2. C++ by E.Balaguruswamy, TMH Publication
3. Programming in C++ by Kumar, TMH Publication.

Internet and HTML
Code: PGDCA-104

Objective: Students will have idea of internet protocols and its applications. They will be able to analyze a web page and identify its elements and attributes; create web pages using HTML.

Course Out Comes–
CO- 1. Making acquainted with evolution and history of Internet.
CO- 2. To make aware of history and function of web browser.
CO- 3. Understanding concept of hypertext, different version of HTML and building HTML documents.

UNIT - I
Introduction to Internet:
History of internet, what is the internet, advantages of internet, Minimum requirements for internet, ISP, Internet protocols, Internet Tools (FTP, Gopher, E-mail, Telnet, Newsgroup, www etc.), Bridges, Hub, Routers, Repeaters and Gateways, Modem, Types of connections - Dial up, leased ISDN, Broadband.

UNIT -II
World Wide Web:
About www, useful services of the www, web browsers, URL, types of web pages (Static & Dynamic), Domain name system, Search Engines, E-mail, Web Publishing, Principles of effective web page design.

UNIT - III
Introduction to HTML:
Origin, evolution and importance of HTML, elements of HTML, Head, Title Body : background, bgcolor, link, vlink, alink, bgroperties, margin.
Anchor: href. Name, title.
Block formatting elements: font, heading, blockquote, line break, centre, marquee, list elements.

UNIT - IV:
Forms in HTML:
Input elements: Textbox, password box, check box, radio button, combo box, select elements, option element.
Information types elements: code, emphasis, keyboard, strong, boldface, italics, strike and subscript.

UNIT-V
Advanced HTML:
Table elements: border, cell spacing, width, height, align, bgcolor, border color, TR element, TD element, TH element, Col Element.
Frames : frame and frameset elements.

Reference Books:
1. Internet for Everyone by Alexis Leon and M.Leon, Vikas Publishing.
2. Internet for Dummies, Pustak Mahal, New Delhi.
3. HTML For Beginners The Easy Way available at html.com.

System Analysis & Design
Code: PGDCA-105

Objective: Students will understand how to create a plan for a software or hardware system that meets the needs and requirements of a customer or user. This plan typically includes detailed specifications for the system, including its architecture, components, and interfaces.

Course Out Comes–

CO- 1. Making acquainted with the concept of system and software product.
CO- 2. To make aware of process of development of system and associated peoples.
CO- 3. To make them able to analyze the system development in business purview.

UNIT- I

The system concept: characteristics, elements and types of a system, the system development life cycle, considerations, for candidate systems prototyping. The role of system analyst.

UNIT- II

System planning and initial investigation: Information Gathering, information gathering tools. Structured analysis, the tools of structured analysis (DFD, Data Dictionary, Decision tree and Pseudo codes Decision Tables), PROS and CONS of each tool, system performance definition description of outputs, feasibility study. Cost/ Benefit analysis, Data analysis, Cost/ Benefit analysis, the system proposal.

UNIT- III

Stages of system design: Design methodologies, development activities, input design, output design forms design, types of forms, basics of form design layout considerations and forms control.

UNIT- IV

File structure: File organization, objectives of database, data structure, system testing and quality assurance, why system testing, what do we test for, the test plan quality assurance, trends in testing, role of data processing auditor, training and documentation.

UNIT- V

Implementing and software maintenance: conversion combating resistance to change, post implementation review, software maintenance, hardware/software selection and the computer contract, suppliers, procedure for hardware/software selection, financial considerations in selection, the computer contract system security disaster recovery planning.

Reference Books:

01. System analysis and design, Elias M. Awad, Galgotia Publication (P) Ltd.
02. System analysis and design, International Ed. Perry Edwards, McGraw Hill Pub.

Practical
Code: **PGDCA-106**

Practical PGDCA102, 103, 104
Practical On:
1. PC Packages and Tally ERP
2. Programming C++
3. Internet and HTML

Maharishi Vedic Science-II
Code: FC-I(II)

Objective:
To specifically groom a generation of experts who can perform independent and application-oriented study of Vedic concepts for modern times. To explore the strength and scope of Vedic Education study through interdisciplinary learning

Course Outcomes:
The subject entitled 'Maharishi Vedic Science' has the following CO:
CO1: The study of Maharishi Vedic Science develops the full potential of the knower and lays the foundation for complete knowledge of any discipline, while it fosters evolution to higher states of consciousness and progressive and fulfilling action and accomplishment in life.
CO2: Maharishi Vedic Science is the systematic study, experience, and development of the full range of life, both individual and cosmic, and its applications to create a better world.
CO3: Its principles and technologies are based on the direct experience and understanding of the most vital element in life – the unbounded field of consciousness that is the inner intelligence at the basis of every individual and the entire universe.

Unit 1:
Maharishi General Introduction to Ayurveda, Definition of Ayurveda, Tradition of Ayurveda, Departments of Ayurveda Samhita, Ayurveda and Health, Ashtanga Ayurveda, Purpose of Ayurveda, Tridosha in Ayurveda.

Unit II:
Routine, getting up in the morning, defecation, teething, exercise, morning walk, bath, worship, breakfast, food, earning livelihood, evening meal, sleeping etc.

Unit III:
Introduction to Maharishi Complete Security Policy, Principles of Security Policy, Opinions of Scholars on Maharishi Complete Security Policy, Invincible Security, Defense and Mahasutra, Meaning of Invincibility, Qualities of Invincibility, Basis of Defense of Invincibility.

Unit IV:
Meissner Effect, Universal Effect of Maharishi Ji, Principle of Power in Purity, Components of Invincibility, Forty Areas of Complete Knowledge.

Unit V:
Verification of Physics from Veda Science, Verification of Veda Science on the basis of Physics, Chemistry, Mathematics and Physiology, Latest research and development till date, Comparison of Veda Science with Physics etc.

Reference Books:
1. Maharishi Sandesh Part I and II.
2. ChetnaVigyan by His Holiness Maharishi Mahesh Yogi Ji.
3. DhyanShailey by BrahmachariDr. Girish Jii

Data Communication and Computer Network
Code: PGDCA-107

Objective: Let the student know how to enable seamless exchange of data between any two points in the world. This exchange of data takes place over a computer network. They will be aware of issues on network securities and probable solutions to them.

Course Outcomes:
CO- 1. Making acquainted with the concept of data communication and computer network.
CO- 2. To make aware of networking topologies & communication protocols.
CO- 3. To make them able to understand the issues related to network security and relevant preventive measures.

UNIT- I
Introduction to Data Communication– Network models, protocols and architecture, standards organizations, line configuration, topology, transmission mode, classification of networks, OSI reference model, TCP/IP model.

UNIT- II
Analog and digital signals, Data encoding, parallel and serial transmission, modems, transmission media: guided media, unguided media, transmission impairment, performance, Synchronous and asynchronous transmission.

UNIT- III
Multiplexing, LLC, error detection and correction, flow control, HDLC, LANs- applications, architecture, Ethernet, 802.3 LANs, token ring, FDDI, IEEE 802.6, circuit switching, packet switching, message switching, connection oriented and connectionless services.

UNIT- IV
Principles of internetworking– connection– oriented, connectionless, Routing concepts, routing algorithms– distance-vector routing, link state routing, shortest path routing. Congestion control, QOS, internetworking, network devices.

UNIT- V
Network security requirements and attacks, public key and private key encryption and digital signatures, digital certificate, firewalls, IDS (Intrusion Detection System)

Reference Books:
01. Computer networks– A.S. Tanenbaum. PHI
02. Data communication and networking – Behrous A. Forouzan. TMH

Relational Database Management System (Oracle)
Code: PGDCA-108

Objective: Students will know the use of an RDBMS and how it could be beneficial to most organizations; the systematic view of raw data helps companies better understand and execute the information while enhancing the decision-making process. The use of tables to store data also improves the security of information stored in the databases.

Course Outcomes:
CO- 1. Making acquainted with the concept of RDBMS.
CO- 2. To make aware of different models to represent underlying entities in the RDBMS structure.
CO- 3. To make them able to understand the SQL and its benefit for structured data mining.

UNIT- I
Overview of Database Management: Data, information, data independence, database administration roles, DBMS architecture, different kinds of DBMS users importance of data dictionary, contents of data dictionary, types of database languages. Data models: network, hierarchical, relational. Introduction to distributed database, client/server databases, object- relational databases, introduction to ODBC concept

UNIT- II
Relational Model: Entity relationship model as a tool for conceptual design-entities attributes and relationships. ER diagrams; concept of keys: candidate key, primary key, alternate key, foreign key; strong and weak entities, case studies of ER modeling generalization; specialization and aggregation, Converting an ER model into relational schema. Extended ER features, introduction to UML, Representation in UML diagram.

UNIT- III
Structured Query Language (SQL): Relational Algebra: select, project, cross product different types of joins (inner join, outer joins, self join); set operations, tuple relational calculus, domain relational calculus, simple and complex queries using relational algebra, stand alone and embedded query languages, introduction to SQL constructs (SELECT...FORM, WHERE... GROUP BY... HAVING ... ORDERBY...), INSERT, DELETE, UPDATE, VIEW definition and use, temporary tables, nested queries, and correlated nested queries, integrity constrains: Not null, unique, check, primary key, foreign key, reference, triggers.

UNIT- IV
Relational database design: Normalization concept in logical model; pitfalls in database design, update anomalies: functional dependencies join dependencies, Normal forms (INF, 2NF, 3NF). Boyce code normal form, decomposition, multi-valued dependencies, 4NF, 5NF. Issues in physical design; concepts of indexes, file organization for relational tables, de-normalization, clustering of tables, clustering indexes.

UNIT- V
Introduction to Query processing and protection the database: parsing, translation, optimization, evaluation and overview of query processing. Protecting the database integrity, security and recovery, Domain constraints, referential integrity, assertion, triggers, security & authorization in SQL.

Reference Books:

01. Database system concept, H. Korth and A. Silberschatz,TMH
02. Data Base Management System, C.J. Date, Narosha Publication.
03. An Introduction to database systems – Bipin Desai, Galgotia Publication.
04. SQL,PL?SQL Evan Bayross (2nd edition) BPB publications.

Unix Fundamentals and Shell Programming
Code: PGDCA-109

Objective: Students will equip with the basic skills of using Unix/Linux as a user and system administrator on a free and open-source system. The course teaches learners how to navigate the file system, manage files and directories, use the VI editor, and work with permissions and ownership.

Course Outcomes:
CO- 1. Making acquainted with the concept of Unix/ Linux as a FOSS used or admin.
CO- 2. To make aware of different commands to operate the OS and handle the files & directories on it.
CO- 3. To make them able to understand about the shell script and relevant editors to handle script.

UNIT - I
Operating system and Architecture, Main functions of operating system.
Types of operating system: Batch, Multitasking, Multiprogramming, Multi processing, Time sharing, Real Time.

UNIT - II
History of Unix, Structure of Unix, kernel, shell, Features and Benefit of Unix. Unix basic commands (clear, main, banner, who am i) Time and Date commands (Date, cal, sleep) Unix file system commands (cat, cp, mv, ls, comm, cmp. diff) Unix directory management commands (pwd, cd, mkdir, rmdir)

UNIT- III
Pipes and Filters in Unix: Need of piping, Unix Filters: uniq, tr, grep
Sort (Sort by lines, Sort by fields) Viewing long files (pg, more, head, tail) Process Utilities (ps, kill) Find Command

UNIT - IV:
Environment variables (HOME, PATH, PSI and LONGAME)
Types of users, Types of files (Ordinary Files, Directory Files, Device Files)
Files Access Permission, Types of Permissions, changing file permission, changing ownership, chomd.
Redirection, Standard input, output and error files, input, output and error redirection.

UNIT - V
Vi editor, Shell scripts: Simple shell scripts using expr shell input & output (echo, read)
Operators (Arithmetic Operators, Relational Operators, Boolean Operators, String Operator s, File Test Operators)
Conditional statements (If-else-elif, Test command, case-esac) Loops (While, For, Until, Break & continue)

Reference Books:
1. Introduction To Unix And Shell Programming by Venkateshmurthy, PEARSON INDIA
2. Unix and Shell Programming by Archna Verma, Laxmi Publications
3. UNIX & Shell Programming by Bintu Harwani, Oxford University Press.

Programming Using VB.Net
Code: PGDCA-110

Objective: Students will capable to assist for providing a simple, safe, object-oriented, Internet-centric, high-performance language for .NET development. VB.NET is simple because there are relatively few keywords. This makes it easy to learn and easy to adapt for specific needs.

Course Outcomes:
CO- 1. Making acquainted with the concept of .NET development environment.
CO- 2. To make aware of VB.NET software language of OOP technique.
CO- 3. To make them able to understand working with GUI components and database connectivity through VB.NET.

UNIT I:
Introduction to .NET: - NET Framework features & architecture, CLR, Common Type System, MSIL, Assemblies and class libraries. Introduction to visual studio, Project basics, types of project in .Net, IDE of VB.NET- Menu bar, Toolbar, Solution Explorer, Toolbox, Properties Window, Form Designer, Output Window, Object Browser. The environment: Editor tab, format tab, general tab, docking tab. visual development & event drive Programming - Methods and events.

UNIT II:
The VB.NET Language: - Variables -Declaring variables, Data Type of variables, Forcing variables declarations, Scope & lifetime of a variable, Constants, Arrays, types of array, control array, Collections, Subroutines, Functions, Passing variable Number of Argument Optional Argument, Returning value from function. Control flow statements, conditional statement, loop statement. Msgbox&Inputbox

.

UNIT III:
Object oriented Programming: - Classes & objects, fields Properties, Methods & Events, constructor, inheritance. Access Specifiers, Public Private, Projected. Overloading, Friend, Overloading Vs Overriding, Interfaces, Polymorphism, My Base & My class keywords. Overview of OLE, Accessing the WIN32 API from VB.NET & Interfacing with office 97, COM technology, advantages of COM+, COM &
.NET, Create User control, register User Control, access com components in .net application.

UNIT IV:
Working with Forms: - Loading, showing and hiding forms, controlling one form within another. GUI Programming with Windows Form: Textbox, Label, Button, Listbox, Combobox, Checkbox, PictureBox, RadioButton, Panel, scroll bar, Timer, ListView, TreeView, toolbar, StatusBar.There Properties, Methods and events. OpenFileDilog, SaveFileDialog, FontDialog, ColorDialog, PrintDialog. Link Label. Designing menus, ContextMenu, access &shorcut keys, System.io Namespace, Reading and Writing data from and into files,File class and related Methods,Stream Reader, Stream Writer , Binary Reader, Binary Writer class, File and Directory Classes.

UNIT V:
Databases in VB .NET: - Database : Connections, Data adapters, and datasets, Data Reader, Connection to database with server explorer, Multiple Table Connection, Creating Command, Data Adapter and Data Set with OLEDB and SQLDB. Display Data on data bound controls, display data on Data grid. Data binding with controls like Text Boxes, List Boxes, Data grid etc. Navigating data source, Data Grid View, Data form wizard, Data validation, Connection Objects,
Command Objects, Data Adapters, Dataset Class, Overview of ADO, from ADO to ADO.NET, Generate Reports Using Crystal Report Viewer. Crystal Report : Connection to Database, Table, Queries Building, Report, Modifying Report, Formatting Fields and Object, Header, Footer, Details, Group Header, Group footer, Working with formula fields, Parameter fields, Group, Special fields, Working with Multiple Tables, SQL in Crystal Report, Report Templates.

Reference Books:
1. VB.NET Programming Black Book by Steven Holzner – Dreamtech Publications.
2. Mastering VB.NET by Evangelos Pet Routsos- BPB publications.
3. Introduction to .NET framework-Worx Publication.

Practical
Code: **PGDCA-111**

Practical PGDCA 108, 109 & 110
Practical On:
1. Relational Data base Management System (Oracle)
2. Unix Fundamentals and Shell Programming
3. Programming Using VB.Net

PROJECT WORK

Code: **PGDCA-112**

Guidelines For Project Work:

A project report must be submitted as per the rules described.

Number of Copies:
The student should submit two hardbound copy of the Project Report with one RW/CD/DVD.

Acceptance/ Rejection of Project Report:
The student must submit a project report to the Head of Department/Project Guide for approval. The Head of Department/Project Guide holds the right to accept the project or suggest modifications for resubmission.

Format of the Project Report:
The student must adhere strictly to the following format for the submission of the Project Report

a. Paper

The Report shall be typed on white paper, A4 size or continuous computer stationary bond, for the final submission. The Report to be submitted to the University must be original and subsequent copies may be photocopied on any paper.

b. Typing

The typing shall be of standard letter size, double-spaced and on one side of the paper only, using black ribbons and black carbons.

c. Margins

The typing must be done in the following margins
Left ----- 35mm, Right ---- 20mm
Top ----- 35mm, Bottom ---- 20mm

d. Binding

The Report shall be Rexene bound in black. Plastic and spiral bound Project Reports not be accepted.

e. Front Cover

The front cover should contain the following details:
TOP: The title in block capitals of 6mm to 15mm letters.
CENTER: Full name in block capitals of 6mm to 10mm letters.
BOTTOM: Name of the University, year of submission- all in block capitals of 6mm to 10mm letters on Separate lines with proper spacing and cantering.

f. Blank Sheets

At the beginning and end of the report, two white black bound papers should be provided, one for the purpose of binding and other to be left blank.

Abstract:
Every report should have an Abstract following the Institute's Certificate. The abstract shall guide the reader by highlighting the important material contained in the individual chapters, section, subsection etc.

Name of modules:

1. DECLARATION
2. CERTIFICATE
3. ACKNOWLEDGEMENT
4. ABOUT THE UNIVERSITY
5. INDEX
6. INTRODUCTION
7. HARDWARE/SOFTWARE REQUIREMENT
8. SURVEY REPORT
9. PROBLEM STATEMENT
10. PROPOSED WORK
11. METHODOLOGY
12. DFD
13. ER DIAGRAM
14. IMPLEMENTATION
15. TOOL/TECHNOLOGY
16. FRONT-END AND BACK-END DATABASE DESCRIPTION
17. CONCLUSION/FUTURE WORK

(Necessary text in the front page of the Project document is give below)

Maharishi University of Management & Technology
Mangla, Bilaspur (CG)

A PROJECT REPORT

ON

"..... TITLE OF THE PROJECT....."

SUBMITTED

TO

DEPARTMENT

OF

COMPUTER SCIENCE AND INFORMATION TECHNOLOGY

SESSION

IN

PARTIAL FULFILLMENT OF THE REQUIREMENS

FOR THE AWARD OF THE

POST GRADUATE DIPLOMA IN COMPUTER APPLICATION (PGDCA)

Project Guide Name	HOD	Submitted BY
NAME...	NAME...	Name of Student-
		Enrollment No. –
		Roll No. –
		Class. -

Maharishi University of Management & Technology, Bilaspur (Chhattisgarh)

FACULTY OF COMPUTER SCIENCE & INFORMATION TECHNOLOGY (CSIT)

"Diploma in Multimedia & Animation"

SYLLABUS 2022-23

Syllabus

DMA SEMESTER – I

S.No	Paper Code	Paper No.	Name of the Paper	Max.Marks
01	FC-I(I)	I	Maharishi Vedic Science-I	100
02	DMA-101	II	Working with Graphics-I	100
03	DMA-102	III	Audio-Video-I	100
04	DMA-103	IV	Working with Graphics-II	100
05	DMA-104	V	Working with Graphics I & II(Practical)Lab-1	100
06	DMA-105	VI	Audio-Video Editing(Practical)Lab-2	100

DMA SEMESTER – II

S.No	Paper Code	Paper No.	Name of the Paper	Max.Marks
01	FC-I(II)	I	Maharishi Vedic Science-II	100
02	DMA-106	II	Animation Concept-I	100
03	DMA-107	III	Audio-Video-II	100
04	DMA-108	IV	Animation Concept-II	100
05	DMA-109	V	Animation Concept-I & II(Practical)Lab-3	100
06	DMA-110	VI	Audio-Video Editing(Practical)Lab-4	100

DMA-SEMESTER-I

Title of the Subject: Working with Graphics-I

Subject Code: DMA-101

Paper: I

Max Marks: 70

Min Marks: 28

Working with Graphics-I

Unit-1. Graphics Fundamental

Unit-2. Concept of Raster Graphics

Unit-3. Raster Graphics Application

Unit-4. Color Theory and Typography

Unit-5. Uses of Graphics in Print and Electronics

Title of the Subject: Audio-Video Editing-I

Subject Code: DMA-102

Paper: II

Max Marks: 70

Min Marks: 28

Audio-Video Editing-I

Unit-1. Concept of Audio

Unit-2. Audio Recording Equipment

Unit-3. Audio Recording and Editing

Unit-4. Mastering the Audio

Unit-5. Audio Publishing

Title of the Subject: Working with Graphics- II

Subject Code: DMA-103

Paper: III

Max Marks: 70

Min Marks: 28

Working with Graphics-II

Unit-1. Vector Design concept

Unit-2. UI and UX

Unit-3. Navigation and Layout Designing

Unit-4. Concept of Graphic Composition

Unit-5. Importance of Vector Design

Title of the Subject: Maharishi Vedic Science

Subject Code: DMA-104

Paper:IV

Max Marks: 70

Min Marks: 28

Maharishi Vedic Science-I

UNIT – 1

Meaning & importance of Guru Pujan. Meaning of meditation, Mann, Intelligence, Chitta, Ego, Thought.

UNIT - 2

Name of forty areas of Vedic Science and their expression in Human Physiology and characteristicsof consciousness. Consciousness, types of consciousness, characteristics of higher stages of
consciousness. Maharishiji's effect on Society, Environment, Behaviour and Moral Values.

UNIT - 3

Maharishi's Yoga, Transcendental Meditation- a general Introduction, Types of Speech, TM Sidhi Programme, Principle of Yoga Asanas and their Concept. Meaning of " Yogastha Kuru Karmani" and " Gyanam Chetanayaam Nihitam".

UNIT – 4

Introduction : Maharishi Vedic Management. Fundamental elements of Vedic Management – Totality Introduction to Absolute theory of Maharishi Government.

UNIT – 5

Theory of Ayurved. Vedic Management and Leadership.

Reference Books:

1.Maharishi Sandesh Part I and II.
2. Chetna Vigyan by His Holiness Maharishi Mahesh Yogi Ji.
3. Dhyan Shailey by Brahmachari Dr.Girish Jii.

Title of the Subject: Working with Graphics I & II (Practical)-LAB-1

Subject Code: DMA-105

Paper: V

Max Marks: 100

Min Marks: 50

(Lab Work)

Title of the Subject: Audio-Video Editing (Practical)-LAB-2

Subject Code: DMA-106

Paper: VI

Max Marks: 100

Min Marks: 50

(Lab Work)

DMA-SEMESTER-II

Title of the Subject: Animation Concept-I

Subject Code: DMA-107

Paper: I

Max Marks: 70

Min Marks: 28

Animation Concept-I

1. Concept of Digital Animation
2. Principle of Animation
3. Motion Tween
4. Animation with Audio
5. Export and Publishing

Title of the Subject: Audio-Video Editing-II

Subject Code: DMA-108

Paper: II

Max Marks: 70

Min Marks: 28

Audio-Video Editing-II

Unit-1. Concept of Video Editing

Unit-2. Video Editing Equipment

Unit-3.Cut , Copy , Paste and sequencing

Unit-4. Transition and Effect

Unit-5. Video Publishing

Title of the Subject: Animation Concept-II

Subject Code: DMA109

Paper: III

Max Marks: 70

Min Marks: 28

Animation Concept-II

Unit-1. Action Script introduction

Unit-2. Coding and Language

Unit-3. Action script Syntax

Unit-4. Introduction with AS 3

Unit-5. Publishing

Title of the Subject: Maharishi Vedic Science-II

Subject Code: DMA110

Paper: IV

Max Marks: 70

Min Marks: 28

Maharishi Vedic Science-II

UNIT – 1

Meaning & importance of Guru Pujan. Meaning of meditation, Mann, Intelligence, Chitta, Ego,Thought.

UNIT - 2

Name of forty areas of Vedic Science and their expression in Human Physiology and characteristicsof consciousness. Consciousness, types of consciousness, characteristics of higher stages of
consciousness. Maharishiji's effect on Society, Environment, Behaviour and Moral Values.

UNIT - 3

Maharishi's Yoga, Transcendental Meditation- a general Introduction, Types of Speech, TM Sidhi Programme, Principle of Yoga Asanas and their Concept. Meaning of " Yogastha Kuru Karmani" and" Gyanam Chetanayaam Nihitam".

UNIT – 4

Introduction : Maharishi Vedic Management. Fundamental elements of Vedic Management – TotalityIntroduction to Absolute theory of Maharishi Government.

UNIT – 5

Theory of Ayurved. Vedic Management and Leadership.

Reference Books:

4.Maharishi Sandesh Part I and II.
5. Chetna Vigyan by His Holiness Maharishi Mahesh Yogi Ji.
6. Dhyan Shailey by Brahmachari Dr.Girish Jii.

Title of the Subject: V

Subject Code: DMA111

Paper: Animation Concept –I & II (Practical) LAB-3

Max Marks: 100

Min Marks: 50

(Lab Work)

Title of the Subject: Audio-Video Editing (Practical)-LAB-4

Subject Code: DMA112

Paper: VI

Max Marks: 100

Min Marks: 50

(Lab Work)