Government Arts and Science College
Ratlam (M. P.) 457001

Internal Quality Assurance Cell
Govt. Arts & Science College, Ratlam (M.P.)

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For the session 2021-22 the syllabus applied respectively in UG I is adopted from Central Board of Studies Bhopal designed according to NEP2020. For UG II and III and PG the syllabus of the previous session have been followed.

Principal

Govt. Arts and Science College

Ratlam (M.P.)

Principal
Govt. Arts & Science College
Ratlam (M.P.)

PART A: Introduction				
Program: **Certificate**		Class: **B.Sc.**	Year: **I Year**	Session: **2021-22**
Subject: **Computer Science**				
1.	Course Code	**S1-COSC 1T**		
2.	Course Title	**Computer System Architecture (Paper I)**		
3.	Course Type (Core Course/Elective/Generic Elective/ Vocational	**Core Course**		
4.	Pre-Requisite (if any)	To study this course, a student must have had the subject Physics/Maths in 12th class.		
5.	Course Learning Outcomes(CLO)	**On completion of this course, learners will be able to:** 1. Understand the basic structure, operation and characteristics of digital computer. 2. Be able to design simple combinational digital circuits based on given parameters. 3. Familiarity with working of arithmetic and logic unit as well as the concept of pipelining. 4. Know about hierarchical memory system including cache memories and virtual memory. 5. Understand concept and advantages of parallelism, threading, multiprocessors and multicore processors. 6. Know the contributions of Indians in the field of computer architecture and related technologies.		
6.	Credit Value	**Theory – 4 Credits**		
7.	Total Marks	Max. Marks : **25+75**	Min. Passing Marks: **33**	

PART B: Content of the Course		
No. of Lectures (in hours per week): **2 Hrs. per week**		
Total No. of Lectures: **60 Hrs.**		
Module	**Topics**	**No. of Lectures**
I	**Fundamentals of Digital Electronics**: Data Types, Complements, Fixed-Point Representation, Floating-Point Representation, Binary and other Codes, Error Detection Codes. **Logic Gates**, Boolean Algebra, Map Simplification, Combinational Circuits, Sequential Circuits, simple combinational circuit design problems. **Circuits**- Adder- Subtractor, Multiplexer, Demultiplexer, Decoders, Encoders Flip - Flops, Registers, Counters.	10

Abhilasha Kumar

II	**Basic Computer Organization**: Instruction codes, Computer Registers, Computer Instructions, Timing & Control, Instruction Cycles, Memory Reference Instruction, Input - Output & Interrupts, Complete Computer Description & Design of Basic Computer.	10
III	**Instructions** - Instruction formats, Addressing modes, Instruction codes, Machine language, Assembly language. **Register Transfer and Micro operations** - Register Transfer Language, Register Transfer, Bus & Memory Transfer, Arithmetic Micro-operations, Logic Micro-operations, Shift Micro-operations.	10
IV	**Processor and Control Unit** - Hardwired vs. Micro programmed Control Unit, General Register Organization, Stack Organization, Instruction Format, Data Transfer & Manipulation, Program Control, Introductory concept of RISC, CISC, advantages and disadvantages of both. **Pipelining** – concept of pipelining, introduction to Pipelined data path and control – Handling Data hazards & Control hazards.	10
V	**Memory and I/O Systems** - Peripheral Devices, I/O Interface, **Data Transfer Schemes** - Program Control, Interrupt, DMA Transfer. I/O Processor. **Memory Hierarchy**, Processor vs. Memory Speed, High-Speed Memories, Main memory, Auxiliary memory, Cache Memory, Associative Memory, Interleaving, Virtual Memory, Memory Management.	10
VI	**Parallelism** – meaning, types of parallelism, introduction to Instruction-level-parallelism, Parallel processing challenges, Applications. **Flynn's classification** – Introduction to SISD, SIMD, MISD, MIMD **Hardware multithreading** – Introduction, types, advantages and applications. **Multicore processors** – Introduction, advantages, difference from multiprocessor.	8
VII	**Indian contribution to the field** – Contributions of reputed scientists of Indian origin - like - Dr. Vinod Dham – Father of Intel Pentium Processor, Dr. Ajay Bhat – Co-Inventor of USB Technology, Dr. Vinod Khosla- co-founder of Sun Microsystems, Dr. Vijay P Bhatkar - architect of India's national initiative in supercomputing, and many others. **Parallel Computing projects of India** – PARAM, ANUPAM, FLOSOLVER, CHIPPS etc. Other relevant contributors and contributions.	2

Abhilasha Kumar

Keywords/Tags: Digital Electronics, Logic Gates, Circuits, Instruction formats, Addressing Modes, Parallelism, Pipelining, Memory Hierarchy, Multicore, Multithreading, SISD, SIMD, MISD, MIMD, PARAM, ANUPAM, FLOSOLVER, CHIPPS

PART C: Learning Resources

Textbooks, Reference Books, Other Resources

Suggested Readings:

- M.Morris Mano, "Computer System Architecture", PHI.
- Heuring Jordan , "Computer System Design & Architecture" (A.W.L.)
- William Stalling, "Computer Organization & Architecture", Pearson Education Asia.
- V. Carl Hamacher , "Computer Organization", TMH
- Tannenbaum, "Structured Computer Organization", PHI .

Suggestive digital platform web links :

https://www.youtube.com/watch?v=4TzMyXmzL8M
https://nptel.ac.in/courses/106/106/106106166/
https://nptel.ac.in/courses/106/106/106106134/

Suggested equivalent online courses

https://nptel.ac.in/courses/106/105/106105163/

PART D: Assessment and Evaluation

Internal Assessment : Continuous Comprehensive Evaluation (CCE) : **25 Marks** Shall be based on allotted assignments and Class Tests. The marks shall be as follows:		**External Assessment**: University Exam (UE) : **75 Marks** Time : **02.00 Hours**	
Assessment and presentation of assignment	10 Marks	Section (A) : Three Very Short Questions (50 Words Each) OR Nine MCQ Questions	03 x 03 = 09 Marks **OR** 09 x 01 = 09 Marks
Class Test I **(Objective Questions)**	5 Marks		
Class Test II **(Descriptive Questions)**	5 Marks	Section (B) : Four Short Questions (200 Words Each)	04 x 09 = 36 Marks
Class Test III **(Based on solving circuit design problems)**	5 Marks	Section (C): Two Long Questions (500 Words Each)	02 x 15 = 30 Marks
Total	**25 Marks**	Total	**75 Marks**

Any remarks/suggestions: Learnings in the course should be emphasised more on practical aspects and real world problems and their solutions.

Abhilasha Kumar

PART A: Introduction				
Program: **Certificate**		Class: **B.Sc.**	Year: **I Year**	Session: **2021-22**
Subject: **Computer Science**				
1.	Course Code	**S1-COSC 1P**		
2.	Course Title	**Computer Architecture Lab (Paper I)**		
3.	Course Type (Core Course/Elective/Generic Elective/ Vocational	**Core Course**		
4.	Pre-Requisite (if any)	To study this course, a student must have had the subject Physics/Maths in 12th class.		
5.	Course Learning Outcomes(CLO)	**On completion of this course, learners will be able to:** 1. Realization of the basic logic and universal gates. 2. Verify the behavior of logic gates using truth tables. 3. Implement Binary-to -Gray, Gray-to -Binary code conversions 4. Design half and full adder circuit using basic gates. 5. Design and construct flip flops and verify the excitation tables.		
6.	Credit Value	**Practical - 2 Credits**		
7.	Total Marks	Max. Marks : **25+75**	Min. Passing Marks: **33**	

PART B: Content of the Course		
No. of Lab. Practicals (in hours per week): **2 Hrs. per week**		
Total No. of Labs: 30 Hrs		
	Suggestive list of Practicals	**No. of Labs.**
	1. To study basic gates (AND, OR, NOT) and verify their truth tables. 2. To convert a given binary number to Gray code using IC 7486. 3. To study and verify NAND as Universal gate using IC 7400. 4. To study half adder using basic gates and verify its truth table. 5. To study Full Adder using basic gates and verify its truth table. 6. To realize basic gates (AND, OR, NOT) from Universal gates (NAND and NOR). 7. To verify truth table of 4-bit adder using IC 7483. 8. To design and construct RS flip Flop using gates and verify the truth table. 9. To design and construct JK flip Flop using gates and verify the truth table. 10. To verify DeMorgan's Theorem.	

Abhilasha Kumar

Keywords/Tags: Digital Electronics, Logic Gates, AND, OR, NOT, IC 7486, IC 7400, NAND, NOR, IC 7483, Circuits, Flip Flop, DeMorgan's Theorem

PART C: Learning Resources

Textbooks, Reference Books, Other Resources

Suggested Readings:

- M.Morris Mano, "Computer System Architecture", PHI.
- Heuring Jordan , "Computer System Design & Architecture" (A.W.L.)
- William Stalling, "Computer Organization & Architecture", Pearson Education Asia.
- V. Carl Hamacher , "Computer Organization", TMH
- Tannenbaum, "Structured Computer Organization", PHI .

Suggestive digital platform web links :

https://www.youtube.com/watch?v=4TzMyXmzL8M
https://nptel.ac.in/courses/106/106/106106166/
https://nptel.ac.in/courses/106/106/106106134/

Suggested equivalent online courses

https://nptel.ac.in/courses/106/105/106105163/

PART D: Assessment and Evaluation

Internal Assessment : Continuous Comprehensive Evaluation (CCE) : **25 Marks**		**External Assessment**: University Exam (UE) : **75 Marks** Time : **02.00 Hours**	
Internal Assessment	**Marks**	**External Assessment**	**Marks**
Hands-on Lab Practice	5 Marks	Practical record file	10 Marks
Lab Test from practical list & internal viva	12 Marks	Viva voce on practical	15 Marks
Assignments (Charts/ Model/ Seminar / Rural Service/ Technology Dissemination/ Report of Excursion/ Lab Visits/ Survey / Industrial visit)	8 Marks	Table works/ Experiments	50 Marks
Total	**25 Marks**	**Total**	**75 Marks**

Any remarks/suggestions: Learnings in the course should be emphasised more on real world problems and their solutions.

Abhilasha Kumar

PART A: Introduction				
Program: **Certificate**		Class: **B.Sc.**	Year: **I Year**	Session: **2021-22**
Subject: **Computer Science**				
1.	Course Code	**S1-COSC2T**		
2.	Course Title	**Programming Methodologies & Data Structures (Paper 2)**		
3.	Course Type (Core Course/Elective/Generic Elective/ Vocational	**Core Course**		
4.	Pre-Requisite (if any)	To study this course, a student must have had the subject Physics/Maths in 12th class.		
5.	Course Learning Outcomes(CLO)	**On completion of this course, learners will be able to:** 1. Develop simple algorithms and flow charts to solve a problem with programming using top down design principles. 2. Writing efficient and well-structured computer algorithms/programs. 3. Learn to formulate iterative solutions and array processing algorithms for problems. 4. Use recursive techniques, pointers and searching methods in programming. 5. Will be familiar with fundamental data structures , their implementation; become accustomed to the description of algorithms in both functional and procedural styles 6. Have knowledge of complexity of basic operations like insert, delete, search on these data structures. 7. Possess ability to choose a data structure to suitably model any data used in computer applications. 8. Design programs using various data structures including hash tables, Binary and general search trees, heaps, graphs etc. 9. Assess efficiency tradeoffs among different data structure implementations. 10. Implement and know the applications of algorithms for searching and sorting etc. 11. Know the contributions of Indians in the field of programming and data structures.		
6.	Credit Value	**Theory – 4 Credits**		
7.	Total Marks	Max. Marks : **25+75**	Min. Passing Marks: **33**	

Abhilasha Kumar

PART B: Content of the Course		
No. of Lectures (in hours per week): **2 Hrs. per week**		
Total No. of Lectures: **60 Hrs.**		
Module	**Topics**	**No. of Lectures**
I	**Introduction to Programming** - Program Concept, Characteristics of Programming, Stages in Program Development, Algorithms, Notations, Design, Flowcharts, Types of Programming Methodologies. **Introduction to C++ Programming** - Basic Program Structure In C++, Data Types, Variables, Constants, Operators and Basic I/O . **Variables** - Declaring, Defining and Initializing Variables, Scope of Variables, Using Named Constants, Keywords, Casting of Data Types, Operators (Arithmetic, Logical and Bitwise), Using Comments in programs, Character I/O (getc, getchar, putc, putchar etc.), Formatted and Console I/O (printf(), scanf(), cin, cout), Using Basic Header Files (stdio.h, iostream.h, conio.h etc.) **Simple Expressions in C++** (including Unary Operator Expressions, Binary Operator Expressions), Understanding Operators Precedence in Expressions **Conditional Statements** if construct, switch-case construct.	8
II	**Iterative Statements** while, do-while, and for loops, Use of break and continue in Loops, Using Nested Statements (Conditional as well as Iterative) **Functions** Top-Down Design, Pre-defined Functions, Programmer – defined Functions, Local Variables and Global variables, Functions with Default Arguments, Call-By-Value and Call-By-Reference Parameters, Recursion. **Introduction to Arrays** - Declaration and Referring Arrays, Arrays in Memory, Initializing Arrays. Arrays in Functions, Multi-Dimensional Arrays.	10
III	**Structures** - Member Accessing, Pointers to Structures, Structures and Functions, Arrays of Structures. **Unions** - Declaration and Initialization. **Strings** - Reading and Writing Strings, Arrays of Strings, String and Function, Strings and Structure, Standard String Library Functions. **Searching Algorithms** - Linear Search, Binary Search. **File Handling** - Use of files for data input and output, merging and copying files.	8
IV	**Data Structure** - Basic concepts, Linear and Non-Linear data structures	12

Abhilasha Kumar

	Algorithm Specification-Introduction, Recursive algorithms, Data Abstraction, Performance analysis. **Linked List** - Singly Linked Lists, Operations, Concatenating, circularly linked lists-Operations for Circularly linked lists, Doubly Linked Lists- Operations. **Array** - Representation of single, two dimensional arrays, sparse matrices-array and linked representations. **Stack**- Operations, Array and Linked Implementations, Applications- Infix to Postfix Conversion, Postfix Expression Evaluation, Recursion Implementation.	
V	**Queue**- Definition, Operations, Array and Linked Implementations. Circular Queue-Insertion and Deletion Operations, Dequeue (Double Ended Queue), Priority Queue- Implementation. **Trees** - Representation of Trees, Binary tree, Properties of Binary Trees, Binary Tree Representations- Array and Linked Representations, Binary Tree Traversals, Threaded Binary Trees. **Heap**- Definition, Insertion, Deletion.	10
VI	**Graphs** - Graph ADT, Graph Representations, Graph Traversals, Searching. **Hashing**- Introduction, Hash tables, Hash functions, Overflow Handling. **Sorting Methods**, Comparison of Sorting Methods, **Search Trees** - Binary Search Trees, AVL Trees- Definition and Examples.	10
VII	**Indian Contribution to the field :** Innovations in India, origin of Julia Programming Language, Indian Engineers who designed new programming languages, open source languages, Dr. Sartaj Sahni – computer scientist - pioneer of data structures, Other relevant contributors and contributions.	2

Keywords/Tags: Programming, C++, Data Structures, Expressions, Control, File Handling, Arrays, Stack, Queue, Linked List, Tree, Graph, Structure, Union, Hash, Search, Sort, Algorithm

PART C: Learning Resources

Textbooks, Reference Books, Other Resources

Suggested Readings:

- Lipschutz: Schaum's outline series Data structures, Tata McGraw-Hill
- Problem Solving and Program Design in C, J. R. Hanly and E. B. Koffman, Pearson, 2015
- E. Balguruswamy, "C++ " TMH Publication ISBN O-07-462038-X
- Herbertz Shield, "C++ The Complete Reference "TMH Publication ISBN 0-07-463880-7
- R. Lafore, 'Object Oriented Programming C++"

Abhilasha Kumar

- N. Dale and C. Weems, Programming and problem solving with C++: brief edition, Jones & Bartlett Learning.
- Adam Drozdek, "Data Structures and algorithm in C++", Third Edition, Cengage Learning.
- Sartaj Sahani, Data Structures, Algorithms and Applications with C++, McGraw Hill.
- Robert L. Kruse, "Data Structures and Program Design in C++", Pearson.
- D.S. Malik, Data Structure using C++, Second edition, Cengage Learning.
- M. A. Weiss, Data structures and Algorithm Analysis in C, 2nd edition, Pearson.

Suggestive digital platform web links :

https://www.youtube.com/watch?v=BClS40yzssA
https://www.youtube.com/watch?v=vLnPwxZdW4Y&vl=en
https://www.youtube.com/watch?v=Umm1ZQ5ltZw
https://www.youtube.com/watch?v=AT14lCXuMKI&list=PLdo5W4Nhv31bbKJzrsKfMpo_grxuLl8LU

Suggested equivalent online courses

https://nptel.ac.in/courses/106/105/106105151/
https://nptel.ac.in/courses/106/106/106106133/

PART D: Assessment and Evaluation

Internal Assessment : Continuous Comprehensive Evaluation (CCE) : **25 Marks** Shall be based on allotted assignments and Class Tests. The marks shall be as follows:		**External Assessment**: University Exam (UE) : **75 Marks** Time : **02.00 Hours**	
Assessment and presentation of assignment	10 Marks	**Section (A) :** Three Very Short Questions (50 Words Each) OR Nine MCQ Questions	03 x 03 = 09 Marks OR 01 x 09 = 09 Marks
Class Test I **(Objective Questions)**	5 Marks		
Class Test II **(Descriptive Questions)**	5 Marks	**Section (B) :** Four Short Questions (200 Words Each)	04 x 09 = 36 Marks
Class Test III (**Based on solving programming problems)**	5 Marks	**Section (C):** Two Long Questions (500 Words Each)	02 x 15 = 30 Marks
Total	**25 Marks**	Total	**75 Marks**

Any remarks/suggestions: **Focus of the course/teaching should be on developing ability of the student in analyzing a problem, building the logic and efficient code for the problem.**

Abhilasha Kumar

PART A: Introduction				
Program: **Certificate**		Class: **B.Sc.**	Year: **I Year**	Session: **2021-22**
Subject: **Computer Science**				
1.	Course Code	**S1-COSC2P**		
2.	Course Title	**Office Tools & Programming Methodology Lab (Paper 2)**		
3.	Course Type (Core Course/Elective/Generic Elective/ Vocational	**Core Course**		
4.	Pre-Requisite (if any)	To study this course, a student must have had the subject Physics/Maths in 12th class.		
5.	Course Learning Outcomes(CLO)	**On completion of this course, learners will be able to:** 1. Develop simple algorithms and flow charts to solve a problem with programming using top down design principles. 2. Writing efficient and well-structured computer algorithms/programs. 3. Learn to formulate iterative solutions and array processing algorithms for problems. 4. Use recursive techniques, pointers and searching methods in programming. 5. Possess ability to choose a data structure to suitably model any data used in computer applications. 6. Implementation of algorithms for searching and sorting.		
6.	Credit Value	**Practical – 2 Credits**		
7.	Total Marks	Max. Marks : **25+75**	Min. Passing Marks: **33**	

PART B: Content of the Course		
No. of Lab Practicals (in hours per week): **2 Hrs per week**		
Total No. of Lab.: 30 Hrs		
	Suggestive list of Practicals	**No. of Labs.**
	I. Office Tools **a. Using a Text Editor Tool** 1. Create a document and apply different Editing options. 2. Create Banner for your college. 3. Design a Greeting Card using Word Art for different festivals. 4. Design your Bio data and use page borders and shading.	30 Hrs.

Abhilasha Kumar

5. Create a document and insert header and footer, page title, date, time, apply various page formatting features etc.
6. Implement Mail Merge.
7. Insert a table into a document and try different formatting options for the table.

b. Using a Spreadsheet Tool

1. Design your class Time Table.
2. Prepare a Mark Sheet of your class result.
3. Prepare a Salary Slip of an employee of an organization.
4. Prepare a bar chart & pie chart for analysis of Election Results.
5. Prepare a generic Bill of a Super Market.
6. Work on the following exercises on a Workbook:
    a. Copy an existing Sheet
    b. Rename the old Sheet
    c. Insert a new Sheet into an existing Workbook
    d. Delete the renamed Sheet.
7. Prepare an Attendance sheet of 10 students for any 6 subjects of your syllabus. Calculate their total attendance, total percentage of attendance of each student & average of attendance.
8. Create a worksheet of Students list of any 4 faculties and perform following database functions on it.
    a. Sort data by Name
    b. Filter data by Class
    c. Subtotal of no. of students by Class.

c. Using a Presentation Tool

1. Design a presentation of your institute using auto content wizard, design template and blank presentation.
2. Design a presentation illustrating insertion of pictures, Word Art and ClipArt.
3. Design a presentation, learn how to save it in different formats, copying and opening an existing presentation.
4. Design a presentation illustrating insertion of movie, animation and sound.
5. Illustrate use of custom animation and slide transition (using different effects).

Abhilasha Kumar

6. Design a presentation using charts and tables of the marks obtained in class.

II. **Given the problem statement, students are required to formulate problem, develop flowchart/algorithm, write code in C++, execute and test it. Students should be given assignments on following :**

1. a. To learn elementary techniques involving arithmetic operators and mathematical expressions, appropriate use of selection (if, switch, conditional operators) and control structures
   b. Learn how to use functions and parameter passing in functions, writing recursive programs.
2. Write a program to swap the contents of two variables.
3. Write a program for finding the roots of a Quadratic Equation.
4. Write a program to find area of a circle, rectangle, square using switch case.
5. Write a program to check whether a given number is even or odd.
6. Write a program to print table of any number.
7. Write a program to print Fibonacci series.
8. Write a program to find factorial of a given number.
9. Write a program to convert decimal (integer) number into equivalent binary number.
10. Write a program to check given string is palindrome or not.
11. Write a program to perform multiplications of two matrices.
12. Write a program to print digits of entered number in reverse order.
13. Write a program to print sum of two matrices.
14. Write a program to print multiplication of two matrices.
15. Write a program to generate even/odd series from 1 to 100.
16. Write a program whether a given number is prime or not.
17. Write a program for call by value and call by reference.
18. Write a program to generate a series 1+1/1!+2/2!+3/3!+----------+n/n!
19. Write a program to create a pyramid structure

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20. Write a program to create a pyramid structure

Abhilasha Kumar

	1 12 123 1234 21. Write a program to check entered number is Armstrong or not. 22. Write a program for traversing an Array. 23. Write a program to input N numbers, add them and find average. 24. Write a program to find largest element from an array. 25. Write a program for Linear search. 26. Write a program for Binary search. 27. Write a program for Bubble sort. 28. Write a program for Selection sort.	

Keywords/Tags: Programming, C++, Data Structures, if, else, for, while, do, File Handling, call by value, call by reference, recursion, Arrays, Union, Hash, Linear search, Binary search, Bubble sort, Selection sort.

PART C: Learning Resources

Textbooks, Reference Books, Other Resources

Suggested Readings:

- Problem Solving and Program Design in C, J. R. Hanly and E. B. Koffman, Pearson, 2015
- E. Balguruswamy, "C++ " TMH Publication ISBN O-07-462038-X
- Herbertz Shield, "C++ The Complete Reference "TMH Publication ISBN 0-07-463880-7
- R. Lafore, 'Object Oriented Programming C++"
- N. Dale and C. Weems, Programming and problem solving with C++: brief edition, Jones & Bartlett Learning.
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- Sartaj Sahani, Data Structures, Algorithms and Applications with C++, McGraw Hill.
- Robert L. Kruse, "Data Structures and Program Design in C++", Pearson.
- D.S. Malik, Data Structure using C++, Second edition, Cengage Learning.
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- Lipschutz: Schaum's outline series Data structures, Tata McGraw-Hill

Suggestive digital platform web links :

https://www.youtube.com/watch?v=BClS40yzssA
https://www.youtube.com/watch?v=vLnPwxZdW4Y&vl=en
https://www.youtube.com/watch?v=Umm1ZQ5ltZw
https://nptel.ac.in/courses/106/106/106106127/

Suggested equivalent online courses

https://nptel.ac.in/courses/106/105/106105151/
https://nptel.ac.in/courses/106/105/106105171/
https://onlinecourses.swayam2.ac.in/cec19_mg35/preview

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PART D: Assessment and Evaluation			
Internal Assessment : Continuous Comprehensive Evaluation (CCE) : **25 Marks**		**External Assessment**: University Exam (UE) : **75 Marks** Time : **02.00 Hours**	
Internal Assessment	**Marks**	**External Assessment**	**Marks**
Hands-on Lab Practice	5 Marks	Practical record file	10 Marks
Lab Test from practical list & internal viva	12 Marks	Viva voce on practical	15 Marks
Assignments (Charts/ Model/ Seminar / Rural Service/ Technology Dissemination/ Report of Excursion/ Lab Visits/ Survey / Industrial visit)	8 Marks	Table works/ Experiments	50 Marks
Total	**25 Marks**	**Total**	**75 Marks**
Any remarks/suggestions: **Focus of the course/teaching should be on developing ability of the student in analyzing a problem, building the logic and efficient code for the problem.**			

Abhilasha Kumar

Department of Higher Education, Government of Madhya Pradesh
Yearly Syllabus for Undergraduates
As recommended by Central Board of Studies of Computer Application
Approved by H E the Governor of Madhya Pradesh
Session 2021-22

B.A/B.Com/B.Sc. (Computer Application) First Year

First Paper

Paper Code - CA -101
Paper Name – Fundamentals of Computer and PC Software

Maximum Marks: 40

Course Objectives:
1. To review the basic concepts and functional knowledge in the field of computer application
2. To expose the students to computer application in the field of Business.

Unit I

Introduction to Computer System: Block diagram, components: mother board, processor, main memory, cache memory,hard disk.
Input devices, Output devices, External storage devices: floppy disk, CD ROM, DVD, USBdrives.
Types of software: System software, Application software.
System software: Operating system.Utility programs: anti-virus, disk cleaning, defragmentation, compression and decompression of files.
Application software: examples of commercial software with brief introduction.
Programming Languages: Low-level Language, Assembly Language, Middle Level Language andHigh Level Language, Compiler, Interpreter, Assembler, Difference between Compiler & Interpreter.

Unit II

Operating system : Definition, Functions of operating system, CUI, GUI, types of operating systems like Single user, Multi-user, Real time, Time sharing and Batch processing, Multiprocessing, Multiprogramming, Multitasking, Distributed processing.Elementary idea of various common operating system prevalent round the world.

MS Windows: Anintroduction and its features, desktop, taskbar, files and folders start menu operations, my computer, network neighborhood, recycle-bin, windows explorer, creating, copying, movingand deleting files, setting wall paper, changing the mouse pointer, paint, notepad, understandingthe OLE features.

Unit III

Introduction to MS-Word: Advantages of word processing,Creating, Saving and Editing a document: Selecting, Deleting, Replacing Text,Copying text to another file. Insert, Formatting Text and Paragraph, Using the Font, Dialog Box, Paragraph Formatting using

Department of Higher Education, Government of Madhya Pradesh
Yearly Syllabus for Undergraduates
As recommended by Central Board of Studies of Computer Application
Approved by H E the Governor of Madhya Pradesh
Session 2021-22

B.A/B.Com/B.Sc. (Computer Application) First Year

Second Paper

Paper Code – CA-102
Paper Name – Desktop Publishing and Multimedia
Maximum Marks: 40

Course Objectives:
1. To review the basic concepts and functional knowledge in the field of computer application
2. To expose the students to computer application in the field of Business.

Unit I

Importance and Advantages of DTP, DTP Software and Hardware, CommercialDTP Packages, Page Layout programs, Introduction to Word Processing. Commercial DTP Packages,Difference between DTP Software and Word Processing Software.

Unit II

Types of Graphics, Uses of Computer Graphics Introduction to GraphicsPrograms, Font and Typefaces, Types of Fonts, Creation of Fonts (Photographer), Anatomy ofTypefaces, Printers, Types of Printers used in DTP, Plotter, Scanner.

Unit III

History and Versions of PageMaker, Creating a New Page, DocumentSetup Dialog Box,Paper Size, Page Orientation, Margins, Different Methods of placing text andgraphics in a document. Master Page, Story Editor, Formatting of Text, Indent, Leading, Hyphenation,Spelling Check, Creating Index, Text Wrap, Position (Superscript/Subscript), Control Palette.

Unit IV

History, Multimedia Elements; Text, Images, Sound, Animation and Video.Text, Concept of Plain Text and Formatted Text, RTF & HTML Text, Image, Importance of Graphicsin Multimedia, Image Capturing Methods, Scanner, Digital Camera, Sound – Sound and its effect inMultimedia, Analog and Digital Sound, Animation, Basics, Principles and use of Animation. Video, Basics of Video, Analog and Digital Video.

Unit V

Features of Multimedia, Overview of Multimedia, Multimedia SoftwareTools, Multimedia Authoring – Production and Presentation, Graphic File Formats, MIDI – Overview,Concepts, Structure of MIDI, MIDI Devices, MIDI Messages.

Bullets and Numbering in Paragraphs,Use of Smart Art, Checking Spelling, Line spacing, Margins, Space before and after paragraph, Mail merge, customizing the ribbon.

Introduction toMS-Excel: Entering information: Numbers, Formula, EditingData in a cell, Excel functions, using a Range with SUM, Moving and Copyingdata, Inserting and Deleting Row and Columns in the worksheet, Using the formatCells Dialog box, Using chart wizard to create a chart.

Introduction to MS-Power Point: Introduction to PowerPoint presentation, Slide show, Formatting, creating aPresentation, insertingSmart Arts, Adding Objects, Applying Transitions,Animation effects, Adding Tables, Charts and Media files .

Unit IV

Decision Support System: Importance of Decision support system, limitation, Characteristics of DSS, Decision Support and Structure of Decisions Making Decision Support and Repetitiveness of Decisions, DSS Users.

Expert Systems: Support for decision making phases,Support for the Intelligence Phase, Support for the Design Phase, Support for the Choice Phase, Decision Support and Alternative Concepts of Decision Making.

Management Information System: Introduction, Role of IT, MIScharacteristics and application areas, Business and Technology trends-specialization, management by methodology, decentralization, internationalization etc.

Unit V

Internet: Meaning, Definitions, History, Internetprotocols, TCP/IP, FTP, HTTP, URL. Internet Browsers,WWW Consortium, Searchengines.Introduction to Internet Security terminology- network security, firewall, cryptography, password, biometrics,digital signature, digital certificate.Business applications of internet, e-mail, UseNet,newsgroup, telnet, intranet, extranet, e-ticketing, chatting.

E-Banking and its benefits: Smart Card, E-cash, Online financial Services Stocktrading, E-broking. E-business Model, Do–it–yourself model, Made-to-Order model,Information Service Model, Emerging hybrid models.

Text Books and Reference Books:

1. Computer Fundamentals by P.K.Sinha
2. Fundamentals of Information Technology by A. Leon & M. Leon
3. Computer Today by Suresh K.Basandra
4. Internet business models and Strategies by Afuah A.&Tucci C.
5. P C Software MS Office by Nitin K Nayak
6. MS-Office Interactive course by Greg Perry, Techmedia
7. MS Office Complete Reference TMH Publication.
8. Operating System: Achyut S. Godbole
9. Management Information systems by Gerald V. Post & David L. Anderson.
10. Understanding Computer Fundamentals & Dos by G.K. Iyer

Instruction to Paper Setter:

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Text Books and reference books:

1. Desktop Publishing on PC by M. C. Sharma
2. Professional in Desktop Publishing by Dinesh Maidasani
3. DTP Courses 2/e by Singh & Singh
4. Multimedia, Computing, Communication & Applications by Ralf Steinmetz
5. Fundamentals of Multimedia by Ze-Nian Li
6. Page Maker – Manual
7. 'o' level module m3.2 Desktop publishing & Presentation graphics by V. K. Jain

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Session 2021-22

B.A/B.Com/B.Sc. (Computer Application) First Year

Suggested list of exercises for practical

Maximum Marks: 50

MS-Word

1. Create a document and apply different Editing options.
2. Create Banner for your college.
3. Design a Greeting Card using Word Art for different festivals.
4. Create your Biodata and use page borders and shading.
5. Create a document and insert header and footer, page title etc.
6. Implement Mail Merge.
7. Insert a table into a document.
8. Create a document and apply different formatting options.

MS Excel

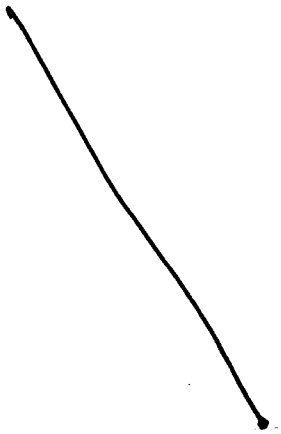
1. Design your class Time Table.
2. Prepare a Mark Sheet of your class subjects.
3. Prepare a Salary Slip of an employee.
4. Prepare a bar chart & pie chart for analysis of Election Results.
5. Prepare a generic Bill of a Super Market.
6. Work on the following exercise on a Workbook:
    a. Copy an existing Sheet
    b. Rename the old Sheet
    c. Insert a new Sheet into an existing Workbook
    d. Delete the renamed Sheet.
7. Prepare an Attendance sheet of 10 students for any 6 subjects of your syllabus. Calculate their total attendance, total percentage of attendance of each student &average of attendance.
8. Create a worksheet on Students list of any 4 faculties and perform following database functions on it.
    a. Sort data by Name
    b. Filter data by Class
    c. Subtotal of no. of students by Class.

MS Power Point

1. Design a presentation of your institute using auto content wizard, design templateand blank presentation.
2. Design a presentation illustrating insertion of pictures, word Art and clipart.
3. Design a presentation learn how to save it in different format, copying and opening an existing presentation.
4. Design a presentation illustrating insertion of movie, animation and sound.
5. Illustrate use of custom animation and slide transition (using different effects).
6. Design a presentation using charts and tables of the marks obtained in class.
7. Illustrate use of macro in text formatting in your presentation.

PageMaker

1. Create a Greeting Card for New Year.
2. Create a Visiting Card.
3. Create your Resume.
4. Create an advertisement for job in well-known firm.
5. Create a Newspaper Report.
6. Create a document by importing Graphic Image from Clip Art.
7. Create a Wedding Card.
8. Type a document using Story Editor.
9. Input a text from Word Document into a PageMaker document.
10. Create a document on Importance of Text Wrap, applying proper font size,



Department of Higher Education, Government of Madhya Pradesh
Yearly Syllabus for Undergraduates
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Session 2021-22

B.A/B.Com/B.Sc. (Computer Application) Second Year

First Paper

Paper Code - CA-201
Paper Name – Internet and E-Commerce

Maximum Marks: 40

Course Objectives:
1. To review the basic concepts and functional knowledge in the field of computer application.
2. To expose the students to computer application in the field of Business.

Unit I

Internet: Evolution, Concepts, Growth of Internet, ISP, ISP in India, Types ofconnectivity, Dial-up, leased line, DSL, Broadband, RF, VSAT etc., Methods of sharing of Internetconnection, Use of proxy server.
Internet Services: USENET, GOPHER, WAIS, ARCHIE and VERONICA, IRC, Concept of Search Engines, Search engines types, searching the Web, Web Servers, TCP/IP and other main protocols used on the Web.
E-Mail: Concepts of e-mailing, POP and WEB Based E-mail, merits, address, Basics of Sending & Receiving, E-mailProtocols, Mailing List, Free E-mail services, e-mail servers and e-mail client programs.

Unit II

Introduction to E-Commerce: Emergence of the Internet, Commercial use of the Internet, Emergence of World Wide Web, Advantages and Disadvantages of E-Commerce, Transition toE-Commerce in India, E-Commerce opportunities for Industries.

Unit III

Models: Business Models for E-commerce, Models based on Relationship ofTransaction parties: B2C,B2B,C2C, C2B;Models based on the Relationship of Transactiontypes, Brokerage Model, Aggregator Model, Infomediary Model, Community Model, Value Chain Model, Manufacturer Model, Advertising Model, Subscription Model, Affiliate Model.

Unit IV

E-Marketing versus Traditional Marketing: Identifying Web Presence Goals, Browsing Behavior Model,Online Marketing, E-advertising, Internet Marketing Trends, E-branding and E-Marketing strategies.

Unit V

E-Security: Information system security, security on the internet, E-business riskmanagement issues, information security environment in India.

E-Payment Systems: Digital payment requirements, Digital Token based e-paymentsystems, properties of Electronic cash, risk and e-payment systems and designing e-payment systems.

Secure Business, Web store, Online Payment, Internet Banking. Security- E-commerce security issues, Cryptography, Digital Signature & Authentication protocol, Digital Certificates. Online Security, Secure Electronic Transaction (SET) .

Text Books and reference books:

1. Internet for Everyone by AlexinLeon and Mathews Leon
2. Doing Business on the Internet: E-Commerce by S. Jaiswal
3. E-Business and E-commerce Management,3rdEdition by Pearson Education
4. E-Commerce: An Indian Perspective,2nd Edition by P.T. Joseph
5. Introduction to E-Commerce by Zheng Qin
6. E-commerce Development: Business to Business by WP Publishers
7. Frontiers of Electronic Commerce by R. Kalakota
8. E-business: Roadmap for success by R. Kalakota
9. Electronic Commerce by Gary P. Schneider
10. The E-Business Revolution by Daniel Amor

Instruction to Paper Setter:

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B.A/B.Com/B.Sc. (Computer Application) Second Year

Second Paper

Paper Code - CA-202
Paper Name – Relational Database Management System

Maximum Marks: 40

Course Objectives:
1. To review the basic concepts and functional knowledge in the field of computer application
2. To expose the students to computer application in the field of Business.

Unit I

Evolution of Databasetechnology, File-Oriented System, Database System, Client Server Platforms.Database System in the Organization: Databases and Data sharing, Strategicdatabase planning, Management control, Risks and cost of database, Logical andPhysical data representation.

Unit II

Database Development Life Cycle(DDLC), Principles ofConceptual Database Design, Objects, Specialization, Generalization, Relationship, Cardinality, Attributes.Relational data model: Fundamental Concepts, Normalization process (1NF, 2NF,3NF, BCNF, 4NF), Transforming Conceptual Model to a Relational Model.

Unit III

Relational Algebra, Relationalimplementation with SQL, Introduction, Data Definition language (DDL), DataManipulation Language (DML), Data Control Language (DCL), Transaction Control Language(TCL), Schema and table definition, SQL functions: Mathematicalfunctions, Group functions, View definition: Introduction, Command to create a VIEW.

Unit IV

Physical, storage media, Disk performance factors Datastorage format file organization and addressing methods implementing, Managingthe Data base environment - Database administration and control, DBA functions,goals, integrity, security and recovery.

Unit V

Introduction to SQL: Components of SQL, DDL, DML, Query Language, DCL, TCL, SCL etc. Invoking sql*plus. The oracle data types two dimensional matrix creation. Insertion,

updation, deletion operations, the many faces of SELECT command, creating tables using query, inserting data using query, modifying the structure of tables, renaming tables, dropping tables, dropping columns, logical operators, range searching, pattern matching, use of Alias, Oracle Functions. Accessing data from multiple tables. Set operations: Union, Intersect, Minus.Data Constraints: I/O constraints, Business Rule constraints. Grouping data from tables. Joins: Equi-join, Self-join, Sub-Queries. Views, Sequences, Synonyms, use of savepoint, ROLLBACK&COMMIT commands, creating user accounts, granting permission, revoking permission.

Text Books and Reference Books:

1. Database Management & Design by G. W. Hansen & J. V. Hansen
2. Database System Concepts by Silberschqtz, Korth&Sudarshan
3. SQL, PL/SQL: The Programming Language of Oracle by Ivan Byross
4. Introduction to Database Systems by C. J. Date
5. Oracle: The Complete Reference by Oracle Press
6. SQL/PL-SQL by P. S. Deshpande

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Department of Higher Education, Government of Madhya Pradesh
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Session 2021-22

B.A/B.Com/B.Sc. (Computer Application) Second Year

Suggested list of exercises for practical

Maximum Marks: 50

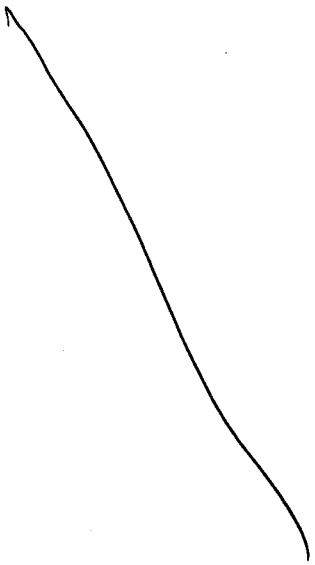
Internet and E-Commerce

1. To set and change computer name.
2. To set and change work group name.
3. To include web-site in your favorite.
4. To un-hide pop-up block.
5. To show default workgroup name.
6. To set default workgroup name.
7. To set default gateways.
8. To identify IP address.
9. To set URL as home page.
10. To set IP address and subnet mask.
11. To view network connection.
12. To change font size of web content.
13. To view the coding of web page.
14. To enable/disable firewall.
15. To turn on and turn off automatic updates.
16. To create e-mail account.
17. To send e-mail.
18. To add name in address book.

SQL

1. Create table for student information like name, age, add, phone, class, college, etc. Using
2. Create table command.

3. Insert data into tables using both types of insert commands.
4. Add another column into database using modify command.
5. Select particular type of data using select command using like, functions etc.
6. Create another table from old table.
7. Run commands like DROP table, ROLLBACK, EDIT, DESC, /, etc.
8. Apply nested queries by joining two tables & select particular data item from both tables.
9. Arrange columns data items in ascending or descending order.
10. Create view & Indexes on table.
11. Join tables using join Command.
12. Create client table with following fields-cid, cname, cadd, city, state and insert 10 records
13. Create customer table with following fields-cust_id, cust_name, cust_add, city, state and insert 10 records and apply the following constraints *NOT NULL, *Primary Key ,*Check Constraint,*Unique
14. Select two fields from the table using following clauses *Order by,*Distinct.
15. Select fields from the table and apply oracle functions like *AVG(),*MAX(),*MIN(),*COUNT(),*ABS(),*POWER(),*ROUND()
16. Apply the WHERE clause on Client(cid,cname,salary,cadd,city,state) table with 1.SELECT 2. DELETE 3. To insert data into some other table.
17. Create a table and apply ALTER TABLE command on the table.
18. Retrieve client information like cust_id, cust_name, city for customers where field city= Delhi or Baroda.
19. Create tables and relate them by using foreign key and reference table.



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Yearly Syllabus for Undergraduates
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Session 2021-22

B.A/B.Com/B.Sc. (Computer Application) Third Year

First Paper

Paper Code - CA-301
Paper Name – Web Designing

Maximum Marks: 40

Course Objectives:
1. To review the basic concepts and functional knowledge in the field of computer application
2. To expose the students to computer application in the field of Business.

Unit I

Web page overview, Elements of a web page. Types of Sites, personal sites, small business sites, large business sites, online business sites, Educational institution sites, Government sites, Blogs, twitter, Matching format to audience, creating guidelines, creating a site structure, writing for the web, download time, methods for creating pages, publishing a site, Addressing a web site, Absolute & Relative addresses, URL. Static and dynamic websites.

Unit II

Head content, adding a title, Body content, Paragraph breaks, Line breaks, Horizontal lines, Fonts and text size, Text color, Headings, Aligning text, Lists, Background color.

Unit III

About HTML editors,Net beans, Dream Viewer, the editing environment,effective page design, Uniform style, finding design ideas, Heading, Lists, using white space, splitting the text, colors and background, creating pages with Save As.

Unit IV

Frames and tables, animation effects, creating forms, Images, Image formats for the web, obtaining images, image size, editing images, thumbnails, images and text, rollover images, Navigation, types of hyperlinks, navigation bars, linking to external sites, email links, creating image maps, image maps in action,site maps, three-click navigation, site linkage.

Unit V

CSS: creating and editing cascading style sheets, adding sound - types of sound files, linking to sound files, embedding sound files, Video, Analog video, Digital video, webcams, animation, downloading animations, flash Publishing ,testing, transferring to the web, registering a site, marketing a site, maintaining a site, Domain names, web hosting .

Text Books and Reference Books :

1. HTML, DHTML, JavaScript, Perl CGI by Ivan Byross
2. The Complete reference HTML by Thomas Powell
3. World Wide Web Design with HTML by C Xavier
4. Easy Web Design by Mary Millhollon
5. Creating Web Pages by Nick Vandome
6. HTML in Easy Steps by Mike McGrath
7. Faster Smarter Web Page Creation by Mary Millhollon
8. Mastering HTML, CSS &Javascript Web Publishing by Laura Lemay
9. Web Designing by HirdeshBhardwaj

Instruction to Paper Setter:

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B.A/B.Com/B.Sc. (Computer Application) Third Year

Second Paper

Paper Code - CA-302
Paper Name – Digital Marketing

Maximum Marks: 40

Course Objectives:
1. To review the basic concepts and functional knowledge in the field of computer application
2. To expose the students to computer application in the field of Business.

Unit I

Digital marketing, Understanding the Marketing Process,Increasing Visibility, Types of visibility, Examples of visibility, Visitor Engagement, Bringing Targeted Traffic, Inbound,Outbound, Understanding Conversion Process,Retention, Types of Retention,Performance Evaluation,Tools Needed.

Unit II

Understanding Internet, Difference between Internet & Web, understanding websites and domain names,extensions, Web server & web hosting,different types of web servers, Planning and conceptualizing a website, building website using CMS in Class.

Unit III

Understanding Google Analytics, set up Analytics account, add Analytics code in a website, understanding goals and conversions, setup goals,understanding bounce rate,Difference between bounce rate and exit rate, reduce bounce rate,Monitoring traffic sources.

Unit IV

Marketing on Social networking websites, viral marketing and its importance, Facebook Marketing, Twitter Marketing, LinkedIn Marketing, Google plus Marketing,Video Marketing,Pinterest Marketing.

Unit V

Introduction to SEO and its importance ,Google AdWords overview, Understanding AdWords Algorithm, creating search campaigns, Creating Ads, Tracking performance/conversion, Optimizing Search Campaigns, Creating Display Campaign.

Text Books and Reference Books:

1. The art of SEO by Eric Enge
2. Marketing in the Age of Google: Your Online Strategy is Your Business Strategy by Vanessa Fox
3. Digital Marketing by VinayakPatukale
4. SEO Made Simple: Strategies for Dominating the World's Largest Search Engine by Michael H. Fleischner
5. Optimize: How to Attract and Engage More Customers by Integrating SEO, Social Media and Content Marketing by Lee Odden
6. Hospitality E-marketing by RavindraVerma

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B.A/B.Com/B.Sc. (Computer Application) Third Year

Suggested list of exercises for practical

Maximum Marks: 50

Note: The final Year Practical for Computer Application will consist of two parts

a. **Part A : 20 marks**
b. **Part B : 30 marks**

PART A

For B.Com.students Part A will comprise of training on Accounting Software Tally latest version

For B.Sc. and B.A. students Part A will comprise of training on Statistical Analysis Software SPSS / Freeware software for statistical analysis Anwari 15/6/17

PART B

Web Designing

1. Create a time table of your class.
2. Create a mark list of University examination.
3. Create a website for an automobile Company (add images and sounds)AN FMCG Company
4. Create a dynamic website for an educational institution
5. Create a website of computer products (add proper animation)
6. Create an online application form for admission process.
7. Create a website for online marketing.
8. Create a web page with information on the following topics:
   - Your Name
   - Address
   - Date of Birth
   - Hobbies
   - Favorite pastime
   - Ideals
   - Favorite Music
   - Favorite Films
9. Create an HTML document with the paragraph using <P><H1>, <STRONG> for the first word of every sentence.
10. Create an HTML document to describe Unordered and Ordered list and their features.
11. Create a Web page for the following:

WELCOME TO ABC UNIVERSITY STUDENTS DETAILS

S.No	SNAME	BRANCH	SEM	Marks		
				M1	M2	M3

12. Create an HTML document to include an image. Use the width and height attributes of the <img> tag to
    - Increase the image size by 100%.
    - Increate the image size by 50%.
    - Change the width-to-height ratio to 2:1.
13. Create a Link for each of the following:
    - Index.html, located in the files directory.
    - Index.html, located in the text subdirectory of the files directory.
    - A link to the president's email address (http://www.dhsgsu.nic.in)
    - An FTP link to the file named README in the pub directory of ftp:cdrom.com
14. Specify the HTML tags to accomplish the following:
    - Insert a framed web page with the first frame extending 300 pixels across the pagefrom the left side.
    - Insert an ordered list that will have numbering by lowercase roman numerals.
    - Insert a scrollable list in a form that will always displays four entries of the list.
    - Insert an image map into a page using an image and map with Name = "hello" asthe image map, and have "hello" be the alt text.
15. Create a home page of your own using HTML tags.
16. Using the tags of HTML forms, create a form to reserve a ticket in the southern Railwaysin the source and destination places are given.
17. Write an HTML document to provide a form that collects names and telephone numbers.
18. Write basic steps for hosting a web site.

Digital Marketing

1. Design SEO keywords for improving Google Page Rank of your college.
2. Monitor traffic on your website using Google Analytics.
3. Using Search Engine Submission improve online recognition and visibility of your website.
4. Design a blog for the regular activities of your college.
5. Link different sites using cross linking.
6. Use On Page Optimization for your web site.
7. Use Off Page Optimization for your web site.
8. Design a website for decreasing the loading time of a website.
9. Design Back link for your website.
10. Design Out Bound Link for your website.