PART A: Introduction				
Program: **Certificate**		Class: **B.C.A.**	Year: **I Year**	Session: **2021-22**

1.	Course Code	S1-BCAA1T	
2.	Course Title	**Computer Fundamentals, Organization and Architecture**	
3.	Course Type (Core Course/Elective/Generic Elective/ Vocational	**Major – Paper I**	
4.	Pre-Requisite (if any)	To study this course, a student must have basic knowledge of Computers.	
5.	Course Learning Outcomes (CLO)	**After the completion of this course, a successful student will be able to :** • Understand the basic structure, operation and characteristics of digital computer. • Design simple combinational digital circuits based on given parameters. • Understand the working of arithmetic and logic unit. • Know about hierarchical memory system including cache memories and virtual memory. • Know the contributions of Indians in the field of computer architecture and related technologies.	
6.	Credit Value	**Theory – 4 Credits Practical - 2 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 computers:** Definition, Characteristics, capabilities and limitations. Types of Computers: Analog, Digital, Micro, Mini, Mainframe & Super Computers, Work Station, Server computers. Generations of Computers. Smart Systems: definition, characteristics and applications. Definition of Embedded system, GIS, GPS, Cloud Computing. Uses of computers in e-governance and various public domains and services.	8
II	Block diagram of computer and its functional units. Concept of hardware, software and firmware. Types of software. **Input devices** - keyboard, scanner, mouse, light pen, bar code reader, OMR, OCR, MICR, track ball, joystick, touch screen camera, mic etc. **Output devices**: monitors – classification of monitors based on technology -CRT & flat panel, LCD, LED monitors, speakers, printers – dot matrix printer, ink jet printer, laser printer, 3D Printers, Wi-Fi enabled printers, plotters and their types , LCD/LED projectors.	10

	Computer memory and its types, Storage devices: Magnetic tapes, Floppy Disks, Hard Disks, Compact Disc – CD-ROM, CD-RW, VCD, DVD, DVD-RW, usb drives, Blue Ray Disc, SD/MMC Memory cards.	
III	**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. **Combinational Circuits**- Adder- Subtractor, Multiplexer, Demultiplexer, Decoders, Encoders **Sequential Circuits** - Flip - Flops, Registers, Counters.	10
IV	**Basic Computer Organization**: Instruction codes, Computer Registers, Computer Instructions, Timing & Control, Instruction Cycles, Memory Reference Instruction, Input - Output & Interrupts 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
V	**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
VI	**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 & its types, Auxiliary memory, Cache Memory, Associative Memory, Interleaving, concept of Virtual Memory, Hardware support for Memory Management.	10
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
PART C: Learning Resources		
Textbooks, Reference Books, Other Resources		
Suggested Readings		
Textbooks:		

1. M.Morris Mano, "Computer System Architecture", PHI.
2. Heuring Jordan , "Computer System Design & Architecture" (A.W.L.)
3. मध्य प्रदेश हिंदी ग्रंथ अकादमी से प्रकाशित विषय से संबंधित पुस्तकें।

Reference Books:

4. William Stalling, "Computer Organization & Architecture", Pearson Education Asia.
5. V. Carl Hamacher , "Computer Organization", TMH
6. Tannenbaum, "Structured Computer Organization", PHI.
7. Er. Rajiv Chopra, "Computer Architecture", Revised 3rd Edition, S. Chand & Company Pvt. Ltd

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/

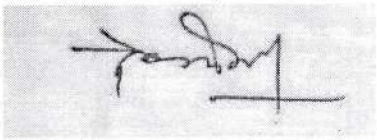
PART D: Assessment and Evaluation

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	4 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**)	8 Marks	Section (B) : Four Short Questions (200 Words Each)	04 x 09 = 36 Marks
Class Test III (**Based on solving circuit design problems**)	8 Marks	Section (C): Two Long Questions (500 Words Each)	02 x 15 = 30 Marks
Total	**25 Marks**	Total	**75 Marks**

Any remarks/suggestions:

PART A: Introduction				
Program: **Certificate**		Class: **B.C.A**	Year: **I Year**	Session: **2021-22**
1.	Course Code	S1-BCAA1P		
2.	Course Title	**Computer Fundamentals and Digital Lab**		
3.	Course Type (Core Course/Elective/Generic Elective/ Vocational	**Major – Paper I**		
4.	Pre-Requisite (if any)	Open for All		
5.	Course Learning Outcomes(CLO)	**After the completion of this course, a successful student will be able to do the following:** • Familiarity with parts of the computer and peripheral devices used with the computer. • Realization of the basic logic and universal gates. • Verify the behavior of logic gates using truth tables. • Implement Binary-to -Gray, Gray-to -Binary code conversions. • Design half and full adder circuit using basic gates. • 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): **1 Hrs. per week**		
Total No. of Labs: **30 Hrs.**		
	Suggestive list of Practicals	**No. of Labs.**
	I. Computer Fundamentals a) Identify various parts of the computer by physical examination. b) Identify various parts inside the CPU like motherboard, SMPS, ports, buses, IC chips, Processor, HDD, RAM etc. c) Identify various I/O devices available in the lab physically. II. Digital Electronics a) Verification and interpretation of truth table for AND, OR, NOT gates b) Verification and interpretation of truth table for NAND, NOR gates c) Verification and interpretation of truth table for Ex-OR, Ex-NOR gates d) Study of half adder using XOR and NAND gates and verification of its operation e) Study of full adder using XOR and NAND gates and verification of its operation	30 Hrs.



	f) Study of half subtractor and verification of its operation g) Study of full subtractor and verification of its operation h) Realization of logic functions with the help of NAND -Universal Gates i) Realization of logic functions with the help of NOR -Universal Gates j) Verify the truth table of RSflip-flops using NAND and NOR gates k) Verify the truth table of JKflip-flops using NAND and NOR gates l) Verify the truth table of T and D flip-flops using NAND and NOR gates m) Implementation of 4x1 multiplexer using logic gates n) Implementation of 1x4 demultiplexer using logic gates o) Verify Gray to Binary conversion using NAND gates only p) Verify Gray to Binary conversion using NAND gates only	

PART C: Learning Resources

Textbooks, Reference Books, Other Resources

Suggested Readings

Textbooks:

- M.Morris Mano, "Computer System Architecture", PHI.
- Heuring Jordan , "Computer System Design & Architecture" (A.W.L.)
- मध्यप्रदेश हिंदी ग्रंथ अकादमी से प्रकाशित विषय से संबंधित पुस्तकें।

Reference Books:

- 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://de-iitr.vlabs.ac.in/

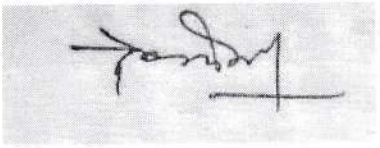
Suggested equivalent online courses

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
Viva	5 Marks	Viva voce practical	15 Marks
Lab Test from practical list	7 Marks	Table works/ Exercise Assigned (02) in practical exam	40 Marks

Assignments (Charts/ Model)/ Technology Dissemination/ Excursion/ Lab visit/ Industrial Training	8 Marks	Reports of excursion/ Lab visits/ Industrial training/ Survey/ Collection/ Models	10 Marks
Total ***Excursion/ Lab visits/ Industrial*** ***Training is compulsory***	**25 Marks**	**Total**	**75 Marks**



PART A: Introduction			
Program: **Certificate**	Class: **B.C.A.**	Year: **I Year**	Session: **2021-22**

1.	Course Code	S1 - BCAA2T
2.	Course Title	**Programming Methodology & Data Structures**
3.	Course Type (Core Course/Elective/Generic Elective/ Vocational	**Major – Paper II**
4.	Pre-Requisite (if any)	To study this course, a student must have basic knowledge of Computers.
5.	Course Learning Outcomes(CLO)	**After the completion of this course, a successful student will be able to do the following:** • Develop simple algorithms and flow charts to solve a problem with programming using top down design principles. • Writing efficient and well-structured computer algorithms/programs. • Learn to formulate iterative solutions and array processing algorithms for problems. • Use recursive techniques, pointers and searching methods in programming. • Will be familiar with fundamental data structures, their implementation; become accustomed to the description of algorithms in both functional and procedural styles. • Have knowledge of complexity of basic operations like insert, delete, search on these data structures. • Possess ability to choose a data structure to suitably model any data used in computer applications. • Assess efficiency tradeoffs among different data structure implementations. • Implement and know the applications of algorithms for searching and sorting. • Know the contributions of Indians in the field of programming and data structures.
6.	Credit Value	**Theory – 4 Credits Practical – 2 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	**Introduction to Programming** - Program Concept, Characteristics of Programming, Stages in Program Development, Algorithms, Notations, Design, Flowcharts, Types of Programming Methodologies.	8

	Basics of C++: A Brief History of C++, Application of C++, Compiling & Linking, Tokens, Keywords, Identifiers & Constants , Basic Data Types, User-Defined Data Types, Symbolic Constant, Type Compatibility, Reference Variables, Operator in C++, Scope Resolution Operator, Member Dereferencing Operators, Memory Management Operators, Manipulators, Type Cast Operator. **Functions In C++:** The Main Function, Function Prototyping, Call by Reference Call by Address, Call by Value, Return by Reference, Inline Function, Default Arguments, Constant Arguments, Function Overloading, Function with Array.	
II	**Classes & Objects:** A Sample C++ Program with class, Defining Member Functions, Making an Outside Function Inline, Nesting of Member Functions, Private Member Functions, Arrays within a Class, Memory Allocation for Objects, Static Data Members, Static Member, Functions, Array of Objects, Object as Function Arguments, Friend Functions, Virtual functions, Returning Objects, Constant member functions, Pointer to Members, Local Classes. **Constructor & Destructor:** Constructor, Parameterized Constructor, Multiple Constructors in a Class, Constructors with Default Arguments, Dynamic Initialization of Objects, Copy Constructor, Dynamic Constructor and Destructor.	10
III	**Inheritance:** Defining Derived Classes, Single Inheritance, Making a Private Member Inheritable, Multilevel Inheritance, Hierarchical Inheritance, Multiple Inheritance, Hybrid Inheritance, Virtual Base Classes, Abstract Classes, Constructor in Derived Classes, Nesting of Classes. Operator Overloading & Type Conversion, Polymorphism, Pointers, Pointers with Arrays C++, Streams, C++ Stream Classes, Unformatted I/O Operation, Formatted I/O Operation, Managing Output with Manipulators, Exception Handling.	8
IV	**Data Structure:** Basic concepts, Linear and Non-Linear data structures **Algorithm Specification:** Introduction, Recursive algorithms, Data Abstraction, Performance analysis. **Arrays:** Representation of single, two-dimensional arrays, triangular arrays, sparse matrices-array and linked representations. **Stacks:** Operations, Array and Linked Implementations, Applications-Infix to Postfix Conversion, Infix to Prefix Conversion, Postfix Expression Evaluation, Recursion Implementation. **Queues:** Definition, Operations, Array and Linked Implementations. Circular Queue-Insertion and Deletion Operations, Dequeue (Double Ended Queue), Priority Queue- Implementation.	12
V	**Linked Lists:** Singly Linked Lists, Operations, Concatenating, circularly linked lists-Operations for Circularly linked lists, Doubly Linked Lists- Operations, Doubly Circular Linked List, Header Linked List **Trees:** Representation of Trees, Binary tree, Properties of Binary Trees, Binary Tree Representations- Array and Linked Representations,	10

	Binary Tree Traversals, Threaded Binary Trees. **Heap:** Definition, Insertion, Deletion.	
VI	**Graphs:** Graph ADT, Graph Representations, Graph Traversals, Searching. **Hashing:** Introduction, Hash tables, Hash functions, Overflow Handling. **Sorting:** Bubble Sort, Selection Sort, Insertion Sort, Quick Sort, Merge Sort, 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

PART C: Learning Resources

Textbooks, Reference Books, Other Resources

Suggested Readings

Textbooks:

- J. R. Hanly and E. B. Koffman, "Problem Solving and Program Design in C", Pearson, 2015
- E. Balguruswamy, "C++ ", TMH Publication ISBN O-07-462038-X
- Herbert Shildt, "C++ The Complete Reference "TMH Publication ISBN 0-07-463880-7
- मध्य प्रदेश हिंदी ग्रंथ अकादमी से प्रकाशित विषय से संबंधित पुस्तकें।

Reference Books:

- R. Lafore, 'Object Oriented Programming C++"
- 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.
- 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

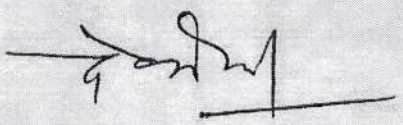
Suggested equivalent online courses

S.No.	Online Course	Duration	Platform
1	Programming in C++ https://nptel.ac.in/courses/106/105/106105151/	8 weeks	NPTEL
2	Beginning C++ Programming - From Beginner to Beyond https://www.udemy.com/course/beginning-c-plus-plus-programming/	Self paced	Udemy

PART D: Assessment and Evaluation

Internal Assessment : Continuous	**External Assessment**: University Exam (UE) : **75**

Comprehensive Evaluation (CCE) : **25 Marks** Shall be based on allotted assignments and Class Tests. The marks shall be as follows:		**Marks** Time : **02.00 Hours**	
Assessment and presentation of assignment	8 Marks	Section (A) : Three Very Short Questions (50 Words Each) OR Nine MCQ Questions	03 x 03 = 09 Marks
Class Test I (**Objective Questions**)	4 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**)	8 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.**			



PART A: Introduction				
Program: **Certificate**		Class: **B.C.A.**	Year: **I Year**	Session: **2021-22**
1.	Course Code	S1-BCAA2P		
2.	Course Title	**Programming Methodology & Data Structures Lab**		
3.	Course Type (Core Course/Elective/Generic Elective/ Vocational	**Major – Paper II**		
4.	Pre-Requisite (if any)	To study this course, a student must have basic knowledge of Computers.		
5.	Course Learning Outcomes(CLO)	**After the completion of this course, a successful student will be able to do the following:** 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. Implement and know the applications of algorithms for searching and sorting etc.		
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): **1 hour per week**		
Total No. of Lab.: **30 Hrs.**		
	Suggestive list of Practicals	**No. of Labs.**
	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. Write a program to swap the contents of two variables. 2. Write a program for finding the roots of a Quadratic Equation. 3. Write a program to find area of a circle, rectangle, square using switch case. 4. Write a program to print table of any number. 5. Write a program to print Fibonacci series. 6. Write a program to find factorial of a given number using recursion. 7. Write a program to convert decimal (integer) number into	30

	equivalent binary number. 8. Write a program to check given string is palindrome or not. 9. Write a program to print digits of entered number in reverse order. 10. Write a program to print sum of two matrices. 11. Write a program to print multiplication of two matrices. 12. Write a program to generate even/odd series from 1 to 100. 13. Write a program whether a given number is prime or not. 14. Write a program for call by value and call by reference. 15. Write a program to create a pyramid structure 1 12 123 1234 16. Write a program to check entered number is Armstrong or not. 17. Write a program to input N numbers and find their average. 18. Write a program to find the area and volume of a rectangular box using constructor. 19. Write a program to design a class time with hours, minutes and seconds as data members. Use a data function to perform the addition of two time objects in hours, minutes and seconds. 20. Write a program to implement single inheritance. 21. Write a program to find largest element from an array. 22. Write a program to implement push and pop operations on a stack using array. 23. Write a program to perform insert and delete operations on a queue using array. 24. Write a program for Linear search. 25. Write a program for Binary search. 26. Write a program for Bubble sort. 27. Write a program for Selection sort. 28. Write a program for Quick sort. 29. Write a program for Insertion sort. 30. Write a program to implement linked list.	

PART C: Learning Resources

Textbooks, Reference Books, Other Resources

Suggested Readings

- J. R. Hanly and E. B. Koffman, "Problem Solving and Program Design in C", Pearson, 2015
- E. Balguruswamy, "C++ ", TMH Publication ISBN O-07-462038-X
- Herbert Shildt, "C++ The Complete Reference "TMH Publication ISBN 0-07-463880-7
- मध्य प्रदेश हिंदी ग्रंथ अकादमी से प्रकाशित विषय से संबंधित पुस्तकें।

Reference Books:

- R. Lafore, 'Object Oriented Programming C++"
- 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.
- 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

Suggested equivalent online courses

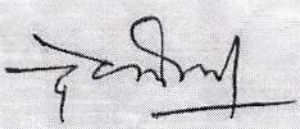
S.No.	Online Course	Duration	Platform
1	Programming in C++ https://nptel.ac.in/courses/106/105/106105151/	8 weeks	NPTEL
2	Beginning C++ Programming - From Beginner to Beyond https://www.udemy.com/course/beginning-c-plus-plus-programming/	Self paced	Udemy

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
Viva	5 Marks	Viva voce practical	15 Marks
Lab Test from practical list	7 Marks	Table works/ Exercise Assigned (02) in practical exam	40 Marks
Assignments (Charts/ Model)/ Technology Dissemination/ Excursion/ Lab visit/ Industrial Training	8 Marks	Reports of excursion/ Lab visits/ Industrial training/ Survey/ Collection/ Models	10 Marks
Total *Excursion/ Lab visits/ Industrial Training is compulsory*	**25 Marks**	**Total**	**75 Marks**



PART A: Introduction			
Program: **Certificate**	Class: **B.C.A.**	Year: **I Year**	Session: **2021-22**

1.	Course Code	S1 - BCAB2T	
2.	Course Title	**Operating System**	
3.	Course Type (Core Course/Elective/Generic Elective/ Vocational	**Minor**	
4.	Pre-Requisite (if any)	Open for all	
5.	Course Learning Outcomes (CLO)	• **After the completion of this course, a student shall be able to do the following**: • Describe the importance of computer system resources and the role of operating system in their management policies and algorithms. • Specify objectives of modern operating systems and describe how operating systems have evolved over time. • Understand various process management concepts and can compare various scheduling techniques, synchronization, and deadlocks. • Describe the concepts of memory management techniques. • Identify the best suited process management technique for any process. • Describe various file operations, file allocation methods and disk space management. • To understand and identify potential threats to operating systems and the security features to guard against them. • Learn to operate the Linux system,	
6.	Credit Value	**Theory - 4 Credits Practical – 2 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 Hours per week**		
Total No. of Lectures: **60 Hrs.**		
Module	**Topics**	**No. of Lectures**
I	**Introduction to Operating System**: What is Operating System? History and Evolution of OS, Basic OS functions, Resource Abstraction, Types of Operating Systems– Batch Systems, Multiprogramming Systems, Multiprocessing Systems, Time Sharing Systems, Distributed OS, Real time systems. Operating System for Personal Computers, Workstations and Hand-held Devices. Applications of various operating system in real world. Some prevalent operating systems – Windows, UNIX/Linux, Android, MacOS, Blackberry OS, Symbian, Bada etc.	6
II	**Process Management**: Process Concepts, Process states & Process Control Block. **Process Scheduling**: Scheduling Criteria, Scheduling Algorithms (Preemptive & Non- Preemptive) – FCFS, SJF, SRTN, RR, Priority,	14

	Multiple-Processor, Real-Time, Multilevel Queue and Multilevel Feedback Queue Scheduling. **Deadlock** - Definition, Deadlock Characterization, Necessary and Sufficient Conditions for Deadlock. **Deadlock Handling Approaches**: Prevention, Avoidance, Detection and Recovery.	
III	**Memory Management**: Introduction, Address Binding, Logical versus Physical Address Space, Swapping, Contiguous & Non-Contiguous Allocation, Fragmentation (Internal & External), Compaction, Paging, Segmentation, Virtual Memory, Demand Paging, Performance of Demand Paging, Page Replacement Algorithms. **File Management**: Concept of File System(File Attributes, Operations, Types), Functions of File System, Types of File System, Access Methods (Sequential, Direct & other methods), Directory Structure (Single-Level, Two-Level, Tree-Structured, Acyclic-Graph, General Graph), Allocation Methods (Contiguous, Linked, Indexed)	14
IV	**Disk Management**: Structure, Disk Scheduling Algorithms (FCFS, SSTF, SCAN, C-SCAN, LOOK), Swap Space Management, Disk Reliability, Recovery. **Security**: Security Threats, Security policy mechanism, Protection, Trusted Systems, Authentication and Internal Access Authorization, Windows Security.	12
V	**LINUX**: Introduction, History and features of Linux, advantages, hardware requirements for installation, Linux architecture, file system of Linux - boot block, super block, inode table, data blocks. Linux standard directories, Linux kernel, Partitioning the hard drive for Linux, installing the Linux system, system - startup and shut-down process, init and run levels. Process, Swap, Partition, fdisk, checking disk free spaces. Difference between CLI OS & GUI OS, Windows v/s Linux, Importance of Linux Kernel, Files and Directories. Concept of Open Source Software.	12
VI	**Indian contribution to the field** – the BOSS operating system, open source softwares, growth of LINUX, Aryabhatt Linux, contributions of innovators – RajenSheth, Sunder Pichai etc.	2

PART C: Learning Resources

Textbooks, Reference Books, Other Resources

Suggested Readings

Textbooks:

- A Silberschatz, P.B. Galvin, G. Gagne, Operating Systems Concepts, 8th Edition, John Wiley Publications.
- A.S. Tanenbaum, Modern Operating Systems, 3rd Edition, Pearson Education.
- Operating System by Peterson
- Linux by Sumitabh Das
- मध्यप्रदेशहिंदीग्रंथअकादमीसेप्रकाशितविषयसेसंबंधितपुस्तकें।

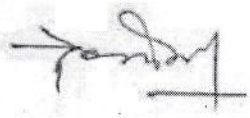
Reference Books:

- G. Nutt, Operating Systems: A Modern Perspective, 2nd Edition Pearson Education.
- W. Stallings, Operating Systems, Internals & Design Principles, 8th Edition, Pearson Education.
- M. Milenkovic, Operating Systems- Concepts and design, Tata McGraw Hill.
- Operating System design and Concepts by Milan Milenkovic.

Suggestive digital platform web links
https://web.iitd.ac.in/~minati/MTL458.html https://www.cse.iitb.ac.in/~mythili/os/ https://www.youtube.com/watch?v=aCJ3YgoolHQ
Suggested equivalent online courses
https://nptel.ac.in/courses/106/102/106102132/

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	4 Marks	Section (A) : Three Very Short Questions (50 Words Each) OR Nine MCQ Questions	03 x 03 = 09 Marks **OR** 09 x 01 = **9 Marks**
Class Test I (**Objective Questions**)	5 Marks		
Class Test II (**Descriptive Questions**)	8 Marks	Section (B) : Four Short Questions (200 Words Each)	04 x 09 = 36 Marks
Class Test III (**Based on OS commands**)	8 Marks	Section (C): Two Long Questions (500 Words Each)	02 x 15 = 30 Marks
Total	**25 Marks**	Total	**75 Marks**
Any remarks/suggestions:			



PART A: Introduction			
Program: **Certificate**	Class: **B.C.A.**	Year: **I Year**	Session: **2021-22**

1.	Course Code	S1- BCAB2P	
2.	Course Title	**Operating System Lab**	
3.	Course Type (Core Course/Elective/Generic Elective/ Vocational	**Minor**	
4.	Pre-Requisite (if any)	Open for All	
5.	Course Learning Outcomes (CLO)	**After the completion of this course, a student shall be able to:** • Operate the Linux system. • Do administration • Use Vi Editor	
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): **1Hr. per week**

Total No. of Lab.: **30 Hrs.**

	Suggestive List of Practicals	No. of Labs.
	Linux: **a) Linux Directory Commands:** pwd, mkdir, rm -rf, ls, cd,cd / , cd ~ **b) Linux File Commands:** touch, cat, cat >, cat >>, rm , cp, mv, rename **c) Linux Permission Commands:**su, id, useradd, passwd, groupadd, chmod, groupdel, chown, chgrp **d) Linux File Content & Filter Commands:** head, tail, tac, more, less, grep, cat, cut, grep, comm, sed, tee, tr, uniq, wc, od, sort, diff. **e) Linux Utility Commands:** find, bc, locate, date, cal, sleep, time, df, mount, exit, clear, gzip, gunzip. **f) Linux Networking Commands:** ip, ssh, mail, ping, host **g) Edit Crontab file:** to wall message on system on particular time automatically. h) **Vi editor:** Create file, edit, save and quit. Highligting the searched term within a file. cut, yank, undo.	30

PART C: Learning Resources

Textbooks, Reference Books, Other Resources

Suggested Readings

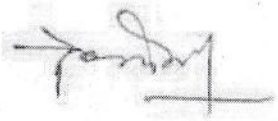
Textbooks:

- Linux by Sumitabh Das
- Linux Bible
- मध्यप्रदेश हिंदी ग्रंथ अकादमी से प्रकाशित विषय से संबंधित पुस्तकें।

Suggestive digital platform web links

https://web.iitd.ac.in/~minati/MTL458.html
https://www.cse.iitb.ac.in/~mythili/os/
https://www.youtube.com/watch?v=aCJ3YgoolHQ

Suggested equivalent online courses			
https://nptel.ac.in/courses/106/102/106102132/ https://www.youtube.com/watch?v=OHCMfsNpqCc			
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
Viva	5 Marks	Viva voce practical	15 Marks
Lab Test from practical list	7 Marks	Table works/ Exercise Assigned (02) in practical exam	40 Marks
Assignments (Charts/ Model)/ Technology Dissemination/ Excursion/ Lab visit/ Industrial Training	8 Marks	Reports of excursion/ Lab visits/ Industrial training/ Survey/ Collection/ Models	10 Marks
Total ***Excursion/ Lab visits/ Industrial*** ***Training is compulsory***	**25 Marks**	**Total**	**75 Marks**



Part A Introduction				
Program: Certificate Course		**Class:**BCAI Year	**Year:** 2021	**Session:** 2021-2022
1	Course Code	S1-BCAC2G		
2	Course Title	Discrete Mathematics		
3	Course Type	Elective		
4	Pre-requisite (if any)	Open for All		
5	Course Learning Outcomes (CLO)	The course will enable the students: 1.Apply the Boolean algebra, switching circuits and their applications. 2. Minimize the Boolean Function using Karnaugh Map. 3. Understand the lattices and their types. 4. Graphs, their types and its applications in study of shortest path algorithms. 5. Test whether two given graphs are isomorphic. 6. Understand the Eulerian and Hamiltonian graphs. 7. Represent graphs using adjacency and incidence matrices. 8. Understand the discrete numeric functions, generating functions and Recurrence Relations.		
6	Credit Value	**Theory:**6Credit		
7	Total Marks	Max. Marks: 25 + 75	Min. Passing Marks: 33	

Part B - Content of the Course		
Total No. of Lectures (in hours per week): 3 hours per week **Total Lectures:** 90 hours		
Unit	Topics	No. of Lectures
I	**Relations:** Binary, Inverse, Composite and Equivalence relation, Equivalence classes and its properties, Partition of a set, Partial order relation, Partially ordered and Totally ordered sets, Hasse diagram. **Lattices:** Definition and examples, Dual, bounded, distributive and complemented lattices.	18
II	**Boolean Algebra:**Definition and properties, Switching circuits and its applications, Logic gates and circuits. **Boolean functions:** Disjunctive and conjunctive normal forms, Bool's expansion theorem, Minimize the Boolean function using Karnaugh Map.	18
III	**Graphs:**Definition and types of graphs, Subgraphs, Walk, path and circuit, Connected and disconnected graphs, Euler graph, Hamiltonian path and circuit, Dijkstra's Algorithm for shortest paths in weighted graph.	18

IV	**Trees:** Definition and its properties, Rooted, Binary and Spanning tree Rank and nullity of agraph, Kruskal's and Prim's Algorithm, Cut-set and its properties, Fundamental Circuit and Cut-Set, Planar graphs. **Matrix representation of graphs:** Incidence, Adjacency, Circuit, Cut-Set, Path.	18
V	**Discrete numeric and generating functions:** Operations on numeric functions, Asymptotic behavior of numeric functions, Generating functions. **Recurrence relations and recursive algorithms:**Recurrence relations, Linear recurrence relations with constant coefficients, Homogeneous solutions, Particular solutions, Total solutions, Solution by the method of generating functions.	18

Keywords/Tags:
Relation, Hasse diagram, Lattices, Boolean Algebra, Boolean function, Graph and Subgraph, Path and circuit, Tree, Spanning tree, Cut-set, Matrix representation of graph, Discrete numeric function, Generating function, Recurrence relation, Recursive algorithm.

Part C - Learning Resources

Text Books, Reference Books, Other Resources

Suggested Readings:

Text Books:

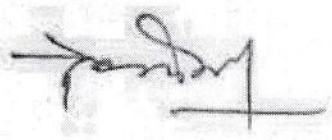
1. J. P. Tremblay and R. Manohar, Discrete Mathematical Structures With Applications To Computer Science, McGraw Hill Education, 1st edition, 2017.
2. C. L. Liu: Elements of Discrete Mathematics, McGraw Hill Education, 4th edition, 2017.
3. Narsingh Deo: Graph Theory with Applications to Engineering and Computer Science, Prentice Hall India Learning Private Limited, 1979.
4. मध्य प्रदेश हिन्दी ग्रंथ अकादमी से प्रकाशित विषय से संबंधित पुस्तकें।

Reference Books:

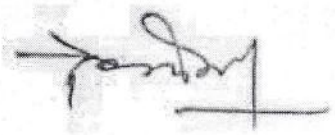
1. Seymour Lipschutz and Mark Lipson: Discrete Mathematics (Schaums Outline), McGraw Hill Education, 3rd edition, 2017.
2. Edgar G. Goodaire and Michael M. Parmenter, Discrete Mathematics with Graph Theory, Pearson Education Pt.Ltd., Indian Reprint 2003.

Suggested Digital Platforms Web links:
https://www.highereducation.mp.gov.in/?page=xhzIQmpZwkylQo2b%2Fy5G7w%3D%3D

Suggested Equivalent online courses:
https://nptel.ac.in/courses/111106086/
https://ugcmoocs.inflibnet.ac.in/index.php/courses/view_ug/311



Part D: Assessment and Evaluation		
Suggested Continuous Evaluation Methods: Maximum Marks: **100** Continuous Comprehensive Evaluation (CCE): **25**Marks University Exam (UE): **75**Marks		
Internal Assessment: Continuous Comprehensive Evaluation (CCE)	Class Test Assignment/Presentation	15 10 **Total Marks: 25**
External Assessment: University Exam (UE) Time: 02.00 Hours	Section (A): Three Very Short Questions (50 Words Each) Section (B): Four Short Questions (200 Words Each) Section (C): Two Long Questions (500 Words Each)	03 × 03 = 09 04 × 09 = 36 02 × 15 = 30 **Total Marks: 75**



भाग अ - परिचय		
कार्यक्रम: प्रमाण पत्र	वर्ष:प्रथम वर्ष	सत्र:2021-22

पाठ्यक्रम का कोड	**V1-PSY-DEVT**
पाठ्यक्रम का शीर्षक	व्यक्तित्व विकास
पाठ्यक्रम का प्रकार :	व्यावसायिक
पूर्वापेक्षा (Prerequisite) (यदि कोई हो)	सभी संकाय के विद्यार्थियों हेतु
पाठ्यक्रम अध्ययन की परिलब्धियां (कोर्स लर्निंग आउटकम)(**CLO**)	इस कोर्स का अध्ययन करने के बाद छात्र सक्षम हो जाएगा- 1. सफल जीवन के लिए कौशल संवर्धनऔरअसफलता को नियंत्रित करने में 2. लक्ष्य निर्धारण और स्वॉट विश्लेषण की प्रक्रियासीखने में 3. समय और तनाव प्रबंधन के महत्व को समझनेमें 4. रोजगारपरकता के लिए मूल कौशल विकसित करने में 5. प्रभावी संचार कौशल विकसित करनेमें 6. व्यक्तित्व विकास में प्रौद्योगिकी की भूमिका को समझनेमें
अपेक्षित रोजगार / करियर के अवसर	संबंधित जॉब प्रोफाइल में वृद्धि और मूल्यवर्धन
क्रेडिट मान	4

भाग ब- पाठ्यक्रम की विषयवस्तु		
व्याख्यानों की कुल संख्या + प्रैक्टिकल (प्रति सप्ताह घंटों में): व्याख्यान -1घंटे / प्रैक्टिकल अवधि 1प्रायोगिक घंटा		
व्याख्यान/प्रैक्टिकल की कुल संख्या : L-30hrs/P-30hrs		
मॉड्यूल	विषय	घंटे
I	**व्यक्तित्व, सफलता,और असफलताओं का सामना करना** व्यक्तित्व की अवधारणा. सफलता क्या है? - सफलता प्राप्त करने में बाधाएं, सफलता के लिए जिम्मेदार कारक, प्रभावी आदतें विकसित करना. असफलताक्या है? - असफलताओं को प्रभावित करने वाले कारक, असफलताओं से सीखना, असफलताओं पर काबू पाना, विश्वास की शक्ति, विश्वास का अभ्यास, स्वॉटविश्लेषण और लक्ष्य-निर्धारण(स्पेसफिक, मापन योग्य, प्राप्ति योग्य, वास्तविक, समयबद्ध; SMART लक्ष्य)	10
II	**समय और तनाव प्रबंधन और रोजगारपरकता-लब्धि** एक संसाधन के रूप में समय, समय की बर्बादी के कारकों की पहचान, बेहतर समय प्रबंधन के लिए तकनीक, तनाव का परिचय, तनाव के कारण और प्रभाव, तनावप्रबंधन रिज्यूमे बिल्डिंग, ग्रुप डिस्कशन में भाग लेने की कला, साक्षात्कार-अक्सर पूछे जाने वाले प्रश्न, साक्षात्कार, अभ्यास सत्र	10
III	**संचार कौशल और डिजिटल शिष्टाचार** संचार कौशल: प्रभावी पठन/लेखन/श्रवणके कौशल, हार्ड स्किल्स और सॉफ्ट स्किल्स, मंच के डर पर काबू पाना, बॉडी लैंग्वेजकी भूमिका, पेशेवर प्रस्तुति की कला, प्रस्तुतियों में श्रव्य और दृश्य माध्यमोंका उपयोग, सामाजिक शिष्टाचार दिन-प्रतिदिन के प्रबंधन में सूचना और संचार प्रौद्योगिकी (आईसीटी) का उपयोग, सोशल मीडिया का प्रभावी उपयोग, ई-मेल शिष्टाचार, नेटिकेट, उपयोगी इलेक्ट्रॉनिक गैजेट और मोबाइल एप्लिकेशन	10

	प्रायोगिक पाठ्यक्रम	
	1. स्वॉटविश्लेषण 2. लक्ष्य-निर्धारण (SMART लक्ष्य) 3. समय प्रबंधन 4. रिज्यूमे लेखन और मॉक साक्षात्कार सत्र 5. संचार कौशल 6. ई-मेल लेखन	30

Project/ Field trip :

1. किसी एक सफल व्यक्तित्व के जीवन सेप्राप्त सीख के आधार पर एक रिपोर्ट प्रस्तुत करें।
2. व्यक्तित्व विकास प्रशिक्षण संस्थान का भ्रमण तथा वहाँ से प्राप्त जानकारी के आधार पर रिपोर्ट प्रस्तुत करें।

भाग स-अनुशंसित अध्ययन संसाधन

पाठ्यपुस्तकें, संदर्भपुस्तकें, अन्यसंसाधन

1. अनुशंसित सहायक पुस्तकें / ग्रन्थ/ अन्य पाठ्य संसाधन/ पाठ्यसामग्री:

1. Andrews, Sudhir (1988). How to Succeed at Interviews. 21st (rep.) Tata McGraw-Hill, New Delhi.
2. Covey, Stephen. (1989). The 7 Habits of Highly Effective People. NY: Free Press
3. Hindle, Tim (2003). Reducing Stress. Essential Manager series. Dk Publishing.
4. Lucas, Stephen (2001). Art of Public Speaking. Tata - Mc-Graw Hill, New Delhi.
5. मार्डन, स्वेट, "व्यक्तित्वकाविकास", आनंदपेपरबैक्स।
6. Petes S. J., Francis (2011). Soft Skills and Professional Communication. Tata McGraw-Hill Education, New Delhi
7. शर्मा, पी.के., (2014) "व्यक्तित्वविकास", भारतीश्री प्रकाशन।
8. Smith, B. (2004). Body Language. Rohan Book Company, Delhi.

2.अनुशंसित डिजिटल प्लेटफ़ॉर्म / वेबलिंक

1. Basics of Communication: https://www.glowandlovelycareers.in/en/course-detail/niit-156/basics-of-communication
2. Social Etiquettes: https://www.glowandlovelycareers.in/en/course-detail/englishedge-904/social-etiquette
3. Self-Presentation: https://www.glowandlovelycareers.in/en/course-detail/niit-161/self-presentation

Part A Introduction		
Program: Certificate/Diploma/Degree	**Year: First Year**	**Session:2021-22**
Course Code	**V1-PSY-DEVT**	
Course Title	**PERSONALITY DEVELOPMENT**	
Course Type	**Vocational**	
Pre-requisite (if any)	**Open for all**	
Course Learning outcomes (CLO)	**After studying this course the Student will be able to** • To cultivate skills for successful life and learn to handle failures • To learn the process of goal setting and SWOT analysis • To understand the importance of time and stress management • To develop core skills for employability • To develop effective communication skills • To realize the role of technology in personality development	
Expected Job Role / career opportunities	• Growth and value addition in the respective job profiles	
Credit Value	**4**	

Part B-Content of the Course		
Total No. of Lectures + Practical (in hours per week): **L-1 Hr / P-1 Lab Hr**		
Total No. of Lectures/ Practical: **L-30hrs/P-30hrs**		
Module	**Topics**	**No. of Hours**
I	**Personality, Success, and Facing Failures** Concept of Personality. What is success? - Hurdles in achieving success, Factors responsible for success, developing effective habits. What is failure? - Factors affecting failures, learning from failures, overcoming failures, power of faith, practicing faith, SWOT analysis and Goal-Setting (Specific, Measurable, Achievable, Realistic, Time-bound- SMART goals)	**10**
II	**Time and Stress Management and Employability Quotient** Time as a Resource, Identifying Time Wasters, Techniques for better Time Management, Introduction to Stress, Causes and Effects of Stress, Managing Stress Resume building, The art of participating in Group Discussion, Interview-Frequently Asked Questions, Mock Interview Sessions	**10**
III	**Communication Skills and Digital Etiquettes** Communication Skills: Effective reading/writing/listening skills, Hard skills & soft skills, overcoming stage fear, role of body language, art of professional presentation, use of audio & visuals in presentations, social etiquettes Use of Information & Communication Technology (ICT) in day-to-day management, Effective use of social media, E-mail etiquette, Netiquette, Useful electronic gadgets and mobile applications	**10**
	Practical	
	1. SWOT analysis 2. Goal-Setting (SMART goals) 3. Time Management 4. Resume writing and mock interview sessions 5. Communication skills 6. E-mail writing	**30**
	Project/ Field trip	
	1. Submit a report based on your learning from the life of any one successful personality. 2. Visit to personality development training institute and submit its report.	

Part C-Learning Resources

Text Books, Reference Books, Other resources

Suggested Readings:

1. Andrews, Sudhir (1988). How to Succeed at Interviews. 21st (rep.) Tata McGraw-Hill, New Delhi.
2. Covey, Stephen. (1989). The 7 Habits of Highly Effective People. NY: Free Press
3. Hindle, Tim (2003). Reducing Stress. Essential Manager series. Dk Publishing.
4. Lucas, Stephen (2001). Art of Public Speaking. Tata - Mc-Graw Hill, New Delhi.
5. मार्डन, स्वेट, "व्यक्तित्व का विकास", आनंद पेपरबैक्स।
6. Petes S. J., Francis (2011). Soft Skills and Professional Communication. Tata McGraw-Hill Education, New Delhi
7. शर्मा, पी. के., (2014) "व्यक्तित्व विकास", भारतीश्री प्रकाशन।
8. Smith, B. (2004). Body Language. Rohan Book Company, Delhi.

Suggested equivalent online courses:

1. **Basics of Communication: https://www.glowandlovelycareers.in/en/course-detail/niit-156/basics-of-communication**
2. **Social Etiquettes: https://www.glowandlovelycareers.in/en/course-detail/englishedge-904/social-etiquette**
3. **Self-Presentation: https://www.glowandlovelycareers.in/en/course-detail/niit-161/self-presentation**

PART A: Introduction				
Program: UG Level		Class: I Year	Year: 2021-22	Session: 2021-22 onwards
Subject: **Foundation Course (English)**				
1.	Course Code	X1-FCHB1T		
2.	Course Title	English Language and Indian Culture		
3.	Course Type (Core Course/Elective/Generic Elective/ Vocational	**Foundation Course**		
4.	Pre-Requisite (if any)	To study this course, a student should have basic knowledge of English language. This course will be studied by all the students of UG level under the Foundation Course category.		
5.	Course Learning Outcomes (CLO)	Through this course the students will be able to: 1. Prepare for various competitive exams by developing their English language competence. 2. Promote their comprehension skills by being exposed to a variety of texts and their interpretations. 3. Build and enhance their vocabulary. 4. Develop their communication skills by strengthening grammar and usages. 5. Inculcate values which make them aware of national heritage and environmental issues, making them responsible citizens.		
6.	Credit Value	2 Credit		
7.	Total Marks	Max. Marks: 50	Min. Pass Marks:17	

PART B: Content of the Course		
Total No. of Lectures-Tutorials- Practical (in hours per week): L-T-P		
Total No. of Lectures:		
Unit	Topics	No. of Lectures
I	**Reading, Writing and Interpretation Skills:** 1. Where The Mind is Without Fear– Rabindranath Tagore **[Key Word: Patriotism]** 2. National Education – M. K. Gandhi **[Key Word: Edification]** 3. The Axe- R.K Narayan **[Key Word: Environment]** 4. The Wonder That Was India- A.L Basham (an excerpt) **[Key Word: Indianness]** 5. Preface to the Mahabharata C. Rajagopalachari **[Key Word: Indian Mythology]**	05
II	**Comprehension Skill:** Unseen Passage followed by Multiple choice questions	05
III	Basic Language Skills 1: Vocabulary Building: Suffix, Prefix, Synonyms, Antonyms, Homophones, Homonyms and One-word substitution. 2: Basic Grammar: Noun, Pronoun, Adjective, Verb, Adverb, Prepositions, Articles,	05

	Time and Tense	

PART C: Learning Resources

Textbooks, Reference Books, Other Resources

Suggested Readings

Essential English Grammar – Raymond Murphy, Cambridge University Press.

- Practical English Grammar Exercises 1- A. J. Thomson & A. V. Martinet, Oxford India.
- Practical English Usage - Michael Swan, Oxford
- English Grammar in Use – Raymond Murphy, Cambridge University Press.

Part D: Assessment and Evaluation			
Max Marks: 50	**Min Marks: 17**	**University Exam (UE)**	**Total: 50**
U.E. Time 2 Hours			

	External Assessment (UE)	Time: 2 Hours	
	Fifty Multiple Choice /Objective/True-False type questions to be asked. Each question carries one mark		

31.5.21

Dr. A.S. Kushwah
Chairman BOS Jiwaji University, Gwalior

31/05/21

प्राचार्य
शा.एस.एल.पी. स्नातकोत्तर महाविद्यालय
मुरार, ग्वालियर

Foundation Course: ENVIRONMENTAL EDUCATION

PART A: Introduction			
Program: UG Level Certificate	Class: UG I Year	Year: FIRST Year.	Session: 2021-22 onwards
Subject: Environmental Education			

1.	Course Code	X1-FCAC1T
2.	Course Title	**Environmental Education**
3.	Course Type (Core Course/Elective/Generic Elective/ Vocational	**Foundation Course**
4.	Pre-Requisite (if any)	A course intended to create awareness about the life of human beings which is an integral part of environment; and to inculcate the skills required to protect the environment from all sides. To study this course, the student must have a knowledge about the environmental components, pollution, biodiversity, and ecosystem at senior secondary, class 12th level.
5.	Course Learning Outcomes (CLO)	1. To understand various aspects of life forms, ecological processes, and the impacts on them by the human during Anthropocene era. 2. To build capabilities to identify relevant environmental issues, analyze the various underlying causes, evaluate the practices and policies, and develop framework to make inform decisions. 3. To develop empathy for all life forms, awareness, and responsibility towards environmental protection and nature preservation. 4. To develop the critical thinking for shaping strategies such as; scientific, social, economic, administrative & legal, environmental protection, conservation of biodiversity, environmental equity and sustainable development. 5. To prepare for the competitive exams.
6.	Credit Value	2 Credit
7.	Total Marks	Max.Marks : 50 / Min. Passing Marks:17

(डा॰ अर्चना पंचोली)

PART B: Content of the Course		
Total No. of Lectures-15 Hrs. (01 hours per week):		
Total No. of Lectures: 15		
Unit	Topics	No. of Lectures
I	**Environment and Natural Resources:** • Multidisciplinary nature, Scope and Importance of Environment • Components of Environment: Atmosphere, Hydrosphere, Lithosphere, and Biosphere. • Brief account of Natural Resources and associated problems: Land Resource, Water Resource, Energy Resource • Concept of Sustainability and Sustainable Development ***Keywords: Environment, Forest, Mineral, Food, Land, Water, Energy, Sustainable Development***	5 Hrs.
II	**Biome, Ecosystem and Biodiversity:** • Major Biomes: Tropical, Temperate, Forest, Grassland, Desert, Tundra, Wetland, Estuarine and Marine • Ecosystem: Structure function and types their Preservation & Restoration • Biodiversity and its conservation practices. ***Keywords: Biome, Ecosystem, Biodiversity***	4 Hrs.
III	**Environmental Pollution, Management and Social Issues:** • Pollution: Types, Control measures, Management and associated problems. • Environmental Law and Legislation: Protection and conservation Acts. • International Agreement & Programme. • Environmental Movements, communication and public awareness programme. • National and International organizations related to environment conservation and monitoring. • Role of information technology in environment and human health. ***Keywords: Pollution, Environmental Legislation, Environmental Movement, Environmental programme and organization.***	6 Hrs.

Suggested activities: (at least one)

1. Visit to an area to document environmental assets: rivers / forest / flora / fauna.
2. Visit to a local polluted site Urban / Rural/ Industrial / Agricultural
3. Study of simple ecosystem.

(डा-अर्चना पंचोली)

PART C: Learning Resources

Textbooks, Reference Books, Other Resources

- Singh; J.S., Singh S.P. and Gupta, S.R.; "Ecology; Environment Science and Conservation ",S Chand publishing , New Delhi , (2018)
- Divan, S. and Rosencranz , A. , "Environmental Law and Policy in India :Cases, Material & Status" Oxford University Press , India , (2002) 2nd Edition .
- Odum , E.P. , "Fundamentals of Ecology " , Philadelphia Saundres , (1971)
- Bharucha , Erach , "Environmental studies " Universities Press India Pvt. Ltd. Hyderabad (2014) (Hindi Edition also available).
- Kaushik, Anubha , Kaushik , C.P. "Perspectives in Environmental Studies "New age International Publishers , (2018), 6th Edition .
- Asthana, D. K Asthana Meera, "A Textbook of Environmental Studies", S. Chand.Publishing, New Delhi, (2007)
- National Digital Library (https://ndl.iitkgp.ac.in/homestudy/science)
- Epg- pathshala (https://epgp.inflibnet.ac.in/Home/Download)
- NPTEL (https://nptel.ac.in/course.html)
- Coursera (https://www.coursera.org/search?query=environmental+science&page=1)
- इराक भरूचा, पर्यावरण अध्ययन, ओरियन्ट ब्लैकस्वान प्राइवेट लिमिटेड नई दिल्ली (2014)
- दयाशंकर त्रिपाठी, पर्यावरण अध्ययन] मोतीलाल बनारसीलाल पब्लिशर्स दिल्ली.(2005)
- रतन जोशी, पर्यावरण अध्ययन, साहित्य भवन पब्लिकेशन्स.(2018)

Suggested equivalent online course –

i. The Health Effects of Climate Change (edx)
ii. Climate Change: Financial Risks and Opportunities (edx)
iii. Introduction to Environmental Law and Policy (coursera)
iv. Women in environmental biology (coursera)
v. Our Earth: It's Climate, History, and Processes (coursera)
vi. Ecology, physiology, environmental science (national digital library)

(डा० अर्चना पंचोली)

भाग . अ परिचय

पाठ्यक्रमः. स्नातक प्रमाण पत्र	कक्षाः स्नातक प्रथम वर्ष	वर्षः- FIRST Year	सत्रः- 2021-22
विषयः-पर्यावरण अध्ययन			
1) पाठ्यक्रम कोडः.			
2) पाठ्यक्रम शीर्षकः.	पर्यावरण अध्ययन	X1FCAC1T	
3) पाठ्यक्रम प्रकारः.	आधार पाठ्यक्रम		
4) पूर्वापेक्षा .	✓ सीनियर सैकेण्डरी कक्षा 12 वी तक विद्यार्थी को पर्यावरण के घटक, प्रदूषण, जैव विविधता, पारिस्थितिकी तंत्र का ज्ञान होना आवश्यक हैं। ✓ इस पाठ्यक्रम के माध्यम से अपेक्षा हैं कि विद्यार्थी पर्यावरण के प्रति जागरूकता को दृष्टिगत रखते हुए उसके विभिन्न घटको का प्रबंधन एवं सतत् विकास की आवश्यकता को ध्यान में रखकर मानव विकास हेतु क्रियाकलाप करे।		
5) पाठ्यक्रम अध्ययन की परिलब्धियां (C.L.O.).	✓ इस पाठ्यक्रम के माध्यम से आने वाले मानवजनित युग में विद्यार्थियों में विभिन्न जीवन प्रारूप पारिस्थितिकी प्रक्रियाओं व उन पर होने वाले मानवीय प्रभावों की व्यापक समझ का विकास करना हैं। ✓ विद्यार्थियों में ऐसी क्षमताओं का विकास करना हैं जिससे वह पर्यावरण संबंधित मुद्दों को पहचान कर अन्तनिर्हित कारकों का विश्लेषण कर सके एवं उनसे संबंधित क्रियाकलाप व नीतियों का मूल्यांकन कर नीतिगत रूपरेखा विकसित करने में सहयोग कर सकेगा। ✓ पर्यावरण सुरक्षा व प्रकृति संरक्षण हेतु सभी जीवन प्रारूपों के लिए समानुभूति, जागरूकता एवं उत्तरदायित्वों का बोध कराना। ✓ पर्यावरण सुरक्षा, जैव विविधता संरक्षण, पर्यावरण समानता एवं सतत् विकास हेतु वैज्ञानिक, सामाजिक, आर्थिक, प्रशासनिक व वैधानिक नीतियों को स्वरूप प्रदान करने की महत्वपूर्ण सोच को विकसित करना हैं। ✓ विद्यार्थी को प्रतियोगी परीक्षा के लिए तैयार करना		
क्रेडिट	02 क्रेडिट		
कुल अंक	अधिकतम अंकः- 50, न्यूनतम प्राप्तांक - 17		

(डा॰ अर्चना पंचोली)

	भाग - ब पाठ्यक्रम की विषयवस्तु कुल व्याख्यान - 15 घंटे (1 घंटा प्रति सप्ताह)	
ईकाई	विषयः	कुल व्याख्यान
I	पर्यावरण एवं प्राकृतिक संसाधनः ✓ पर्यावरण की बहुशास्त्रीय प्रकृति, विषय क्षेत्र एवं महत्व ✓ पर्यावरण के घटक . वायुमण्डल, जल मण्डल, स्थल मण्डल व जैव मण्डल ✓ प्राकृतिक संसाधन एवं संबंधित समस्याएँ का संक्षिप्त विवरणः भू.संसाधन, जल संसाधन, ऊर्जा संसाधन ✓ दीर्घकालिक एवं सतत विकास की अवधारणा कुंजी शब्दः पर्यावरण, वन, खनिज, खाद्य, भू, जल, ऊर्जा एवं सतत् विकास	5
II	बायोम,पारिस्थितिकी तंत्र एवं जैव विविधताः ✓ मुख्य बायोमः उष्णकटिबंधीय, शीतोष्ण, वन, घास का मैदान, मरूस्थल, टुण्डरा, आर्द्रभूमि, मुहाना व समुद्री ✓ पारिस्थितिकी तंत्र की संरचना, कार्य एवं प्रकार व इनका संरक्षण तथा पुनः स्थापन ✓ जैव विविधता और उसका संरक्षण कुंजी शब्दः बायोम, पारिस्थितिकी तंत्र, जैव विविधता	5
III	पर्यावरण प्रदूषण, प्रबंधन एवं सामाजिक मुद्देः ✓ प्रदूषण के प्रकार, नियंत्रण के उपाय, प्रबंधन एवं उससे जुड़ी समस्याऐं ✓ पर्यावरण कानून एवं अधिनियमः पर्यावरण सुरक्षा एवं संरक्षण विधान अन्तर्राष्ट्रीय समझौता एवं कार्यक्रम. ✓ पर्यावरण आंदोलन, संचार एवं जनजागरूकता कार्यक्रम ✓ पर्यावरण संरक्षण एवं नियंत्रण से संबंधित राष्ट्रीय एवं अन्तर्राष्ट्रीय संगठन ✓ पर्यावरण और मानव स्वास्थ्य में सूचना प्रौद्योगिकी की भूमिका। कुंजी शब्दः प्रदूषण, पर्यावरण कानून एवं विधान, पर्यावरण आंदोलन, पर्यावरण कार्यक्रम एवं संगठन	5

(डा० अर्चना पँचोली)

Part-C

Learning Resource

Text Book, References Books, Other resources

- Singh; J.S., Singh S.P. and Gupta, S.R.; "Ecology; Environment Science and Conservation ",S Chand publishing , New Delhi , (2018)
- Divan, S. and Rosencranz , A. , "Environmental Law and Policy in India :Cases, Material & Status" Oxford University Press , India , (2002) 2nd Edition .
- Odum , E.P. , "Fundamentals of Ecology " , Philadelphia Saundres , (1971)
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- Asthana, D. K Asthana Meera, "A Textbook of Environmental Studies", S. Chand Publishing, New Delhi, (2007)
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- Epg- pathshala (https://epgp.inflibnet.ac.in/Home/Download)
- NPTEL (https://nptel.ac.in/course.html)
- Coursera (https://www.coursera.org/search?query=environmental+science&page=1)
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Suggested equivalent online course –

i. The Health Effects of Climate Change (edx)
ii. Climate Change: Financial Risks and Opportunities (edx)
iii. Introduction to Environmental Law and Policy (coursera)
iv. Women in environmental biology (coursera)
v. Our Earth: It's Climate, History, and Processes (coursera)
vi. Ecology, physiology, environmental science (national digital library)

(डा० अर्चना पंचोली)

संशोधित

आधार पाठ्यक्रमः प्रथम प्रश्न पत्र – हिन्दी भाषा

(भाग–ए) परिचय

	कार्यक्रम : यूजी लेवल प्रमाण–पत्र	कक्षा : बी.ए. / बी.कॉम / बी.एसारी. / बी.एच.एसारी. / बी.सी.ए / बी.बी.ए (प्रथम वर्ष)	वर्ष 2021	सत्र 2021 2022
	विषय :–	आधार पाठ्यक्रम		
1	कोर्स कोडः	X1-FCEAIT		
2	कोर्स का शीर्षकः	भाषा और संस्कृति		
3	कोर्स का प्रकार	आधार पाठ्यक्रम		
4	कोर्स अपेक्षित	कक्षा 12वी उत्तीर्ण किसी भी विषय समूह से।		
5	कोर्स अधिगम उपलब्धि (लर्निंग आउटकम) (CLO)	1.उत्कृष्ट साहित्यिक पाठो के अध्ययन से रुचि का विकास करना। 2.सांस्कृतिक चेतना और राष्ट्रीय भावना का विकास करना। 3.भाषा–ज्ञान। 4.सामान्य शब्दावली और विशेष शब्दावली के अध्ययन द्वारा भाषा एवं संस्कृति बोध का विकास करना 5.विशिष्ट शब्दावली (बीज शब्द / की वर्ड) से परिचित करवाते हुए बोध के स्तर को विकसित करना। 6. प्रतियोगी परीक्षाओं हेतु तैयार करना।		
6	क्रेडिट मान	02 क्रेडिट		
7	कुल अंक	50 अंक		
8	उत्तीर्ण अंक	17 अंक		

ब्रा।५८।

(भाग – बी) कोर्स सामग्री

व्याख्यान की कुल संख्या : वर्ष में अधिकतम 15 घंटे

यूनिट	विषय	व्याख्यान की संख्या
इकाई– एक		
	1. मैथिलीशरण गुप्तः परिचय पाठः मातृभूमि (कविता)	5 घण्ट
	2. प्रेमचन्दः परिचय पाठः शतंरज के खिलाडी (कहानी)	
	3 व्यंग्यः शरद जोशी–जीप पर सवार इल्लियॉ	
इकाई– दो		
	1. वैचारिक–भारतीय भाषाओं में राम	5 घण्टे
	2. आचार्य रामचन्द्र शुक्लः परिचय पाठः उत्साह (भावमूलक निबन्ध)	
	3. रामधारी सिंह दिनकरः परिचय पाठः भारत एक है (संस्कृति)	
	4.आदिशंकराचार्य–जीवन व दर्शन	
इकाई– तीन		
	1. पर्यायवाची शब्द; विलोम शब्द; अनेक शब्द के लिए एक शब्द (हिन्दी व्याकरण)	5 घण्टे
	2. संधि और उसके प्रकार (हिन्दी व्याकरण)	
	3. बीज शब्द– धर्म, अद्वैत, भाषा, अवधारणा, उदारीकरण।	
सार बिन्दु (की वर्ड)/ टैग		
सर्च करेः		
मैथिलीशरण गुप्तः	मैथिलीशरण गुप्त की कविता मातृभूमि	
प्रेमचद	प्रेमचंद शतरंज के खिलाडी	
रामधारी सिंह दिनकर	भारत एक है रामधारी सिंह दिनकर	

9/8/21

	आचार्य रामचन्द्र शुक्ल	उत्साह निबन्ध रामचन्द्र शुक्ल	
	स्वामी विवेकानन्द	शिकागो व्याख्यान	
	धर्म क्या है		
	अद्वैत		
	भाषा विकास		
	भाषा परिभाषा		
	अवधारणा का अर्थ एव परिभाषा		
	उदारीकरण की विशेषता		
	पर्यायवाची शब्द		
	विलोम शब्द		
	अनेक शब्द के लिए एक शब्द		
	संधि		

(भाग सी)

अनुशंसित अध्ययन संसाधन

पाठ्य पुस्तके, सन्दर्भ पुस्तकें, अन्य संसाधन

1	प्रेमचन्द– मानसरोवर, खण्ड:3	
2	आचार्य रामचन्द्र शुक्ल– चिन्तामणि, भाग 1	
3	डॉ. वासुदेव नन्दन प्रसाद: आधुनिक हिन्दी व्याकरण और रचना, भारती भवन, ठाकुर बाडी रोड ,पटना, बिहार	
4	डॉ. राजेश्वर चतुर्वेदी, हिन्दी व्याकरण– उपकार प्रकाशन, आगरा उ.प्र.	
5		
6	हिन्दी ज्ञान कोश	
7	इन्टर नेट सामग्री– टैग में उल्लेखित	

(भाग डी)

निरंक

डॉ. प्रेमलता चुटैल
हिन्दी अध्ययन शाला
वि.वि.वि. उज्जैन (म.प्र.

Foundation Course: Yoga and Meditation

Part-A: Introduction				
Program: Certificate course		**Class**: B.A. 1 Year	**Year**: 2021	**Session**: 2021 – 2022
Subject: Yogic Science				
1.	**Course Code**	A1-YOSC1F		
2.	**Course Title**	**Yogaand Meditation (Paper-2)**		
3.	**Course Type**	Foundation Course		
4.	**Pre-requisite (If any)**	For BA I Year students, this course is compulsory for all.		
5.	**Course Learning Outcomes**	After studying this course,students will be able to: • Take care of their own Physical Mental emotional, social and spiritual health.		
6.	**Credit Value**	Theory-**2**		
7.	**Total Marks**	Max. Marks: 50	Min. Passing Marks: 17	

Part-B: Content of the Course

Total numbers of Lectures (in hours per week): 2 hours per week
Total Lectures: 30 hours; L – T – P: 2 – 0 – 0

Units	Topics	No. of Lectures
I	**Introduction to Yoga and Yogic Practices** 1. Yoga: Etymology, definitions, aim, objectives and misconceptions 2. Yoga: Its Origin, history and development 3. Rules and regulations to be followed by Yoga Practitioners 4. Introduction to Yoga practices 5. Shatkarma: meaning, purpose and their significance in Yoga Sadhana 6. Introduction to Yogic Loosening practices and Surya Namaskar **Key Words:** History and Development of Yoga, Shatkarma, Common Yogic Practices.	10
II	**Breathing Practices and Pranayama** 1. Sectional Breathing (Abdominal, Thoracic and Clavicular)	10

	2.Yogic Deep Breathing 3.Concept of Puraka, Rechaka and Kumbhaka 4. Concept of Bandha and Mudra 5. AnulmoaViloma/NadiShodhana 6. Shitali7. Bhramari **Key Words:**Sectional breathing, Deep breathing, Bandha & Mudra, Shitali, Bhramari.	
III	**Practices leading to Meditation** 1.Recitation of Pranava Mantra 2. Recitation of Hymns, in vocations and prayers 3. Anter Maun 4. Breath Meditation 5. Om Dhyana **Key Words:** Pranav Mantra, Antermaun, Breath Meditation, Om Dhyan.	10

Part-C: Learning Resources

Text Books, Reference Books, Other resources

Suggested Readings:

1. Singh S. P & Yogi Mukesh: Foundation of Yoga, Standard Publication, New Delhi, 2010.
2. Swami Dhirendra Brahmchari: YogasanaVijnana, Dhirendra Yoga Publication, New Delhi, 1966.
3. Saraswati, Swami Satyanand: Asana, Pranayama, Mudra, Bandha (APMB), Yoga Publication Trust, Munger, 2013.
4. H. R. Nagendra: Asana, Pranayama, Mudra, Bandha, Swami Vivekananda YogPrakashan, Bangalore, 2002.
5. Ishwar Bhardwaj: SaralYogasana, Satyam Publishing House, New Delhi, 2018.
6. Shri Rai Singh Chouhan: Mudra Rahasya, Bhartiya Yog Sansthan, New Delhi, 2014.
7. Dr. Vishwanath Prasad Sanha: Dhyan Yoga, Bhartiya Yog Sansthan, New Delhi, 1987.
8. Shri Deshraj: Dhyan Sadhana, Bhartiya Yoga Sansthan, New Delhi, 2015.

Suggestive digital platforms web links:

1. www.rishikeshnathyogshala.com

Suggested equivalent online courses:1.https://sahayji.com/hathayoga-course

2. https://theyogainstitute.org/

Part D: Assessment and Evaluation		
Maximum Marks: 50 University Examination (Objective) 50 Time: **01.00 Hour**		
External Assessment: University Examination	Objective questions	50
	Total	**50**
Any Remarks/suggestions:		

आधार पाठ्यक्रम :योग एवं ध्यान

भाग अ - परिचय				
प्रोग्राम: सर्टिफिकेट		कक्षा `: स्नातक प्रथम वर्ष	वर्ष::2021	सत्र:2021- 2022
विषय:योग विज्ञान				
1	पाठ्यक्रम का कोड	A1-YOSC1F		
2	पाठ्यक्रम का शीर्षक	योग एवं ध्यान (प्रश्न पत्र2)		
3	पाठ्यक्रम का प्रकार	आधार पाठ्यक्रम		
4	पूर्वापेक्षा(Prerequisite) (यदि कोई हो)	स्नातक प्रथम वर्षके छात्रों केलिए आधार पाठ्यक्रमअनिवार्य विषय है।		
5	पाठ्यक्रम अध्धयन की परिलब्धियां(कोर्स लर्निंगआउटकम) (CLO)	इस पाठ्यक्रम का अध्ययन करने के बाद, छात्र निम्न में सक्षम होंगे: • अपने स्वयं के शारीरिक मानसिक भावनात्मक, सामाजिक और आध्यात्मिक स्वास्थ्य के विकास में।		
6	क्रेडिटमान	2		
7	कुल अंक	अधिकतम अंक: 50	न्यूनतम उत्तीर्ण अंक: 17	

भाग ब- पाठ्यक्रम की विषयवस्तु		
व्याख्यान की कुल संख्या- (प्रति सप्ताह घंटे में):30 (दो घंटे प्रति सप्ताह) L-T-P: 2 – 0 – 0		
इकाई	विषय	व्याख्यान की संख्या
I	योग और योगिक अभ्यासों का परिचय 1. योग: व्युत्पत्ति, परिभाषाएं, उद्देश्य, उद्देश्य और गलत धारणाएं 2. योग: इसकी उत्पत्ति, इतिहास और विकास 3. योग अभ्यासकर्ताओं द्वारा पालन किए जाने वाले नियम और विनियम 4. योग प्रथाओं का परिचय	10

	5. षट्कर्म: योग साधना में अर्थ, उद्देश्य और उनका महत्व 6. योगिकशिथलीकरणऔर सूर्य नमस्कार का परिचय **सार बिंदु (कीवर्ड)**: योग का इतिहास और विकास, योग के सिद्धांत और महत्व, सामान्य योगिक अभ्यास।	
II	**श्वास अभ्यास और प्राणायाम** 1. अनुभागीय श्वास (पेट, थोरैसिक और क्लैविक्युलर) 2. योगिक गहरी श्वास 3. पुरक, रेचक और कुंभक की अवधारणा 4. बंध और मुद्रा की अवधारणा 5. अनुलोम विलोम/नाड़ी शोधन 6. शीतलीएवं7. भ्रामरी **सार बिंदु (कीवर्ड)**: पुरक, रेचक और कुंभक, बंध और मुद्रा, प्राणायाम	**10**
III	ध्यानअभ्यास 1. प्रणव मंत्र का पाठ 2. मंत्रों का पाठ, मंगलाचरण और प्रार्थनाओं में 3. अंतर मौन 4. श्वास ध्यान 5. ओम ध्यान **सार बिंदु (कीवर्ड)** :प्रणव मंत्र, श्वास ध्यान, ओम ध्यान	**10**
भाग स-अनुशंसित अध्ययन संसाधन		
पाठ्य पुस्तकें, संदर्भ पुस्तकें, अन्य संसाधन		
अनुशंसित सहायक पुस्तकें /ग्रन्थ/अन्य पाठ्य संसाधन/पाठ्य सामग्री:		

1. सिंह एस. पी. और योगी मुकेश: फाउंडेशन ऑफ योग, स्टैंडर्डपब्लिकेशन, नई दिल्ली, 2010.
2. स्वामी धीरेंद्र ब्रह्मचारी: योगासन विज्ञान, धीरेंद्र योग प्रकाशन, नई दिल्ली, 1966.
3. सरस्वती, स्वामी सत्यानंद: आसन, प्राणायाम, मुद्रा, बंध (APMB), योग प्रकाशन ट्रस्ट, मुंगेर, 2013.
4. एच. आर. नागेंद्र: आसन, प्राणायाम, मुद्रा, बंध, स्वामी विवेकानंद योग प्रकाशन, बैंगलोर, 2002.
5. ईश्वर भारद्वाज: सरल योगासन, सत्यमपब्लिशिंग हाउस, नई दिल्ली, 2018.
6. श्री राय सिंह चौहान: मुद्रा रहस्य, भारतीय योग संस्थान, नई दिल्ली, 2014.
7. डॉ विश्वनाथ प्रसाद संहा: ध्यान योग, भारतीय योग संस्थान, नई दिल्ली, 1987.
8. श्री देशराजः ध्यान साधना, भारतीय योग संस्थान, नई दिल्ली, 2015.

अनुशंसितडिजिटलप्लेटफॉर्मवेब लिंक:

1. www.rishikeshnathyogshala.com

अनुशंसित समकक्ष ऑनलाइन पाठ्यक्रम:

1. https://sahayji.com/hathayoga-course
2. https://theyogainstitute.org/

भाग द - अनुशंसित मूल्यांकन विधियां:

अनुशंसितसतत मूल्यांकन विधियां:

अधिकतम अंक: 50

विश्वविद्यालयीनपरीक्षा (वस्तुनिष्ठ) अंक:50

आकलन : **विश्वविद्यालयीन परीक्षा:** समय- 01.00 घंटे	वस्तुनिष्ठप्रश्न	50 x 1 = 50 **कुल अंक: 50**

कोई टिप्पणी/सुझाव:

Yearly Syllabus for Undergraduates
As recommended by Board of Studies of Computer Science and Applications
Barkatullah University, Bhopal
Session 2018-19 onwards

Class: BCA II Year(for Regular Students only)

Paper Code	Paper Title	Internal			Theory	Grand Total
		Three Months	Six Months	Total		
BCA-201	Programming with C++ and Data Structures	5	5	10	40	50
BCA-202	Computer based Numerical and Statistical Techniques	5	5	10	40	50
BCA-203	Operating System	5	5	10	40	50
BCA-204	Web technology and Application Development using .Net & C#	5	5	10	40	50
BCA-205	RDBMS Concepts & Oracle	5	5	10	40	50
BCA-206	Software Engg.	5	5	10	40	50
BCA-207	Organisational Behaviour	5	5	10	40	50
BCA-208	Lab-I					50
BCA-209	Lab-II					50
					Grand Total	450

Paper Code BCA-201
Paper Title :PROGRAMMING WITH C++ AND DATA STRUCTURES **Max Marks: 40**

Unit I
Introduction Procedural Vs Object Oriented Programming, Classes, Object, Data, Abstraction, Encapsulation, Inheritance, Polymorphism, Dynamic Binding, Message Passing, Object Oriented Languages, Object Based languages.**Basics of C++:** A Brief History of C++, Application of C++, Compiling & Linking, Tokens, Keywords, Identifiers & Constants , Basic Data Types, User-Defined Data Types, Symbolic Constant, Type Compatibility, Reference Variables, Operator in C++, Scope Resolution Operator, Member Dereferencing Operators, Memory Management Operators, Manipulators, Type Cast Operator. **Functions In C++:** The Main Function, Function Prototyping, Call by Reference Call by Address, Call by Value, Return by Reference, Inline Function, Default Arguments, Constant Arguments, Function Overloading, Function with Array.

Unit II
Classes & Object: A Sample C++ Program with class, Defining Member Functions, Making an Outside Function Inline, Nesting of Member Functions, Private Member Functions, Arrays within a Class, Memory Allocation for Objects, Static Data Members, Static Member, Functions, Array of Objects, Object as Function Arguments, Friend Functions, Returning Objects, Constant member functions, Pointer to Members, Local Classes. **Constructor & Destructor:** Constructor,Parameterized Constructor, Multiple Constructors in a Class, Constructors with Default Arguments, Dynamic Initialization of Objects, Copy Constructor, Dynamic Constructor,Destructor.

Unit III
Inheritance: Defining Derived Classes, Single Inheritance, Making a Private Member Inheritable, Multilevel Inheritance, Hierarchical Inheritance, Multiple Inheritance, Hybrid Inheritance, Virtual Base Classes, Abstract Classes, Constructor in Derived Classes, Nesting of Classes,Operator Overloading & Type Conversion , Polymorphism, Pointers, Pointers with Arrays C++, Streams, C++ Stream Classes, Unformatted I/O Operation, Formatted I/O Operation, Managing Output with Manipulators.

Unit IV
Basic Idea of Data Structures: Introduction to Data Structure, Classification, Operations on Data Structure, Dynamic Memory Allocation.**Arrays**: Array Address Calculation, operations on array and its algorithms, Application of Arrays, Limitations, Sparse Matrix. **Stacks:** Introduction, Representation of Stack, Implementation, Applications of stack: Infix, Prefix, Postfix expressions, Conversion of Infix to Prefix and Postfix Expressions, Evaluation of Postfix expression using Stack. **Recursion:** Recursive Definition and Processes, Example of Recursion, Recursion Vs. Iteration. **Queues:** Introduction, Representation of Queue, Implementation, Circular Queue, Dequeue, and Priority Queue.

Unit V
Linked Lists: Linear List Concept, Linked List v/s Array, Linked List Terminology, Linked List Data Structure, presentation of Linked List in Memory, Types of Linked List: Simple, Circular, Doubly Linked List, Circular Doubly Linked List, Operations on Linked List: Creation, Traversing, Searching, Insert Node (Empty List, Beginning, Middle, End), Delete Node (First, General Case) Count, Sort List.
Introduction to Trees: Tree Terminology, Binary Tree, Types of Binary Tree, Representation of Binary Tree, Binary Tree Traversal (Inorder, Preorder, Postorder), Binary Tree Creation, Expression Tree, Binary Search Tree ,Insertion and Deletion in BST, Graph Terminology. **Sorting & Searching Techniques:** Bubble Sort, Selection Sort, Binary search and Sequential Search.

Textbooks & Reference books:

1. Herbert Schildt,"C++ The Complete Reference"
2. Kanetkar, "Let us C++"
3. E. Balagurusamy, "Object Oriented Programming with C++"
4. Seymour Liptsuz, "Data Structure"
5. Tannebaum, "Data Structure"
6. Y.P. Kanetkar, "Data Structure through C++"
7. Y. Langsam, M. Augenstin and A. Tannenbaum, —Data Structures using C and C++, Pearson Education Asia.
8. Stanley Lippman&Lajoi, "C++ Primer"
9. BjarneStroustrup, "C++ Programming Language"

Paper Code: BCA-202
Paper Title: COMPUTER BASED NUMERICAL AND STATISTICAL TECHNIQUES **Max Marks: 40**

Unit I

Computer Arithmetic: Floating Point representation of numbers and operations, normalization and their consequences, pitfalls in computing, errors in numbers.

Solution of algebraic and transcendental equations: Introduction, Bisection method, the method of false position (Regulafalsi), Newton-Raphson method, secant method, their algorithms & comparative study of all the methods.

Unit II

Solution of simultaneous linear algebraic equations: Direct Method: Gauss elimination method, Gauss Jordan Elimination method Iterative Method: Gauss seidel method, pivoting, Ill-conditioned equations.

Numerical Integration: General quadrative formula for equidistant ordinates, Trapezoidal Rule, Simpson's 1/3 rule, Simpson's 3/8 rule and their algorithms.

Unit III

Interpolation & Extrapolation: Introduction, Finite Differences: Forward differences, backward differences, Interpolation with evenly spaced points: Newton's forward difference interpolation formula, Newton's backward difference interpolation formula.

Ir. polation with unevenly spaced points:Lagrange's interpolation formula, Newton's divided difference interpolation formula.

Unit IV

Numerical solution of ordinary differential equations: Introduction, Euler's method and algorithm, Euler's modified method, Taylor's series, Picard's method, RungeKutta method of order 2 and its algorithm, Rungekutta method of order 4 and its algorithm.

Unit V

Correlation & Regression : Correlation, definition, Utility, Types of Correlation, Karl Pearson's coefficient of correlation, shortcut method, step deviation method, merits and limitations of Karl Pearson's coefficient of correlation, Rank correlation coefficient,its merits and demerits.

Regression: Definition, Utility, Linear Regression lines: Freehand curve method, method of least squares, line of regression, regression coefficient and its properties.

Textbooks & Reference Books :

1. Shastri S.S., —Introductory methods of Numerical Analysis, PHI.
2. Rajaraman V., —Computer Oriented Numerical Methods, PHI.
3. PrahladTiwari – Numerical Analysis
4. Ray &Harswarup Sharma - Mathematical Statistics
5. H.C. Agarwal- Numerical Methods
6. Gupta &Kapoor-Tundamentals of mathematical statistics
7. Krishnamurthy - Computer based Numerical Algorithm
8. Salvadori - Computer Oriented Numerical Methods

Paper Code :BCA 203
Paper Title : OPERATING SYSTEM **Max Marks: 40**

Unit I
Introduction: Definitions, functions and types of operating system, System components, Operating system Structure, System Calls, System Programs, Interrupts, Microkernel .
Process Management: Process Concepts, Process states & Process Control Block, Process Scheduling: Scheduling Criteria, Scheduling Algorithms (Preemptive & Non- Preemptive) FCFS, SJF, RR, Priority, Multiple-Processor, Real-Time, Multilevel Feedback Queue Scheduling.

Unit II
Process Synchronization: Critical Section Problem, Semaphores, Classical Problems of Synchronization and their Solutions, Deadlock Characterizations, Method for Handling Deadlocks, Deadlock Prevention, Deadlock Avoidance, Deadlock Detection, Recovery from Deadlock
Memory Management: Introduction, Address Binding, Logical versus Physical Address Space, Swapping, Contiguous & Non-Contiguous Allocation, Fragmentation (Internal & External), Compaction, Paging, Segmentation

Unit III
Virtual Memory: concept, Demand Paging, Performance of Demand Paging, Page Replacement Algorithms
File Management: Concept of File System(File Attributes, Operations, Types), Functions of File System, Types of File S m, Access Methods (Sequential, Direct & other methods), Directory Structure (Single-Level, Two-Level, Tree-Structured, Acyclic-Graph, General Graph), Allocation Methods (Contiguous, Linked, Indexed).

Unit IV
Disk Management: Disk Scheduling Algorithms (FCFS, SSTF, SCAN, C-SCAN, LOOK), Swap Space Management, Disk Reliability, Recovery, Security: Security Threats, Protection, Trusted Systems, Windows Security.

UNIX :Introduction to UNIX, UNIX System Organization (the Kernel and the Shell), Files and Directories, Library Functions and System Calls, Editors (vi and ed). Introduction to the Concept of Open Source Software: Linux, Linux Architecture: Linux File System (inode, Super block, Mounting and Un-mounting), Essential Linux Commands, Kernel, Process Management in Linux, Signal Handling, System Call, System Call for Files, Processes and Signals

Unit V
Shell Programming: Types of Shells, Shell Meta Characters, Shell Variables, Shell Scripts, Shell Commands, the Environment, Integer Arithmetic and String Manipulation, Special Command line Characters, Decision Making and Loop Control, Controlling Terminal Input, Trapping Signals, Arrays, I/O Redirection and Piping, Vi and Emacs Editors, Shell Control Statements, Find, Shell Meta- Characters, Shell Scripts, Shell Keywords, Shell Procedures and Reporting, Handling Documents, Changing Process Priority with Nice, Scheduling of Processes at Command, cron, Batch commands.
P cess Management and Process Synchronization: Command line argument, Background processes, process synchronization, Sharing of data, user-id, group-id, pipes, fifos, message queues, semaphores, shared variables, Coding, Compiling, Testing and Debugging, AWK programming – report printing with AWK.

Textbooks & Reference Books:

1. Abraham Silberschatz and Peter Baer Galvin, —Operating System Concepts, Addison-Wesley.
2. Andrew Tanenbaum, —Modern Operating Systems, Prentice Hall.
3. Harvey M. Deitel, —An introduction to Operating Systems, Addison-Wesley.
4. Milan Milankovic, —Operating Systems, Concepts and Design, TMH
5. William Stallings, —Operating Systems: Internal and Design Principles, 3rd Edition, PHI.
6. Gary Nutt, —Operating Systems, A modern Approach, Third Edition, Addison Wesley, 2004
7. D.M. Dhamdhere, —Operating Systems, A Concept Based Approach, Second Edition, Tata McGraw-Hill, 2007.
8. Sumitabha Das — Unix Concepts and Applications, TMH.
9. YashwantKanetkar —Unix Shell Progamming, BPB
10. Parata —Advanced Unix: A Programmer's Guide, BPB.
11. Meeta Gandhi, —The C Odyssey Unix – The Open Boundless C, BPB.

Paper Code: BCA-204
Paper Title: Web technology and Application Development using .Net & C# **Max.Marks:40**

Unit I
HTML - HTML Introduction, HTML Syntax, Head & Body Sections, Basic HTML Tags, Inserting, formatting, & modifying text. Lists – ol,ul& dl. Inserting images, hyperlinks, internal links. Working with tables: table tags &attributes. Form Controls – text field, textarea, radio button, checkbox, drop down list box, button etc.

Unit II
Cascading Style Sheet – Introduction, merits, types, creating Divs with ID & Classes.CSS backgrounds, border, & box model.
Javascript - Overview, JavaScript vs. Java, Comments, Variables, Alertbox, Prompt & confirm. Expressions: Arithmetic operators, Assignment operators, Logical operators, Expressions and precedence, Statements: If statement, For statement, While statement, Break/Continue, Functions.

Unit III
ASP.Net - Overview ofASP.NET framework, Installation of **Visual Studio**, ASP.NET Standard Controls &**Code in C#** for – Labels, Text box, Button, Link Button, Radio Button, Radio Button List, Check Box, Check Box List, Calendar control, Adrotator Control, File upload control. Running a web application, creating a multi-form web project.

Unit IV
State management: Client side- Cookies, quary string, hidden fields.Server Side-View state, Session state, Application state.
Form Validation: Client side validation, server Side validation, ValidationControls: Required Field, Comparison, Range, Regular Expression validator, validation summary and custom validation.

UnitV
Database Connection: SQL Server Database File, Configuring SQL Data Source Control, Connection Class, Command Class, Data Adapter Class, Dataset Class. Displaying data in data bound Controls and Data Grid.

Textbooks & Reference Books:

1. Laura Lemay, Rafe Colburn, Jennifer Kyrnin, "Mastering HTML, CSS &Javascript Web Publishing" , BPB Publications
2. Thomas A. Powell , " HTML & CSS: The Complete Reference" , McGraw Hill
3. Black Book , "Web Technologies: HTML, JAVASCRIPT, PHP, JAVA, JSP, ASP.NET, XML and Ajax, Black Book: HTML, Javascript, PHP, Java, Jsp, XML and Ajax" , Dreamtech press
4. Black Book, "ASP.NET 4.5; Covers C# and VB Codes" , Dreamtech press
5. Matthew Macdonald, "ASP.NET: The Complete Reference" , McGraw-Hill
6. ImarSpaanjaars, "Beginning ASP.NET 4.5 in C# and VB", Wrox

Paper Code : BCA- 205
Paper Title : RDBMS & ORACLE **Max.Marks:40**

UNIT I

Introduction: Evolution of DB and DBMS, need for Data Management, Introduction and Application of DBMS, File System versus Database System.**Concepts of DBMS:** Data, Information, Database, Components of DBMS, Architecture of a database system – Physical, Conceptual and User level, Data Independence – Logical and Physical, DBMS terminology, Data Dictionary.

Concepts of Multitier Architecture in databases, Brief idea about distributed databases, parallel databases, mobile databases, temporal databases, spatial databases, geographic databases, data warehousing, data mining, data visualization, OODB and XML Databases, Multimedia and Web Databases.

UNIT II

Database Models: Network, Hierarchical and Relational Models, Features and Comparison of the three models.

RDBMS: Introduction to Relational Database, Structure of Relational Database, Relational Model terminology- domains, Attributes, Tuples, Relations, Relational DB Schema, ER-Model, ER-Diagram, ER-concepts, and types of relationships, Codd's 12 rules.

Normalization: Functional Dependency, definition,Trivial and Non-Trivial Functional Dependencies,Steps involved in normalization, 1NF, 2NF, 3NF, Decomposition using Functional Dependency preservation, BCNF, Multi-valued Dependency, 4NF, Join Dependency, 5NF.

UNIT III

Idea about Generalization, Aggregation, Specialization.

Indexing &Hashing : Basic Concepts, Indexing: b+ tree & B- tree index files, Hashing: static & dynamic hashing .**Elementary Concepts of Database Security:** System failure, Backup and Recovery Techniques, Authorization and Authentication.**Relational Algebra:** Formal Definition, Fundamental Operations –select, project, union, set difference, Cartesian product & rename, additional operations & extended operations.

UNIT IV

Concept of SQL sublanguages – DDL, DML, DCL, TCL, SCL etc., Embedded SQL.

Interactive SQL: Oracle data types, table creation, modifying the structure of tables, dropping and renaming tables.**DML commands:** Insertion, updation, deletion operations, many faces of select command, data constraints, logical operators, range searching, pattern matching, oracle functions, use of Alias, grouping data from tables, manipulating dates in sql.

UNIT V

Joins: Equi Join, Self Join, Cross Join.Sub queries, Indexes, Views, Sequences, Roles, Synonyms **TCL Commands:** use of savepoint, rollback, commit commands.**DCL Commands**: creating user accounts, granting permissions, revoking permissions, Concept of **importing** and exporting database files.

Text Books& Reference Books:

1. Abraham Silberschatz, Henry Korth, S. Sudarshan, "Database System Concepts" McGraw Hill
2. Rajesh Narang"Database Management System" PHI
3. C.J. Date , "An introduction to database system "
4. Bipin C. Desai, "An Introduction to Database System" .
5. RamakrishnanGehrke , "Database management system".

Paper Code: BCA-206
Paper Title : SOFTWARE ENGINEERING **Max Marks: 40**

Unit I

Introduction to Software Engineering: Introduction to Software, Types of software, Software Components, Software Characteristics, Software Engineering , Scope and necessity of Software Engineering, Software Engineering Processes, Factors affecting Quality and Quantity of Software. Software Development Life Cycle (SDLC), **Software Models:** Water Fall Model, Prototype Model, RAD Model, Evolutionary Development Models (Spiral Model, Incremental Model Concurrent Development Model)

Software Requirement Analysis: Requirement Specifications: Need for SRS, Nature of SRS, Characteristics, Components of SRS, Requirements analysis: Review and Management of User Needs, Feasibility Study, Information Modeling, IEEE Standards for SRS, Various SRS Templates, Validation of SRS.

Unit II

Software Metrics and Measurement: Software Process and Project Metrics, Software Measurement, Cyclomatic Complexity Measures: Control Flow Graphs, Software Quality Matrices. **Software Project Planning:** Objectives, Scope, Software Cost Estimation; **Decomposition Techniques:** Software sizing , Problem Based Estimation, Line of Code(LOC) Vs Function Point (FP) Based Estimation, Process Based Estimation; Empirical Estimation Models: The COCOMO Model; Make/Buy Decision, Software Risk Management.

Software Analysis : Analysis Model, Process and various Documents. **Conventional Analysis:** Data Modeling (ER Diagram), F tional Model & Information Flow (DFDs), Behavioral Modeling, Structured Analysis, Data Dictionary. **Object Oriented Analysis:** Domain Analysis, Object Oriented approach Process (Use Case), Object-Relational Model, Object- Behavioral Model.

Unit III

Software Design: Conventional Design: Design Process, Principles & Concepts, and Design Model. **Object Oriented Design:** Design Issues, Design Process: System Design, Object Design. **Software Design Document:** Software Design Document & its various example templates: Data Design, Architecture Design, and Interface Design & Procedural Design. **Coding:** Code Debugging, Verification and Code Optimization.

Testing, Deployment & Maintenance: Objectives, Types of Software Testing, Testing for Functionality and Performance, Structural Testing (White Box Testing), Functional Testing (Black Box Testing), Test Data Suite Preparation, Levels of Testing: User, Integration, System Alpha and Beta Testing, User Acceptance of Products, Roll out of Software & Deployment ssues. Need for Maintenance, Categories of Maintenance: Corrective, Preventive, Adaptive and Perfective Maintenance, Cost of Maintenance, Software Re-Engineering, Reverse Engineering, Software Reuse.

Unit IV

ntroduction to Software Project Management (SPM): Project stakeholders, Project management knowledge areas, Project nanagement tools and techniques, Project success factors; The Role of the Project Manager: Job description, Skills for project ager, Ethics in Project Management. Project Management Software. Project Integration Management .Project Execution, Monitoring and Controlling the Project.

Project Time Management: Importance of Project Schedules and Time Management, Activity Definition, Activity equencing, Activity Resource Estimation, Activity Duration Estimation, Schedule Development, Gantt Charts, Critical Path Method (CPM), Program Evaluation and Review Technique (PERT) **Project Cost Management:** Importance and Principles of roject Cost Management, Cost Estimation, Types of cost estimates, Cost estimation tools and techniques, Cost Budgeting, Cost Control, **Project Quality Management:** Importance of Project Quality Management, Quality planning, Quality assurance, Quality control, Tools and Techniques for Quality Control, Pareto analysis, Statistical sampling, Testing, ISO standards for uality, Cost of Quality.

nit V

roject Human Resource Management: Motivation theories, Maslow's hierarchy of needs, Improving effectiveness, Human esource Planning, Project organizational charts, Responsibility assignment matrices, Management plans and resource stograms, Acquiring the Project Team, Resource assignment, Resource loading, Resource leveling, Developing the Project eam, Managing the Project Team.

oftware Configuration Management (SCM), Software Version Control, Software Quality Management, Software Quality ssurance (SQA), Software Reliability & Reliability Models, Clean Room Software Engineering Approach. **CASE Tools:** verview of CASE Tools Framework, Features, Advantages and Limitations of CASE Tools. Awareness about Some ommercial CASE Tools Use and Applications.

Textbooks & Reference books:

1. R. S. Pressman, —Software Engineering: A Practitioners Approach, McGraw Hill.
2. Rajib Mall, Fundamentals of Software Engineering, PHI Publication.
3. PankajJalote, —Software Engineering, Wiley.
4. PankajJalote —Software Project Management In Practice, Pearson Education.
5. Carlo Ghezzi, M. Jarayeri, D. Manodrioli, —Fundamentals of Software Engineering, PHI Publication.
6. Ian Sommerville, —Software Engineering, Addison Wesley.

Paper Code : BCA-207
Paper Title: ORGANIZATIONAL BEHAVIOR **Max Marks: 40**

Unit I

Fundamentals of OB : Definition, Scope and importance of OB, Relationship between OB with other disciplines Psychology, Sociology, Anthropology and Political science, Challenges and Opportunities for OB., Theoretical framework and models of OB (cognitive, behavioristic and social cognitive).

Unit II

Individual Differences and Behavior: Foundations of individual behavior: Biographical Characteristics, Ability and learning, Attitudes, Values and Job Satisfaction, Attitude, Importance of attitude in an organization, Measuring Attitude, Components of attitude, Relationship between behavior and attitude.

Importance of Values and Ethical behavior, Job satisfaction: Concept and measurement, Concept of Personality and Emotions, The Big Five personality model, Significant personality traits suitable to the workplace (personality & job –fit theory). Emotions, Emotional Intelligence, Developing Emotional Intelligence at the workplace, Perception: Meaning and concept of perception, Factors influencing perception, Motivation: Definition & Concept, Theories of Motivation (Maslow's Need Hierarchy & Herzberg's Two Factor model Theory), The Process Theories (Vroom's expectancy Theory & Porter Lawler model), Contemporary Theories- Equity Theory of Work Motivation.

Unit III

Group Behaviour and Interpersonal Influence: Foundation of Group Behavior: The Meaning of Group, Group behavior & Group Dynamics, Types of Groups, The Five –Stage Model of Group Development, Managing Teams: Work teams In Organization, Developing Work Teams, Team Effectiveness & Team Building, Managing Conflict and Negotiation- Conflicts in Organizations, A contemporary perspective on intergroup conflict, What causes intergroup conflict, The causes of dysfunctional intergroup conflict, Managing intergroup conflict through Resolution, Stimulating Constructive intergroup conflict, Negotiations- Negotiation tactics, Increasing negotiation effectiveness, Assertive Behaviour- Interpersonal Orientations, Facilitating smooth relations, Stroking

Job stress: Concept of Stress, Stress model, Work stressors, Stress outcomes, Stress moderators, Stress prevention and management, Employee counseling, Types of counseling.

Unit IV

Organization System and Processes:

Communication - The importance of communication, The communication process, Communicating within organizations, Information richness, How technology affects communication, Interpersonal communication, Multicultural communication, Barriers to effective communication, Improving Communication in organizations, Promoting ethical communications.

Decision Making - Types of decisions, A Rational Decision-making Process, Alternatives to Rational Decision making, Behavioral influences on decision making, Group decision making, Creativity in group decision making.

Leadership - Concept of Leadership, Styles of Leadership, Traits Approach, Contingency leadership Approach, Contemporary leadership, meaning and significance of contemporary leadership, Contemporary issues in leadership, Contemporary theories of leadership, Concept of Transformational leadership, Multicultural leadership, Success stories of today's Global and Indian leaders.

Unit V

Organizational Design, Change And Innovation : Designing an organizational structure, Division of labour, Delegation of authority, Departmental biases, Span of control, Dimensions of structure, Organizational design models, Multinational Structure and Design, Virtual Organizations.

Organizational Culture, Meaning & Definition of Organizational Culture, Creating & Sustaining Organizational Culture, Types of Culture (Strong vs. Weak Culture, Soft vs. Hard Culture & formal vs. Informal Culture), Creating Positive Organizational Culture, Concept of Workplace Spirituality. Organizational behaviour across cultures, Conditions affecting multinational operations, Managing International Workforces, Productivity and cultural contingencies, Cross cultural communication.

Organizational Change: Meaning, definition & Nature of Organizational Change, Types of organizational change, Forces that acts as stimulants of change, Implementing Organizational Change : How to overcome the Resistance to Change, Approaches to managing Organizational Change : Kurt Lewin's-Three step model, Seven Stage model of Change & Kotter's Eight Step plan for Implementing Change, Leading the Change Process, Facilitating Change, Dealing with Individual & Group Resistance, Intervention Strategies for Facilitating Organization Change, Methods of Implementing Organizational Change, Developing a Learning organization, Organizational Development: Concept and Techniques of OD, The future of Organizational Behaviour.

Text Books& reference books

1. Organizational Behaviour by Robins
2. Organizational Behaviour by Nelson & Quick
3. Organizational Behaviour by Fred Luthans
4. Organizational Behaviour - Niraj Kumar
5. Organizational Behaviour by Stephen Robins, Timothy Judge, Neharika Vohra
6. Organizational Behaviour by M N Mishra
7. Organizational Behaviour by K Ashwathappa

Supplementary Reading Material

1. Contemporary Leadership Theories: Enhancing the Understanding of the complexity, subjectivity and dynamic of leadership by Ingo Winkler
2. Organizational Performance in a Nutshell by Daniel M Wentland

BCA- 208 : Lab I

Max.Marks:50

SUGGESTED LIST OF PRACTICALS

I. (A) C++

1. Write a program to convert decimal (integer) number into equivalent binary number.
2. Write a program to print Fibonacci series.
3. Write a program to find factorial of a given number using recursion.
4. Write a program to swap the contents of two variables with functions value parameters, address parameters and pointer parameters.
5. Write a program to check given string is palindrome or not
6. Write a max function which accepts two numbers and find the maximum of two numbers. The two given numbers can be integer, float, or double so that the functions may call the overloaded functions.
7. Write a program to perform multiplications of two matrices.
8. Write a program to design a class distance with feet and inches as data members. Use a data function to set and show the distance.
9. Write a program to design a class with length and height as data member. Use a data function to get value of length and height from the keyboard and display area of right angle triangle.
10. Write a program to overload the binary operator to add two complex numbers.
11. Write a program to find the area and volume of a rectangular box using constructor.
12. Write a program to design a class time with hours, minutes and seconds as data members. Use a data function to perform the addition of two times objects in hours, minutes and seconds.
13. Write a program to implement single inheritance.

I. (B) Data Structures

1. Write a program to traverse an array.
2. Write a program to insert item at k^{th} position in an array.
3. Write a program to delete k^{th} position item from array.
4. Write a program to push and pop operations on a stack using array.
5. Write a program to insert and delete operation on a queue using array.
6. Write a program for selection sort.
7. Write a program for bubble sort.
8. Write a program for linear (sequential) Search.
9. Write a program for binary search.
10. Write a program to implement linked list.

II. Implementation of Numerical and Statistical Methods

1. Write a program to implement Bisection Method.
2. Write a program to implement False Position Method
3. Write a program to implement Newton Raphson Method.
4. Write a program to implement Trapezoidal Rule.
5. Write a program to implement Simpson's 1/3 Rule.

6. Write a program to implement Simpson's 3/8 Rule.
7. Write a program to implement Lagrange's interpolation formula.
8. Write a program to implement Euler's method.
9. Write a program to implement RungeKutta Method of order 2.
10. Write a program toimplementRungeKutta Method of order 4.
11. Write a program toimplement Karl Pearson's Coefficient of Correlation.

BCA- 209 : Lab II

Max. Marks:50

SUGGESTED LIST OF PRACTICALS

A. SQL

1. Create tables named Employee, Department, Salary. Implement all DDL commands on it.
2. On the Employee Table use the many faces of SELECT command.
3. On a table perform WHERE CLAUSE, HAVING, GROUP BY, ORDER BY, IN, NOT IN, BETWEEN
4. Create a Database implementing Primary and Foreign Key.
5. Implement I/O Constraints and Business Rule constraints on the database created as in 4 above.
6. Perform Nested Queries on table STUDENT.
7. Perform different types of JOINS on any two tables
8. Create VIEWS, SEQUENCES and SYNONYMS on a table.
9. Use of SAVEPOINT, ROLLBACK and COMMIT command.

B. Web technology

I. HTML, CSS and Javascript:

1. Design a home page which displays information about your college department using paragraph and list tags, apply basic formatting, insert images also.
2. Create hyperlinks in home page connecting it to 3 different pages. Also, create 3 hyperlinks in home page, which jump to 3 different headings on the same page.
3. Design a timetable and display it in tabular format. Implement CSS backgrounds and borders in the page.
4. Design a Registration form in HTML using HTML forms. Apply CSS on web page and various form controls.
5. Implement javascript validation on a sign-up form.
6. Design a web-page whose content can be changed using JavaScript events.
7. Write a html code inserting javascript to create a basic calculator.

II. .Net & C#

8. Design & code an .aspx web form using textbox, label and button control to calculate simple interest.
9. Design a program in ASP.Net to print student's grade based on the following criteria(using nested if) :
   1)Grade A – percent>=75 2)Grade B – percent >=60 and <75 3) Grade C – for others
10. Calculate factorial of number using for and while loop
11. Calculate gross salary of an employee based on options selected from the check box list. Options are using checkbox list:
    1)HRA, 2)DA and 3)PF
12. Write a program using radio button list control to change thecolour of a label, and use check box list control to change the bold, italic and underline styles of that label .

III Mini Project using Visual Studio

Create a sign-up form(in 70% width of body)which takes data through text fields, radio-buttons, check-boxes, drop-down list, calendar control etc. Apply various types of validation through validation controls and then fill that data into a table of a SQL Server Database File.Make space for Advertisements in 30% body and display ads using adrotator control.

Yearly Syllabus for Undergraduates
As recommended by Board of Studies of Computer Science and Applications
Barkatullah University, Bhopal
Session 2019-20 onwards

Class: BCA III Year (for Regular Students only)

Paper Code	Paper Title	Internal			Theory	Grand Total
		Three Months	Six Months	Total		
BCA-301	Computer Networks, Internet Tech. & Security	5	5	10	40	50
BCA-302	Core Java	5	5	10	40	50
BCA-303	MIS	5	5	10	40	50
BCA-304	Python Programming	5	5	10	40	50
BCA-305	E-Governance	5	5	10	40	50
BCA-306	Principles and Practices of Management	5	5	10	40	50
BCA-307	Project: Application Development using PHP/JSP & MySQL	5	5	10	40	50
BCA-308	Lab-I(java programming)					50
BCA-309	Lab-II (python programming)					50
					Grand Total	450

Paper Code: BCA-301
Paper Title : COMPUTER NETWORKING& INTERNET SECURITY Max.Marks:40

UnitI

Definition and concept of networking ,transmission modes, transmission media, Internetworking, connecting devices, Adapters, Brouters, evolution of Network Technology, Standards and protocol, Introduction to Analog signal, Digital signal, Modulation and Demodulation OSI Reference Model-Layered architecture, function of each layer, protocol used.

Unit II

Switching-Message, Packet, and Circuit Switching, Multiplexing - FDM, TDM, WDM, SONET, Cellular network, satellite network, IEEE 802 STANDARDS-CSMA/CD, TOKEN BUS, TOKEN RING, FDDI, Routing algorithms – Distance Vector routing, Link state routing, TCP/IP- Overview, Architecture, functions of each layer and protocol, IP addressing, subnet and subnet mask, IP addressing-classes, IPV4,IPV6.

Unit III

Bootstrap protocol, DHCP, mobile IP, DNS, Telnet, SMTP, HTTP, SNMP ,TFTP, ATM network, ATM Architecture, BISDN reference model, ATM applications, Data link control - Line discipline, Flow control, Error control, Conventional Encryption – Convention Encryption: Conventional Encryption Model, Steganography, Classical Encryption Techniques, Simplified DES, Block Cipher Design Principles, Block Cipher Modes of Operation.

Unit IV

Cryptography, Public key encryption and hash functions –public key cryptography, principles of public key cryptosystems, The RSA algorithm, Message Authentication and Hash Functions Authentication Requirements, Authentication Functions, Message Authentication Codes, MAC Algorithm, Hash Function algorithms, Secure Hash Algorithm (SHA-1,SHA-256,SHA-512),IP Security.

Unit V

Network Security at various layers, Secure-HTTP, SSL, PSP, authentication Header, Key distribution protocols, Digital Signature, Digital Certificates, Security protocol, Levels of security, Virus and Worms related threats, Malicious programs, FIREWALL design principles, Wifi, Bluetooth, Infrared.

Textbooks and Reference Books:

1. Forouzan,Data Communication - TMG
2. Tanenbaum, Computer Networks
3. William Stallings, Cryptography and Network Security
4. P S Gill, Cryptography and Network Security
5. RajnishAgarwal, B Tiwari, Data Communication and Computer Network

Paper Code :BCA- 302
Paper Title: CORE JAVA

Max.Marks:40

Unit I

History and Features of java, C++ Vs Java, how java works,JAVA Program Structure, Java Virtual Machine concepts, java platform overview,Primitive data types, tokens, variables and constants, operators, precedence, expressions ,statements – branching , looping and jumping , labeled statements.

Unit II

Classes, objects and methods : defining a class, adding variables and methods, creating objects, constructors, Instances, fields and methods initialization by constructors, access methods Arrays , String and String buffer classes , Wrapper classes, using the JDK tools.

Unit III

Inheritance, Super class, Subclass, basic types, using super keyword, abstract and final classes, Method overloading, Interface, Thread, Thread Life cycle, Multithreading examples, Synchronized threading, Priorities of thread.

Unit IV

Exception handling: fundamentals, exception types, uncaught exceptions, throws, throw, try-catch, finally, built in exceptions, creating your own exceptions, Packages, Built in Packages, Creating your own Package
put/output-basics-streams, byte and character streams.

UnitV

Applet programming- Local and Remote Applets ,AppletVs Applications creating and executing java applets , inserting applets in a web page , java security, Passing Parameters to Applets, Aligning the Display, HTML Tags & Applet Tag, Getting Input from the User.
Networking –basics, networking classes and interfaces, using java.net package, TCP/IP and datagram programming.

Text books & Reference books:

1. E.Balaguruswamy, "Programming with java".
2. Schildt, "Java Complete Reference", TMH.
3. Das Rashmikanta, "Core Java", IE, Vikas Publication.
4. BansalNitin, Ajit Kumar,"A Simplified approach to Java Programming", KALYANI Publications.

Paper Code: BCA- 303
Paper Title :Management Information Systems

Max.Marks:40

Unit I

The System Concept: Definition, Characteristics of Systems, Elements of a System, Open and Closed System, Formal and Informal Information Systems, Computer based Information Systems, Decision Support System, Interpersonal Communicational System, Physical or Abstract Systems.
Systems Analysis and Design: Life Cycle: SDLC, Requirements specifications, Feasibility analysis, Final Specifications, Role of System Analyst, Attributes of a Systems Analyst.

Unit II

Systems Analysis: System Planning and Initial Investigation, Information gathering tools, Tools used in System Analysis, Data flow diagrams, case study for use of DFD. Leveling of DFDs, Logical and physical DFDs, Structured and Unstructured DFDs, Types of Interviews and Questionnaires, Data Dictionary, Decision Trees and Structured English, Feasibility Study, Cost/Benefit Analysis.
Systems Design: Logical & Physical Design, Design methodologies, Structured Design, Input/output and Forms Design: Input Design, Output Design, Requirements of form Design, Screen design, graphical user interfaces, interactive I/O on terminals, Specification oriented design vs. Procedure oriented Design, File Organization and Database Design .

Unit III

System Implementation: System Testing and validation, Systems Quality Assurance, Level of Quality Assurance, Implementation and software maintenance, Hardware and software selection, Project Scheduling, System Maintenance: Maintenance activities and issues, Security , Disaster/Recovery Planning, Ethicscodes and standards of behavior in system development.
Management Information Systems – Need, Purpose and Objectives – Contemporary Approaches to MIS, Information as a strategic resource – Use of information for competitive advantage – MIS as an instrument for the organizational change.

Unit IV

Management and Decision Making – Models of Decision Making – Classical, Administrative and Herbert Simon's Models – Attributes of information and its relevance to Decision Making. Types of information.
Information Technology – Definition, IT Capabilities and their organizational impact. IT enabled services such as Call Centers, Geographical Information Systems etc., Data Base Management Systems – Data Warehousing and Data Mining. **Information Security and Control** – Quality Assurance -Ethical and Social Dimensions – Intellectual Property Rights as related to IT Services / IT Products – Managing Global **Information** Systems.

Unit V

Decision Support System– Importance of decision support system, Characteristics of Decision Support System, Computerized Decision Support-Decision Making: introduction and Definitions, Models, Phases of the Decision-Making Process: The Intelligence Phase, Design Phase, implementation Phase, Executive **Information Systems** – Executive Support Systems – Expert Systems and Knowledge Based Expert Systems – Artificial Intelligence.
Performance Evaluation and monitoring, Model Building, Simulation, Quality Control and Quality Assurance.

Textbooks & Reference Books:

1. Laudon and Laudon, —Management Information Systems, Pearson Education Asia.

2. Jawadekar, —Management Information Systems, Tata McGraw-Hill.
3. Elias M.Awad, "System Analysis and Design"
4. Perry Edwards, "System Analysis and Design"
5. I.T. Haryszkiewycz, "Introduction of System Analysis and Design" , PHI
6. Davis and Olson, —Management Information Systems, Tata McGraw-Hill.
7. Turban and Aronson, —Decision Support Systems and Intelligent Systems, Pearson Education.
8. O'Brien, —Management Information Systems. 8/e, Tata McGraw-Hill.
9. Kroenk Hatch,. —Management Information Systems, Tata McGraw-Hill.
10. JayantOke, —Management Information Systems.
11. Ron Weber, —Information System Control and Audit.
12. Management Information System- Rakesh Kothari

Paper Code: BCA-304
Paper Title: Python Programming

Max. Marks: 40

UNIT I

Python Basics : Python interpreter, Python idle, dynamically typed and strongly typed features,basic data types, variables, expressions, statements, operators, flow of execution. Input and Output statements, Conditionals: Boolean values and operators, conditional (if), alternative (if-else), chained conditional (if-elif-else). Iteration: while, for, break, continue, pass, implementing 'for' through range(),'in' and 'not in' operators for sequence traversal. Creating and executing .py scripts.

UNIT II

Data Structures: Lists- append, extend, insert, index, remove, pop,count, sort, reverse, slicing, list comprehension, Copying a list:deep copy, shallow copy. Tuples- index, count, usage, use of tuples as a swap function. Dictionaries-keys, values, tuples, nested dictionaries, dictionary comprehension. Strings-Single line and multi-line strings, formatter, isdigit, isalpha, isalnum, islower, istitle, isspace, title, lower, upper, strip, split, splitlines,join etc. Sets – union, intersection, subset, superset, difference, symmetric difference, copy, add, remove, discard etc.

UNIT III

Functions& File Handling: Inbuilt Functions- id, len,chr, ord etc., defining and calling a function, arguments, global versus local variables, defining and using lambda functions. the map(), filter(), reduce() functions.

Working with files : read, write and append modes: r,w,a,r+,w+,a+, reading-read(), readline(), readlines(), writing-write(), writelines(), seek(), tell(). Word count, copy file scripts through file handling concepts.

UNIT IV

Classes, modules and exceptional handling: Classes: Introduction, Member variables and defining methods, constructor, destructor, data encapsulation, inheritance, multiple inheritance, diamond problem solving technique of python.

Modules: inbuilt modules- sys, random, time etc. import, from..import, from..import *. Constructing packages, role of __init__.py

Exceptional Handling: The **try-except-else-finally** block, the **raise** statement, the hierarchy of exceptions, adding exceptions.

Unit V

Database & GUI Programming: importing sqlite, connecting to database, creating table, insert, select, update, delete, drop tables, accessing and modifying tables through python.

Graphical user interfaces; event-driven programming paradigm; tkinter module, creating simple GUI; buttons, labels, entry fields, dialogs; widget attributes - sizes, fonts, colors layouts, nested frames.

Textbooks & Reference Books:

1.TanejaSheetal& Kumar Naveen , "Python Programming: A modular approach", Pearson
2.Zed A. Shaw , "Learn Python the Hard Way", Zed Shaw's Hard Way Series
3.Liang Y. Daniel, "Introduction to Programming Using Python", Pearson
4.Charles Dierbach, "Introduction to Computer Science using Python", Wiley
5.Michael T. Goodrich, "Data Structures and Algorithms in Python", Wiley

Paper Code: BCA-305
Paper Title :E-GOVERNANCE

Max.Marks: 40

Unit I

Introduction to E-Governance: Needs of E-Governance, Issues in E-Governance applications and the Digital Divide: Evolution of E-Governance. Its scope and content, Present global trends of growth in E-Governance; Other issues.
Models of E-Governance: Introduction; Model of Digital Governance: Broadcasting/ Wilder Dissemination Model, Critical Flow Model, Comparative Analysis Model, Mobilization and Lobbying Model, Interactive-service Model/Government-to-Citizen-to-Government Model (G2C2G), Evolution in E-Governance and Maturity Models: Five Maturity Levels, Characteristics of Maturity Levels, Key areas, Good Governance through E-Governance Models.

Unit II

E-Governance Infrastructure and Strategies: E-readiness: Digital System Infrastructure, Legal Infrastructural Preparedness, Institutional Infrastructural Preparedness, Human Infrastructural Preparedness, Technological Infrastructural Preparedness; Evolutionary Stages in E-Governance.
Data Warehousing and Data Mining in Government: Introduction, National Data Warehouses: Census Data, Prices of Essential Commodities, Other areas for Data Warehousing and Data Mining: Agriculture, Rural Development, Health, Planning, Education, Commerce and Trade, Other Sectors.

Unit III

C er Security: Information System Threats and attacks, Classification of Threats and Assessing Damages, Security in Mobile and Wireless Computing- Security Challenges in Mobile Devices, Authentication Service Security, Security Implication for organizations, Laptops Security Framework for Information Security, ISO 27001, SEE-CMM, Security Metrics, Information Security Vs Privacy.
Basic Principles of Information Security, Confidentiality, Integrity, Availability and other terms in Information Security, Information Classification and their Roles, Security Threats to E-Commerce, Virtual Organization, Business Transactions on Web, E-Governance and EDI, Concepts in Electronics payment systems, E-Cash, Credit/Debit Cards.

Unit IV

Virtual Private Networks- Need, Use of Tunneling with VPN, Authentication Mechanisms, Types of VPNs and their Usage, Security Concerns in VPN.
IT Act & Cyber Laws :Cyber Crime and Cyber Laws, Types of Cyber Crimes, Cyber Law Issues in E-Business Management, Overview of Indian IT Act, Information Technology Act 2000, International Scenario in Cyber Laws: Data Protection Laws in EU and USA, Ethical Issues in Intellectual property rights, Copy Right, Patents, Data privacy and protection, Domain Name, Software piracy, Plagiarism, Issues in ethical hacking.

Unit V Case Studies: Indian Context: Cyber Laws, Implementation in the Land Reform, Human Resource Management Software; India: NICNET, Collectorate, Computer-aided Administration of Registration Department (CARD), Smart N arpalika, National Reservoir Level and Capacity Monitoring System, Computerization in Andra Pradesh, EkalSevaKentra, SachivalayaVahini, Bhoomi, IT in Judiciary, E-Khazana, DGFT, PRAJA, E-Seva, E-Panchyat, General Information Services of National Informatics Centre; E-Governance initiative in USA; E-Governance in China; E-Governance in Brazil and Sri Lanka.

Textbooks & Reference Books:

1. C.S.R. Prabhu, —E-Governance: Concepts and Case Studies, Prentice-Hall of India Private Limited, 2004.
2. Backus, Michiel, —e-Governance in Developing Countries, IICD Research Brief, No. 1, March 2001.
3. N. Gopalsamy, —Information Technology & e-Governance, New Age Publication, First Edition 2009.
4. Godbole,— Information Systems Security, Willey
5. Merkov, Breithaupt.— Information Security, Pearson Education
6. Schou, Shoemaker, —Information Assurance for the Enterprise, Tata McGraw Hill
7. Sood,—Cyber Laws Simplified, Mc-Graw Hill
8. Indian IT Act 2000-Bare Act Professional.
9. PavanDuggal, —Cyberlaw-The Indian Perspective: 2009 Edition with IT Act amendments 2008, Saakshar Law Publications.
10. Farooq Ahmad, —Cyber law in India, Pioneer Books
11. Vakul Sharma, —Information Technology Law and Practice, Universal Law Publishing Co. Pvt. Ltd..
12. Suresh T Vishwanathan Bharat, —The Indian Cyber Law, Law house New Delhi.
13. P.M. Bakshi& R. K. Suri, —Hand Book of Cyber & E-Commerce Law, Bharat Law House New Delhi.

Paper Code: BCA-306
Paper Title: PRINCIPLES AND PRACTICES OF MANAGEMENT **Max. Marks: 40**

Unit I

Introduction to Management Concept, Definition and Characteristics: Management as an Art or Science: Objective of business management, Manager: roles and responsibilities, Management Theories and Practices; Core functions of Management.

Unit II

Planning: Introduction (concept, definition and characteristics) ; Types of Planning; significance of planning,Planning versus forecasting. Planning Principles; Planning Process; Factors responsible for failure; Management by objectives.

Unit III

Organizing: Introduction (concept, definition and characteristics), Organizing Process and its importance; Span of Management; Organizing Principles; Line and staff relationship(s); Delegation of Authority,Departmentation; Centralization and decentralization.

Unit IV

Directing: Introduction, Components of Directing; Principles of Directing; Directing Styles; Tools for Directing. Leadership: styles and importance.
Controlling: Introduction, Control process; Types of control, Controlling Principles and Techniques; Resistance to control- effects and ways to overcome resistance; Controlling by Exception.

Unit V

Coordinating: Introduction, Elements of coordination, Principles of coordination; Approaches of coordination.
Staffing: Introduction; Roles and responsibility of staffing; Staffing process; Factors affecting staffing process.

TEXT BOOKS& REFERENCE BOOKS:

1. Haroid Koontz, O'Donnel and Heinz Welhrich, 'Principles of Management',McGrawHillCo
2. R.D. Agarwal , 'Organization and Management Concepts', Tata McGraw Hill.
3. Newman and Warran, 'The process of management: concepts, behavior and practices', PHI
4. S M Shukla, 'Principles of Management', SahityaBhawan, Agra.
5. Robbins S. P. and Decenzo David, " Fundamentals of Management: Essential Concepts and Applications", Pearson Education,
6. Hillier Frederick S. and Hillier Mark S. - Introduction to Management Science: A Modeling and Case Studies Approach with Spreadsheets, Tata McGraw Hill, 2nd Ed., 2008.

Paper Code :BCA-307 Marks :50

Paper Title: Project :Application Developmentusing PHP & MySQL.

Recommendation: The technology to be used for Project Development to be revised every 2 yrs .as per the prevailing trends and needs of the industry/market.

GUIDELINES for Project Development in BCA Final Year.

- **Internal Evaluation (CCE) will be based on viva on project synopsis((i.) System study and system design, (ii.) Presentation) submitted by the student – 10 marks.**
- **External Evaluation will be based on , Viva and demonstration of the work done in the project– 40 marks**

1. Project will consist of software development taken up in a group consisting of not more than 2 students.
2. Report will be submitted jointly by the group in one copy.
3. Project can be done eitheras on-the-job training in a software development organization/company or it can be a self effort as a suitable solution to a real world problem identified in consultation with guide teacher.

GUIDELINES FOR PROJECT FORMULATION

*** TYPE OF PROJECT**

It is **suggested** that the project to be chosen should have some direct relevance to the real world. Students are expected to work out a solution for real life problemsinvolving diverse application domains in some industry/development laboratories/educational institutions/software companies. However, it is not mandatory for a student to work on a live project. The student can formulate or innovatea project problem with the help of his/her Guide.

The project work will give an opportunity to the students to develop quality software solutions. Project development should involve all the stages of the software development life cycle (SDLC) like requirements analysis, systems design, software development/coding, testing and documentation, with an overall emphasis on the development of reliable software systems. The primary emphasis of the project work is to understand and gain the knowledge of the principles of software engineering practices, and develop good understanding of SDLC.

Project Ethics to be adhered to: Plagiarism to be avoided: The project should be genuine and original in nature and should not be copied from anywhere . Students should be encouraged to work in the suggested areas listed at the end of the guidelines.

***Calendar For The Project**

Sr. No.	Topic	Date
1	Assigning of teacher guide	Before 25/July
2	Topic Finalized	Before 20/August/

3	Submission Of the Project Abstract And Synopsis (CCE 1)	Before 20/September/
4	PPT Presentation (CCE 2)	Before 20 /December/
5	First proof of the Project Report to be checked by teacher guide	Before 20/February/
6	Final Submission and Viva/demonstration by external examiner	2nd week of March

*** PROJECT PROPOSAL (SYNOPSIS)**

The project proposal should be prepared in consultation with thementor in organisation / teacher guide. The project proposal should clearly state the project objectives and the environment of the proposed project to be undertaken. The project proposal should contain complete details in the following form:

1. Title of the Project
2. Introduction and Objectives of the Project
3. Relevance of the topic for the benefit of the society
4. Analysis :(DFDs at least up to second level , ER Diagrams/ Class Diagrams/ Database Design etc. as per the project requirements).
5. Design: A complete structure which includes: Number of modules and purpose of each module to provide an estimation of the student's effort on the project. Data Structures as per the project requirements for all the modules.
6. Testing process to be used.
7. Reports generation (Mention tentative content of report)
8. Tools / Platform, Hardware and Software Requirement specifications
9. Are you doing this project for any Industry/Client? Mention Yes/No. If Yes, Mention the Name and Address of the Industry or Client
10. Future scope and further enhancement of the project.

Incomplete project proposals in any respect should be given another chance and re-submitted after incorporating changes and suggestions given by the guide. CCE marks to be given based on synopsis viva.

*** PROJECT REPORT FORMULATION**

I. The project report must contain the following in detail :

1. Certificate from the organization where project has been undertaken.
2. Certificate of Originality (Format given).
3. Declaration(Format given).
4. Acknowledgement (Format given).
5. Introduction
4. Objectives
5. Tools/Environment Used
6. Analysis Document (This should include SRS in proper structure based on Software

Engineering concepts. E-R diagrams/Class diagrams/any related diagrams (if the former are not applicable), Data flow diagrams/other similar diagrams (if the former is not applicable), Data dictionary)

7. Design Document (Modularization details, Data integrity & constraints including database design, Procedural design, User interface design)
8. Program Description (Detailed specification instead of code), Comments & Description.)
9. Testing (Test case designs are to be included separately for Unit testing, Integration testing, System testing; Reports of the outcome of Unit testing, Integration testing, System testing are to be included separately. Also, details of debugging and code improvement are to be included.)
10. Input and Output Screens
11. Implementation of Security for the Software developed (In case, you have set up a User Name and Password for your software, you should ensure the security of User Name and Password during transmission to server)
12. Limitations, future scope for improvement/enhancement of the Project
13. Application of the project mentioning benefit to the real world
14. Bibliography/ References
15. Synopsis

II. The Project Report may not be more than 80 1.5mm spaced A-4 size typed pages .

III. Executable file of the project must be submitted in soft copy attached at the back of the project report.

IV. The project report should be hard bound; should consist of a Contents page; all pages of report should be numbered; content should be well organized in a meaningful manner; printouts of text & screen layouts should be original and should not be xeroxed)

***Important Points For Preparation & Submission of the Project Report**

1. The Project Report should be submitted in A-4 size typed in 1.5mm line space, justified. (Font Times New Roman, size normal 12 , Heading 16 and Subheading 14)
2. The length of the report should be between 50 to 80 pages including the cover page, summary, table of contents, list of figures, list of tables, and acknowledgement.
3. Ensure that Project Synopsis and the final report contain the signatures of both the Guide and the student along with date.
4. If any project report is received in the absence of the items listed above, it will be rejected and returned to students for compliance. Also, violation of Project Guidelines may lead to rejection of the Project .
5. Spiral bound photocopy of the project report is to be submitted to the College. Original copy of the same Project Report is to be retained with the student and the student is supposed to carry his copy while appearing for viva voce.
6. If the title and content of the Project differs from the title mentioned in the Project Proposal, the Project Report should be rejected by the external examiner and valuation to be done accordingly.

***Suggested list of topics for Application Development**

A sample list of topics for Project development is provided below. This is just a suggested list and students are free to choose any other innovative project relevant to computer applications **which can be developed using PHP/ MySQL.**

- Customer Targeted E-Commerce
- Automated Faculty Evaluation System
- Online Health Shopping Portal With Product Recommendation
- College Forums with Alumni With Content Filtering
- Sql Injection Prevention System
- College Social Network Project
- ERP System
- Online Book Recommendation Using Collaborative Filtering
- Monitoring Suspicious Discussions On Online Forums
- Fake Product Review Monitoring & Removal For Genuine Ratings
- A Commodity Search System For Online Shopping Using Web Mining
- Secure Online Auction System
- Farming Assistance Web Service
- Online Loan Application & Verification System
- Matrimonial Portal
- Online Herbs Shopping Project
- Online Bakery Shop System
- Course Material Distribution System
- Online Furniture Shop Project
- Hotel Room Comparison System Project
- Salon management System
- Sports Club Management Project
- Online Blood Bank Project
- Stationery Management System
- Online Application for the Training and Placement
- Online Leave Management System
- Airline Reservation System
- Recipe Management System
- Complaint Management System
- Web Based Meeting Scheduler
- Student Project Allocation And Management
- Ticket Reservation System
- Content Management System
- Call Center Management
- Online On-Request Courses Coordination System
- Civil Registry
- Online Career Guidance and Placement Unit
- Ad Agency

* Formats of certificates to be included

A. Cover page:

PROJECT REPORT

On

<Project Title>

SUBMITTED TO

Barkatullah University

<logo of university>

IN PARTIAL FULLFILLENT
OF THE DEGREE OF
Bachelor of Computer Applications
Session <>

By

Name : .....
Roll No : .....
Enrollment No.....

Under the
Guidance of

<Name of Internal Guide>
<Designation >

< Name of External Guide>
<Designation>

B. Certificate from the organization :(to be issued by the organization and the photocopyof the certificate is to be attached in the report)

C. Format for acknowledgement

ACKNOWLEDGEMENT

I convey my sincere gratitude to _____ for giving me the opportunity to prepare my project work in _____. I express my sincere thanks to all the staff members of _____.

I am thankful to _____ for her/his guidance during my project work and sparing her/his valuable time for the same.

I express my sincere obligation and thanks to the Principal and all Faculties of the Department of _____, _____, for providing me with guidance, help, motivation and valuable advice at every stage for completing the project work successfully.

Signature:
Name:
Roll No:

D. Format for Declaration

DECLARATION

I do hereby declare that the project work entitled "_____"submitted by me for the partial fulfillment of the requirement for the award of Bachelor of Computer Applications, is an authentic work completed by me. The report being submitted has not been submitted earlierfor the award of any degree or diploma to any Institute or University.

Date:

Signature :
Name:
Roll No:

E. Certificate of Originality

CERTIFICATE OF ORIGINALITY

This is to certify that the project report entitled _____ Submitted to Barkatullah University, Bhopal, in partial fulfillment of the requirement for the award of the degree of Bachelor of Computer Applications, is an original work carried out by Mr./ Ms. _____ Enrollment No.: _____ Roll.No.....

The matter embodied in this project is a genuine work done by the student and has not been submitted whether to this University or to any other University / Institute for the fulfillment of the requirement of any course of study.

Signature of the Guide
Name, Designation and
Address of the Guide

BCA 308 Lab I :

A. Core Java Programming (Using any Text editor)

1. Find greater number between two numbers. Using conditional operator.
2. Find the factorial of number if number is given by user using command line argument.
3. Write a program to check if a number is prime or not.
4. Write a program to display tables from 2 to 10.
5. Write a program to print Fibonacci series.
6. Enter a no. and check whether it is even or odd.
7. Write a Program to find sum & average of 10 no. using arrays
8. Write a program to display reverse of a digit no. using array.
9. Write a program to display grade according to the marks obtained by the student.
10. Write a program to calculate the salary of an employee if salary is greater than or equal to 20000 and year of service is greater than or equal to 5 years then bonus will be 2000 otherwise 1000 and print grass salary of employee.
11. Write a program to convert the given no of days into months & days using with classes, objects and method.
12. Write a program to convert given string into Uppercase and lowercase and get the length of string using array.
13. Create a package called "Arithmetic" that contains methods to deal all arithmetic operations. Also write a program to use the package.
14. Define an exception called "Marks out of Bound" exception that is thrown if the entered marks are greater than 100.
15. Write a program using application of single inheritance. Find the area of rectangle & volume of cube.
16. Develop a simple real life application to illustrate the use of multithreading.
17. Write a program using multiple inheritance calculate area and parameter of a circle
18. Write a program which takes input from keyboard and sends output to the console
19. Write an applet program to draw a Rectangle (color = orange)and an right aligned oval.
20. Develop an applet that receives 3numeric values as inputs from the user and then displays the largest no. on the screen.

B. **Management Information System Lab**

1. Identify some Real time Business Domain Problems.
2. Documentations of any one identified Problem (Preparation of Problem statement) by using process Analyst tools for making DFD/ER Diagrams.

BCA 309 : Lab II : PYTHON PROGRAMMING

Max.Marks: 50

SUGGESTED LIST OF PRACTICALS

1. Find all numbers which are multiple of 17, but not the multiple of 5, between 2000 and 2500?
2. Print the first 2 and last 3 characters in a given string. Use the string slicing.
3. Write a program that eliminates duplicates in a list.
4. Implement shallow copy and deep copy of a list.
5. Find the largest of n numbers, using a user defined function largest()
6. Write a function that capitalizes all vowels in a string.
7. Read a line containing digits and letters. Write a program to give the count of digits and letters.
8. Write a function myReverse() which receives a string as an input and returns the reverse of the string.
9. Use the list comprehension methodology in python, to generate the squares of all odd numbers in a given list.
10. Generate a dictionary and print the same. The keys of the dictionary should be integers between 1 and 10 (both inclusive). The values should be the cubes of the corresponding keys.
11. Create a nested dictionary. The roll number of a student maps to a dictionary. This inner dictionary will have name, age, and place as keys. Read details of at least three students.
12. Enter a word. Create a dictionary with the letters of this word as keys, and the corresponding ASCII values as values.
13. Define a class with three methods: readString(), printString(), writeString(). The first method should read the contents of a file. The second method should print the contents to the console. The third method should write the contents to a new file.
14. Create a class account which has constructor to input account_no, name, balance from user, print_account() to display the account details, and deposit(), withdraw() which inputs amount and add/subtract them from the total amount of individual object.
15. Create a database table in sqlite and show the table data in python.
16. Implement DML commands in SQLite from python interface.
17. Implement tkinter methods in a python script.