PART A: Introduction				
Program: **Certificate**		Class: **B.C.A.**	Year: **I Year**	Session: **2025-26**
Subject: **Computer Applications**				
1.	Course Code			
2.	Course Title	**Computer Architecture (Theory)**		
3.	Course Type (Core Course/DSE/Minor/MD-ID/ SEC/VOC)	**Major –I** (Core Course)		
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. Understand the basic structure, operation and characteristics of digital computer. 2. Design simple combinational digital circuits based on given parameters. 3. Familiarity with working of arithmetic and logic unit. 4. Know about hierarchical memory system including cache memories and virtual memory. 5. Know the contributions of Indians in the field of computer architecture and related technologies.		
6.	Credit Value	**Theory – 4 Credits**		
7.	Total Marks	Max. Marks : **30 + 70**		Min. Passing Marks: **35**

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	**Indian Knowledge System:** Ancient Indian Contribution in Computer Architecture: Pingala's "Chandahśāstra", Panini Sanskrit Grammar. Modern Contribution: Dr. Vinod Dhami, Dr. Ajay Bhat, Dr. Vinod Khosla, Dr. Vijay P Bhatkar. *Suggested Activities: Debate on Pingala's "Chandahśāstra", Panini Sanskrit Grammar. Solve real-world problems inspired by PARAM's computational models. Discuss on Indian contributions to computing,*	02

Prof. (Dr.) Umesh Kumar Singh
Dean, Faculty of Engineering Sciences,
Vikram University, Ujjain (MP)

II	**Fundamentals of Digital Electronics**: Decimal, Binary, Octal, Hexadecimal, Number System Conversions, Binary Arithmetic, Addition and subtraction of BCD, Octal Arithmetic, Hexadecimal Arithmetic, Binary Codes, Decimal Codes, Error detecting and correcting codes, ASCII, EBCDIC, Excess-3 Code, The Gray Code. **Logic Gates**, Boolean Algebra, Map Simplification, Combinational Circuits, Sequential Circuits, simple combinational circuit design problems.	12
	Suggested Activities: Assignment on number systems, Verifying logic gates through truth tables,	
III	**Combinational Circuits:** Half Adder and Full Adder, Subtractor, Decoders, Encoder, Multiplexer, Demultiplexer. **Sequential Circuits:** Flip-Flops- SR Flip- Flop, D Flip-Flop, J-K Flip-Flop, T Flip-Flop. **Register:** 4 bit register with parallel load, Shift Registers- Bidirectional shift register with parallel load Binary. **Counters:** 4 bit synchronous and Asynchronous binary counter.	12
	Suggested Activities: Designing combinational circuits, Hands-on session on designing adders and multiplexers, use simulation software to design basic combinational circuits, Students work in teams to optimize logic circuits for efficiency, Debate on advancements in digital logic design.	
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.	12
	Suggested Activities: Understand how processors access operands in memory, Implement AND, OR, XOR operations at the bit level, explore Panini's rule-based grammar and compare it with modern instruction set design, debate on addressing modes and their use cases.	
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	12

Prof. (Dr.) Umesh Kumar Singh
Dean, Faculty of Engineering Sciences,
Vikram University, Ujjain (MP)

	control – Handling Data hazards & Control hazards.		
	Suggested Activities: Debate on Hardware vs. Microprogrammed Control, Assignment on designing a simplified processor. Discussion on RISC vs. CISC architectures, Analyze how modern processors handle instruction execution.		
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, Auxiliary memory, Cache Memory, Associative Memory, Interleaving, Virtual Memory, Memory Management. **Ancient Manuscript Storage (Nalanda, Takshashila Libraries):** Similarity to hierarchical memory and indexing methods.	10	
	Suggested Activities: Understanding memory allocation in modern computers, Compare manuscript storage methods with modern hierarchical memory, Field Visit (if possible): Visit a digital archive/library to understand memory organization.		

PART C: Learning Resources
Textbooks, Reference Books, Other Resources

Suggested Readings:

Textbooks:

1. Gerard G. Emch, R. Sridharan, M. D. Srinivas: Contributions to the History of Indian Mathematics, Hindustan Book Agency, Vol. 3, 2005.
2. Udayan S. Patankar & Sunil M. Patankar: Elements of Vedic Mathematics, TTU Press, Tallinn 2018.
3. M. Morris Mano: "Computer System Architecture", PHI.
4. Heuring Jordan: "Computer System Design & Architecture" (A.W.L.).
5. Donald P Leach, Albert Paul Malvino, Goutam Saha: "Digital Principles & Applications", Tata McGraw Hill Education Private Limited, 2011Edition.
4. मध्य प्रदेश हिन्दी ग्रंथ अकादमी की पुस्तकें।

Reference Books:

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

Prof. (Dr.) Umesh Kumar Singh
Dean, Faculty of Engineering Sciences,
Vikram University, Ujjain (MP)

Suggested Digital Platforms & Web links:
https://epgp.inflibnet.ac.in https://www.eshiksha.mp.gov.in/mpdhe
Suggested Equivalent Online Courses:
https://nptel.ac.in/courses/106/105/106105163/ https://nptel.ac.in/courses/106/106/106106166/ https://nptel.ac.in/courses/106/106/106106134/

Part D: Assessment and Evaluation	
Suggested Continuous Evaluation Methods: Maximum Marks: **100** Continuous Comprehensive Evaluation (CCE): **30** Marks University Exam (UE): **70** Marks	
Internal Assessment: Continuous Comprehensive Evaluation (CCE)	**Total Marks: 30**
External Assessment: University Exam Section Time: 03.00 Hours	**Section (A) :** Very Short Questions **Section (B) :** Short Questions **Section (C) :** Long Questions	**Total Marks: 70**

Prof. (Dr.) Umesh Kumar Singh
Dean, Faculty of Engineering Sciences,
Vikram University, Ujjain (MP)

	PART A: Introduction			
	Program: **Certificate**	Class: **B.C.A.**	Year: **I Year**	Session: **2021-22**
	Subject: **Computer Applications**			
1.	Course Code			
2.	Course Title	**Computer Architecture (Practical)**		
3.	Course Type (Core Course/DSE/Minor/MD-ID/ SEC/VOC)	**Major - 1** (Core Course)		
4.	Pre-Requisite (if any)	Nil		
5.	Course Learning Outcomes(CLO)	**After the completion of this course, a successful student will be able to do the following**: 1. Realization of the basic logic and universal gates. 2. Verify the behavior of logic gates using truth tables. 3. Implement Binary-to -Gray, Gray-to -Binary code conversions. 4. Design half and full adder circuit using basic gates. 5. Design and construct flip flops and verify the excitation tables.		
6.	Credit Value	**Practical - 2 Credits**		
7.	Total Marks	Max. Marks: **100**		Min. Passing Marks: **35**

PART B: Content of the Course	
No. of Lab. Practical's (in hours per week): 1 **Hrs. per week**	
Total No. of Labs: 3**0 Hrs.**	
Suggestive list of Practical's	**No. of Labs.**
1. Verification and interpretation of truth table for AND, OR, NOT gates 2. Verification and interpretation of truth table for NAND, NOR gates 3. Verification and interpretation of truth table for Ex-OR, Ex-NOR gates 4. Study of half adder using XOR and NAND gates and verification of its operation 5. Study of full adder using XOR and NAND gates and verification of its operation 6. Study of half subtractor and verification of its operation 7. Study of full subtractor and verification of its operation 8. Realization of logic functions with the help of NAND -Universal Gates	30 Hrs.

Prof. (Dr.) Umesh Kumar Singh
Dean, Faculty of Engineering Sciences,
Vikram University, Ujjain (MP)

9. Realization of logic functions with the help of NOR -Universal Gates
10. Verify the truth table of RS flip-flops using NAND and NOR gates
11. Verify the truth table of JK flip-flops using NAND and NOR gates
12. Verify the truth table of T and D flip-flops using NAND and NOR gates
13. Implementation of 4x1 multiplexer using logic gates
14. Implementation of 1x4 demultiplexer using logic gates
15. Verify Gray to Binary conversion using NAND gates only
16. Verify Gray to Binary conversion using NAND gates only

PART C: Learning Resources
Textbooks, Reference Books, Other Resources
Suggested Readings

Textbooks:
1. Gerard G. Emch, R. Sridharan, M. D. Srinivas: Contributions to the History of Indian Mathematics, Hindustan Book Agency, Vol. 3, 2005.
2. Udayan S. Patankar & Sunil M. Patankar: Elements of Vedic Mathematics, TTU Press, Tallinn 2018.
3. M. Morris Mano: "Computer System Architecture", PHI.
4. Heuring Jordan: "Computer System Design & Architecture" (A.W.L.).
5. Donald P Leach, Albert Paul Malvino, Goutam Saha: "Digital Principles & Applications", Tata McGraw Hill Education Private Limited, 2011Edition.
6. मध्य प्रदेश हिन्दी ग्रंथ अकादमी की पुस्तकें।

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

Suggested Digital Platforms Web links:
https://epgp.inflibnet.ac.in
https://www.eshiksha.mp.gov.in/mpdhe

Suggested equivalent online courses
https://nptel.ac.in/courses/106/105/106105163/
https://nptel.ac.in/courses/106/106/106106166/
https://nptel.ac.in/courses/106/106/106106134/

Prof. (Dr.) Umesh Kumar Singh
Dean, Faculty of Engineering Sciences,
Vikram University, Ujjain (MP)

PART D: Assessment and Evaluation			
Suggested Continuous Evaluation Methods:			
Internal Assessment	**Marks**	**External Assessment**	**Marks**
Class Interaction/Quiz		Viva voce practical	
Attendance		Practical record file	
Assignments (Charts/ Model/Seminar/Rural Services/ Technology Dissemination/Report of Excursion/Lab visit/ Survey/Industrial Visit)		Table work/Experiment	
Total	**30**		**70**

Prof. (Dr.) Umesh Kumar Singh
Dean, Faculty of Engineering Sciences,
Vikram University, Ujjain (MP)

<table>
<tr><td colspan="5" align="center">**PART A: Introduction**</td></tr>
<tr><td colspan="2">Program: **Certificate**</td><td>Class: **B.C.A.**</td><td>Year: **I Year**</td><td>Session: **2025-26**</td></tr>
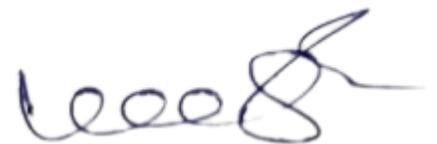<tr><td colspan="5" align="center">Subject: **Computer Applications**</td></tr>
<tr><td>1.</td><td colspan="2">Course Code</td><td colspan="2"></td></tr>
<tr><td>2.</td><td colspan="2">Course Title</td><td colspan="2" align="center">**Programming Methodology (Theory)**</td></tr>
<tr><td>3.</td><td colspan="2">Course Type (Core Course/DSE/Minor/MD-ID/ SEC/VOC)</td><td colspan="2" align="center">**Major – II**
(Core Course)</td></tr>
<tr><td>4.</td><td colspan="2">Pre-Requisite (if any)</td><td colspan="2">To study this course, a student must have basic knowledge of Computers.</td></tr>
<tr><td>5.</td><td colspan="2">Course Learning Outcomes (CLO)</td><td colspan="2">**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.</td></tr>
<tr><td>6.</td><td colspan="2">Credit Value</td><td colspan="2">**Theory – 4 Credits**</td></tr>
<tr><td>7.</td><td colspan="2">Total Marks</td><td>Max. Marks : **30 + 70**</td><td>Min. Passing Marks: **35**</td></tr>
</table>

<table>
<tr><td colspan="3" align="center">**PART B: Content of the Course**</td></tr>
<tr><td colspan="3" align="center">No. of Lectures (in hours per week): **2 Hrs. per week**</td></tr>
<tr><td colspan="3" align="center">Total No. of Lectures: **60 Hrs.**</td></tr>
<tr><td>**Module**</td><td>**Topics**</td><td>**No. of Lectures**</td></tr>
<tr><td>I</td><td>**Indian Knowledge System:** Ancient Indian Contribution: Brahmagupta "Chakravala method", Aryabhata Algorithm. The Panini Grammar System (Ashtadhyayi). Modern Contribution: Origin of Julia Programming Language, Indian Scientist who designed new programming languages and open source languages.

Suggested Activities: Discuss how Panini's grammar rules resemble formal grammar in programming languages, Aryabhata Algorithm.</td><td>02</td></tr>
</table>

Prof. (Dr.) Umesh Kumar Singh
Dean, Faculty of Engineering Sciences,
Vikram University, Ujjain (MP)

II	**Introduction to Programming** - Program Concept, Characteristics of Programming, Stages in Program Development, Algorithms, Notations, Design, Flowcharts, Types of Programming Methodologies. **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. Conditional Statements if construct, switch-case construct. Iterative Statements: while, do-while, and for loops, use of break and continue in loops, Using Nested Statements (Conditional as well as Iterative).	12
	Suggested Activities: Implement a console-based quiz using formatted I/O, Use flowcharts and pseudocode tools to map variable types and memory usage.	
III	**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.	10
IV	**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.	12
	Suggested Activities: Combine all the modules to create a comprehensive Library Management System with features like adding books, managing users, calculating late fees, and tracking library statistics. Design a Simple Banking System in C++.	
V	**Constructor & Destructor:** Constructor, Parameterized Constructor, Multiple Constructors in a Class, Constructors with Default Arguments, Dynamic Initialization of Objects, Copy Constructor, Dynamic Constructor and Destructor. **Inheritance:** Defining Derived Classes, Single Inheritance, Making a Private Member Inheritable, Multilevel Inheritance, Hierarchical Inheritance, Multiple Inheritance, Hybrid Inheritance.	12

Prof. (Dr.) Umesh Kumar Singh
Dean, Faculty of Engineering Sciences,
Vikram University, Ujjain (MP)

	Suggested Activities: *Building a Simple Student Management System, Designing a Vehicle Management System. Implement dynamic memory allocation for managing multiple vehicles.*	
VI	**Various types of Classes:** 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.	12
	Suggested Activities: *Create a Shape Management System to manage different geometric shapes like Circle, Rectangle, and Triangle. Develop a Payroll System for managing employee salaries.*	

PART C: Learning Resources
Textbooks, Reference Books, Other Resources

Suggested Readings:
Textbooks: 1. Gerard G. Emch, R. Sridharan, M. D. Srinivas: Contributions to the History of Indian Mathematics, Hindustan Book Agency, Vol. 3, 2005.   2. Udayan S. Patankar & Sunil M. Patankar: Elements of Vedic Mathematics, TTU Press, Tallinn 2018.   3. J. R. Hanly and E. B. Koffman, "Problem Solving and Program Design in C", Pearson, 2015.   4. E. Balguruswamy, "C++ ", TMH Publication ISBN O-07-462038-X   5. Herbert Shildt, "C++ The Complete Reference "TMH Publication ISBN 0-07-463880-7.   6. मध्य प्रदेश हिन्दी ग्रंथ अकादमी की पुस्तकें।   **Reference Books:**   1. R. Lafore, 'Object Oriented Programming C++"   2. N. Dale and C. Weems, "Programming and problem solving with C++: brief edition", Jones & Bartlett Learning.
Suggestive Digital Platform Web Links:
https://www.eshiksha.mp.gov.in/mpdhe
Suggested Equivalent Online Courses:
https://nptel.ac.in/courses/106/105/106105151/   https://nptel.ac.in/courses/106/105/106105234/

Prof. (Dr.) Umesh Kumar Singh
Dean, Faculty of Engineering Sciences,
Vikram University, Ujjain (MP)

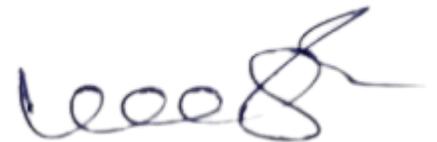| Part D: Assessment and Evaluation	
Suggested Continuous Evaluation Methods: Maximum Marks: **100** Continuous Comprehensive Evaluation (CCE): **30** Marks University Exam (UE): **70** Marks	
Internal Assessment: Continuous Comprehensive Evaluation (CCE)	**Total Marks: 30**
External Assessment: University Exam Section Time: 03.00 Hours **Section (A) :** Very Short Questions **Section (B) :** Short Questions **Section (C) :** Long Questions	**Total Marks: 70**

Prof. (Dr.) Umesh Kumar Singh
Dean, Faculty of Engineering Sciences,
Vikram University, Ujjain (MP)

	PART A: Introduction			
Program: **Certificate**		Class: **B.C.A.**	Year: **I Year**	Session: **2025-26**
	Subject: **Computer Applications**			
1.	Course Code			
2.	Course Title	**Programming Methodology (Practical)**		
3.	Course Type (Core Course/DSE/Minor/MD-ID/ SEC/VOC)	**Major – II** (Core Course)		
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.		
6.	Credit Value	**Practical – 2 Credits**		
7.	Total Marks	Max. Marks: **100**		Min. Passing Marks: **35**

PART B: Content of the Course	
No. of Lab Practicals (in hours per week): **1 hours per week**	
Total No. of Lab.: **30 Hrs.**	
Suggestive list of Practical's	**No. of Labs.**

Prof. (Dr.) Umesh Kumar Singh
Dean, Faculty of Engineering Sciences,
Vikram University, Ujjain (MP)

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 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.
	30 Hrs.

PART C: Learning Resources
Textbooks, Reference Books, Other Resources
Suggested Readings:
Textbooks:
1. Gerard G. Emch, R. Sridharan, M. D. Srinivas: Contributions to the History of Indian Mathematics, Hindustan Book Agency, Vol. 3, 2005.

Prof. (Dr.) Umesh Kumar Singh
Dean, Faculty of Engineering Sciences,
Vikram University, Ujjain (MP)

2. Udayan S. Patankar & Sunil M. Patankar: Elements of Vedic Mathematics, TTU Press, Tallinn 2018.

3. J. R. Hanly and E. B. Koffman, "Problem Solving and Program Design in C", Pearson, 2015

3. E. Balguruswamy, "C++ ", TMH Publication ISBN O-07-462038-X

4. Herbert Shildt, "C++ The Complete Reference "TMH Publication ISBN 0-07-463880-7.

5. मध्य प्रदेश हिन्दी ग्रंथ अकादमी की पुस्तकें।

Reference Books:

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

2. N. Dale and C. Weems, "Programming and problem solving with C++: brief edition", Jones & Bartlett Learning.

Suggestive Digital Platform Web Links:
https://www.eshiksha.mp.gov.in/mpdhe
Suggested Equivalent Online Courses:
https://nptel.ac.in/courses/106/105/106105151/   https://nptel.ac.in/courses/106/105/106105234/

PART D: Assessment and Evaluation			
Suggested Continuous Evaluation Methods:			
Internal Assessment	**Marks**	**External Assessment**	**Marks**
Class Interaction/Quiz		Viva voce practical	
Attendance		Practical record file	
Assignments (Charts/ Model/Seminar/Rural Services/ Technology Dissemination/Report of Excursion/Lab visit/ Survey/Industrial Visit)		Table work/Experiment	
Total	**30**		**70**

Prof. (Dr.) Umesh Kumar Singh
Dean, Faculty of Engineering Sciences,
Vikram University, Ujjain (MP)

<table>
<tr><td colspan="5" align="center">PART A: Introduction</td></tr>
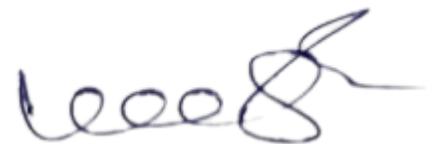<tr><td colspan="2">Program: Certificate</td><td>Class: B.C.A.</td><td>Year: I Year</td><td>Session: 2025-26</td></tr>
<tr><td colspan="5" align="center">Subject: Computer Applications</td></tr>
<tr><td>1.</td><td>Course Code</td><td colspan="3"></td></tr>
<tr><td>2.</td><td>Course Title</td><td colspan="3" align="center">Data Structures (Theory)</td></tr>
<tr><td>3.</td><td>Course Type (Core Course/DSE/Minor/ MD-ID/ SEC/VOC)</td><td colspan="3" align="center">Major – III
(Core Course)</td></tr>
<tr><td>4.</td><td>Pre-Requisite (if any)</td><td colspan="3">To study this course, a student must have basic knowledge of Computers.</td></tr>
<tr><td>5.</td><td>Course Learning Outcomes (CLO)</td><td colspan="3">After the completion of this course, a successful student will be able to do the following:
1. Will be familiar with fundamental data structures, their implementation; become accustomed to the description of algorithms in both functional and procedural styles.
2. Have knowledge of complexity of basic operations like insert, delete, search on these data structures.
3. Possess ability to choose a data structure to suitably model any data used in computer applications.
4. Design programs using various data structures including hash tables, Binary and general search trees, heaps, graphs etc.
5. Assess efficiency tradeoffs among different data structure implementations.
6. Implement and know the applications of algorithms for searching and sorting.
7. Know the contributions of Indians in the field of programming and data structures.</td></tr>
<tr><td>6.</td><td>Credit Value</td><td colspan="3">Theory – 4 Credits</td></tr>
<tr><td>7.</td><td>Total Marks</td><td colspan="2">Max. Marks : 30 + 70</td><td>Min. Passing Marks: 35</td></tr>
</table>

<table>
<tr><td colspan="3" align="center">PART B: Content of the Course</td></tr>
<tr><td colspan="3" align="center">No. of Lectures (in hours per week): 2 Hrs. per week</td></tr>
<tr><td colspan="3" align="center">Total No. of Lectures: 60 Hrs.</td></tr>
<tr><td>Module</td><td align="center">Topics</td><td>No. of Lectures</td></tr>
<tr><td>I</td><td>Indian Knowledge System: Resemblance of efficient Sorting & Searching techniques with Ancient Indian classification methods in Ayurveda & Sanskrit texts. The Buddhist Numerical Sorting Method (Bhāskara II). Indian</td><td align="center">02</td></tr>
</table>

Prof. (Dr.) Umesh Kumar Singh
Dean, Faculty of Engineering Sciences,
Vikram University, Ujjain (MP)

	contribution in Data Structure: Dr. Sartaj Sahni, Dr. Arvind, R. K. Gupta.	
	Suggested Activities: Vedic Sorting Implementation: Develop a sorting algorithm inspired by Ayurvedic classification techniques. Study the resemblance of temple architecture to graph connectivity and model it using Graphviz/Network..	
II	**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.	10
	Suggested Activities: Implementing a Simple To-Do List using Linear Data Structures, Exploring Non-Linear Data Structures with a Family Tree, Sparse Matrix Operations Using Arrays.	
III	**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. **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.	14
	Suggested Activities: Express Calculator Using Stacks, Queue Simulation for a Bank System, Linked List-Based Music Playlist, Compare linked list pointer-based structure with ancient manuscript referencing, Develop a queue system (FIFO) for handling real-world ticket processing.	
IV	**Trees:** Representation of Trees, Binary tree, Properties of Binary Trees, Binary Tree Representations- Array and Linked Representations, Binary Tree Traversals, Threaded Binary Trees. **Heap:** Definition, Insertion, Deletion.	12
	Suggested Activities: Create efficient storage models for Ayurveda medicinal records using tree-based structures. Research how Vedic knowledge management compares with modern database indexing, Implement tree traversal to simulate genealogy in Vedic lineage texts, Implement heap sorting for priority based Ayurveda classification.	
V	**Graphs:** Graph ADT, Graph Representations, Graph Traversals, Searching. **Hashing:** Introduction, Hash tables, Hash functions, Overflow Handling.	10

Prof. (Dr.) Umesh Kumar Singh
Dean, Faculty of Engineering Sciences,
Vikram University, Ujjain (MP)

	Suggested Activities: *Model Indian temple network connectivity using graph algorithms, Social Network Graph Simulation, Implementing a Hash Map, Graph-Based Maze Solver.*	
VI	**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.	12
	Suggested Activities: *Students compete to optimize sorting algorithms based on Ayurvedic classification techniques, Use binary trees to model ancient Indian lineage systems.*	

PART C: Learning Resources
Textbooks, Reference Books, Other Resources
Suggested Readings:
Textbooks: 1. Gerard G. Emch, R. Sridharan, M. D. Srinivas: Contributions to the History of Indian Mathematics, Hindustan Book Agency, Vol. 3, 2005. 2. Udayan S. Patankar & Sunil M. Patankar: Elements of Vedic Mathematics, TTU Press, Tallinn 2018. 3. Sartaj Sahani, "Data Structures, Algorithms and Applications with C++", McGraw Hill. 4. Robert L. Kruse, "Data Structures and Program Design in C++", Pearson. 5. D. S. Malik, "Data Structure using C++", Second edition, Cengage Learning. 6. मध्य प्रदेश हिन्दी ग्रंथ अकादमी की पुस्तकें। **Reference Books:** 1. Adam Drozdek, "Data Structures and algorithm in C++", Third Edition, Cengage Learning. 2. M. A. Weiss, "Data structures and Algorithm Analysis in C", 2nd edition, Pearson. 3. Lipschutz, "Schaum's outline series Data structures", Tata McGraw-Hill.
Suggestive Digital Platform Web Links:
https://www.eshiksha.mp.gov.in/mpdhe https://epgp.inflibnet.ac.in
Suggested Equivalent Online Courses:
https://nptel.ac.in/courses/106/102/106102064/ https://nptel.ac.in/courses/106/106/106106127/ https://nptel.ac.in/courses/106/105/106105085/

Prof. (Dr.) Umesh Kumar Singh
Dean, Faculty of Engineering Sciences,
Vikram University, Ujjain (MP)

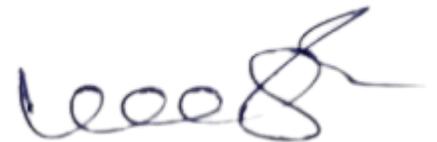| Part D: Assessment and Evaluation	
Suggested Continuous Evaluation Methods:	
Maximum Marks: **100**	
Continuous Comprehensive Evaluation (CCE): **30** Marks	
University Exam (UE): **70** Marks	
Internal Assessment: Continuous Comprehensive Evaluation (CCE)	**Total Marks: 30**
External Assessment: University Exam Section Time: 03.00 Hours	**Section (A) :** Very Short Questions **Section (B) :** Short Questions **Section (C) :** Long Questions **Total Marks: 70**

Prof. (Dr.) Umesh Kumar Singh
Dean, Faculty of Engineering Sciences,
Vikram University, Ujjain (MP)

PART A: Introduction				
Program: **Certificate**	Class: **B.C.A.**		Year: **I Year**	Session: **2025-26**
Subject: **Computer Applications**				
1.	Course Code			
2.	Course Title	**Data Structures (Practical)**		
3.	Course Type (Core Course/DSE/Minor/MD-ID/ SEC/VOC)	**Major – III** (Core Course)		
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. Will be familiar with fundamental data structures, their implementation; become accustomed to the description of algorithms in both functional and procedural styles. 2. Have knowledge of complexity of basic operations like insert, delete, search on these data structures. 3. Possess ability to choose a data structure to suitably model any data used in computer applications. 4. Design programs using various data structures including hash tables, Binary and general search trees, heaps, graphs etc. 5. Assess efficiency tradeoffs among different data structure implementations. 6. Implement and know the applications of algorithms for searching and sorting. 7. Know the contributions of Indians in the field of programming and data structures.		
6.	Credit Value	**Practical – 2 Credits**		
7.	Total Marks	Max. Marks: **100**		Min. Passing Marks: **35**

PART B: Content of the Course	
No. of Lab Practical's (in hours per week): **1 hours per week**	
Total No. of Lab.: **30 Hrs.**	
Suggestive list of Practical's	**No. of Labs.**
Given the problem statement, students are required to formulate problem,	30 Hrs.

Prof. (Dr.) Umesh Kumar Singh
Dean, Faculty of Engineering Sciences,
Vikram University, Ujjain (MP)

develop flowchart/algorithm, write code in C++, execute and test it. Students should be given assignments on following:

1. Write a program to find largest element from an array.
2. Write a program to implement push and pop operations on a stack using array.
3. Write a program to perform insert and delete operations on a queue using array.
4. Write a program for Linear search.
5. Write a program for Binary search.
6. Write a program for Bubble sort.
7. Write a program for Selection sort.
8. Write a program for Quick sort.
9. Write a program for Insertion sort.
10. Write a program to implement linked list.

PART C: Learning Resources
Textbooks, Reference Books, Other Resources

Suggested Readings:

Textbooks:
1. Gerard G. Emch, R. Sridharan, M. D. Srinivas: Contributions to the History of Indian Mathematics, Hindustan Book Agency, Vol. 3, 2005.
2. Udayan S. Patankar & Sunil M. Patankar: Elements of Vedic Mathematics, TTU Press, Tallinn 2018.
3. Sartaj Sahani, "Data Structures, Algorithms and Applications with C++", McGraw Hill.
4. Robert L. Kruse, "Data Structures and Program Design in C++", Pearson.
5. D. S. Malik, "Data Structure using C++", Second edition, Cengage Learning.
6. मध्य प्रदेश हिन्दी ग्रंथ अकादमी की पुस्तकें।

Reference Books:
1. Adam Drozdek, "Data Structures and algorithm in C++", Third Edition, Cengage Learning.
2. M. A. Weiss, "Data structures and Algorithm Analysis in C", 2nd edition, Pearson.
3. Lipschutz, "Schaum's outline series Data structures", Tata McGraw-Hill.

Suggestive Digital Platform Web Links:
https://www.eshiksha.mp.gov.in/mpdhe
https://epgp.inflibnet.ac.in

Suggested Equivalent Online Courses:
https://nptel.ac.in/courses/106/102/106102064/
https://nptel.ac.in/courses/106/106/106106127/
https://nptel.ac.in/courses/106/105/106105085/

Prof. (Dr.) Umesh Kumar Singh
Dean, Faculty of Engineering Sciences,
Vikram University, Ujjain (MP)

PART D: Assessment and Evaluation			
Suggested Continuous Evaluation Methods:			
Internal Assessment	**Marks**	**External Assessment**	**Marks**
Class Interaction/Quiz		Viva voce practical	
Attendance		Practical record file	
Assignments (Charts/ Model/Seminar/Rural Services/ Technology Dissemination/Report of Excursion/Lab visit/ Survey/Industrial Visit)		Table work/Experiment	
Total	**30**		**70**

Prof. (Dr.) Umesh Kumar Singh
Dean, Faculty of Engineering Sciences,
Vikram University, Ujjain (MP)

	PART A: Introduction			
	Program: **Certificate**	Class: **B.C.A.**	Year: **I Year**	Session: **2025-26**
	Subject: **Computer Applications**			
1.	Course Code			
2.	Course Title	**Mathematical Foundations to Computer Science (Theory)**		
3.	Course Type (Core Course/DSE/Minor/MD-ID/ SEC/VOC)	**Minor – 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 do the following**: 1. Perform key operations for image processing, computer graphics, and data analysis. 2. Understand and implement linear transformations in 3D modeling, robotics, and neural networks. 3. Solve linear systems that arise in cryptography, game development, and AI algorithms. 4. Use matrices in machine learning models for efficient data manipulation and optimization. 5. Implement algorithms that involve graph theory, network flow analysis, and dynamic systems. Using the principles of logic to distinguish between sound and unsound reasoning in discourse of everybody. 6. Construct truth tables for logical expressions; test statements for logical equivalence and represent mathematical statements in the language of predicate language. 7. Using the appropriate set theoretic concepts, thinking process, tools and techniques in the solution to various conceptual or real-world problems. 8. Understanding Frequency Distributions that helps in efficiently summarizing and analyzing large datasets, detecting anomalies, and optimizing algorithms for better performance in areas like searching, sorting, and recommendation systems.		
6.	Credit Value	**Theory – 4 Credits**		
7.	Total Marks	Max. Marks : **30 + 70**		Min. Passing Marks: **35**

Prof. (Dr.) Umesh Kumar Singh
Dean, Faculty of Engineering Sciences,
Vikram University, Ujjain (MP)

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	**Indian Knowledge System:** Basic concepts of Mathematical Logic in ancient India: Panini's Logical Structure, Avaktavtakta, Navya-Nyaya Logic. Indian Contributions in Statistics: P. C. Mahalanobis, C. Radhakrishna Rao, Samanta Chandra Sekhar Harichandan, J. K. Ghose, P. Maiti.	05
	Suggested Activities: Decoding Ancient Logic, Statistical Legends: A Tribute to Indian Pioneers, Logic Meets Statistics: A Fun Debate.	
II	**Determinants:** Basic Properties of Determinants, Minor determinant, Co-factors, Applications of determinants in finding the area of a triangle. **Matrices:** Concept of Matrices, Notation, order and equality of Matrices, Types of Matrices, Operations on Matrices, Addition and multiplication, Multiplication with a scalar, Simple properties of addition, multiplication and scalar multiplication, Transpose of a Matrix, Application of Matrices to solve real world problems.	15
	Suggested Activities: Applications of Matrices to solve the problems related to Industries, Business, Economics and real world problems.	
III	**Statistics:** Frequency distribution, Measures of central tendency: Mean, Median, Mode. Measure of dispersion: mean deviation, variance and standard deviation of ungrouped/grouped data.	20
	Suggested Activities: Applications of Mean, Median, Mode, mean deviation, variance and standard deviation to solve the problems related to Industries, Business, Economics and real world problems.	
IV	**Mathematical Logic:** Statements and notations, Propositions and Truth table, Negation, Conjunction and Disjunction, Implications and Double implication, Bi-conditional propositions, Contrapositive Implication and converse, Contrapositive and inverse propositions, Tautology and Contradiction, Logical equivalences, De-Morgan Law.	20
	Suggested Activities: Applications of Mathematical Logic to solve the problems related to Industries, Business, Economics and real world problems.	

PART C: Learning Resources	
Textbooks, Reference Books, Other Resources	
Suggested Readings:	
Textbooks:	

Prof. (Dr.) Umesh Kumar Singh
Dean, Faculty of Engineering Sciences,
Vikram University, Ujjain (MP)

1. Gerard G. Emch, R. Sridharan, M. D. Srinivas: Contributions to the History of Indian Mathematics, Hindustan Book Agency, Vol. 3, 2005.
2. Udayan S. Patankar & Sunil M. Patankar: Elements of Vedic Mathematics, TTU Press, Tallinn 2018.
3. Nita H. Shah, Foram A. Thakkar: Matrix and Determinant Fundamentals and Applications, CRC Press, 2020.
4. H. C. Saxena and J. N. Kapoor: Mathematical Statistics, S. Chand and Company, 2010.
5. R. M. Somasundaram: Discrete Mathematical Structures, PHI Learning Pvt. Ltd., 2003.
6. मध्य प्रदेश हिन्दी ग्रंथ अकादमी की पुस्तकें।

Reference Books:
1. Hari Kishan: A Textbook of Matrices, Atlantic Publishers & Dist, 2008
2. Shanti Narayan and P K Mittal: A Textbook of Matrices, S. Chand Publishing, 1953.
3. E. Rukmangadachari: Probability and Statistics, Pearson Education India; First edition, 2012.
4. R. P. Grimaldi, Discrete Mathematics and Combinatorial Mathematics, Pearson Education, 1998.

Suggestive Digital Platform Web Links:

https://www.eshiksha.mp.gov.in/mpdhe
https://epgp.inflibnet.ac.in

Suggested Equivalent Online Courses:

https://nptel.ac.in/courses/111106112/
https://nptel.ac.in/courses/111105090/
https://nptel.ac.in/courses/108104157

Part D: Assessment and Evaluation		
Suggested Continuous Evaluation Methods: Maximum Marks: **100** Continuous Comprehensive Evaluation (CCE): **30** Marks University Exam (UE): **70** Marks		
Internal Assessment: Continuous Comprehensive Evaluation (CCE)		**Total Marks: 30**
External Assessment: University Exam Section Time: 03.00 Hours	**Section (A) :** Very Short Questions **Section (B) :** Short Questions **Section (C) :** Long Questions	**Total Marks: 70**

Prof. (Dr.) Umesh Kumar Singh
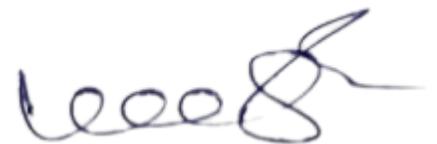Dean, Faculty of Engineering Sciences,
Vikram University, Ujjain (MP)

	PART A: Introduction			
Program: **Certificate**		Class: **B.C.A.**	Year: **I Year**	Session: **2025-26**
Subject: **Computer Applications**				
1.	Course Code			
2.	Course Title	**Operating System (Theory)**		
3.	Course Type (Core Course/DSE/Minor/MD-ID/ SEC/VOC)	**Minor – 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. Describe the importance of computer system resources and the role of operating system in their management policies and algorithms. 2. Specify objectives of modern operating systems and describe how operating systems have evolved over time. 3. Understand various process management concepts and can compare various scheduling techniques, synchronization, and deadlocks. 4. Describe the concepts of multithreading and memory management techniques. 5. Identify the best suited memory management technique for any process. 6. Describe various file operations, file allocation methods and disk space management. 7. To understand and identify potential threats to operating systems and the security features design to guard against them. 8. Learn to operate the Linux system, along with its administration and Shell programming 9. Getting to know the Android OS and its application framework.		
6.	Credit Value	**Theory – 3 Credits**		
7.	Total Marks	Max. Marks : **30 + 70**		Min. Passing Marks: **35**

PART B: Content of the Course
No. of Lectures (in hours per week): **2 Hrs. per week**
Total No. of Lectures: **45 Hrs.**

Prof. (Dr.) Umesh Kumar Singh
Dean, Faculty of Engineering Sciences,
Vikram University, Ujjain (MP)

Module	Topics	No. of Lectures
I	**Indian Knowledge System:** The BOSS operating system, open source softwares, growth of LINUX, Aryabhatt Linux, contributions of innovators – Rajen Sheth, Sunder Pichai etc.	02
	Suggested Activities: Aryabhatt Linux Coding Sprint, Open Source Innovation Hackathon	

Module	Topics	No. of Lectures
II	**Introduction to Operating System**: What is Operating System? History and Evolution of OS, Basic OS functions, Resource Abstraction, Types of Operating Systems– Multiprogramming Systems, Batch Systems, Time Sharing Systems; Operating Systems for Personal Computers, Workstations and Hand-held Devices, Process Control & Real time Systems. **Process Management**: Process Concepts, Process states & Process Control Block. **Process Scheduling**: Scheduling Criteria, Scheduling Algorithms (Preemptive & Non- Preemptive) – FCFS, SJF, SRTN, RR, Priority, Multiple-Processor, Real-Time, Multilevel Queue and Multilevel Feedback Queue Scheduling. **Deadlock -** Definition, Deadlock Characterization, Necessary and Sufficient Conditions for Deadlock.	15
	Suggested Activities: OS Evolution Timeline, OS Simulator Challenge, Process Scheduling Debate, Deadlock Detection Lab, Real-Time OS Case Study, OS Simulation with Deadlock Avoidance.	
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) **Disk Management**: Structure, Disk Scheduling Algorithms (FCFS, SSTF, SCAN, C-SCAN, LOOK), Swap Space Management, Disk Reliability, Recovery.	15

Prof. (Dr.) Umesh Kumar Singh
Dean, Faculty of Engineering Sciences,
Vikram University, Ujjain (MP)

	Suggested Activities: *Memory Management Simulator, File System Design Challenge, Disk Scheduling Algorithm Race, Virtual Memory Management Simulation, Disk Management Case Study, File System Forensics Lab.*		
IV	**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.	13	
	Suggested Activities: *Linux OS Architecture Poster, Linux System Installation Lab, Linux File System Exploration, CLI vs. GUI Challenge, Linux Kernel Deep Dive, Open Source Software Debate.*		

PART C: Learning Resources
Textbooks, Reference Books, Other Resources
Suggested Readings:
Textbooks: 1. A Silberschatz, P.B. Galvin, G. Gagne, Operating Systems Concepts, 8th Edition, John Wiley Publications. 2. A. S. Tanenbaum, Modern Operating Systems, 3rd Edition, Pearson Education. 3. Operating System by Peterson. 4. मध्य प्रदेश हिन्दी ग्रंथ अकादमी की पुस्तकें।
Reference Books: 1. G. Nutt, Operating Systems: A Modern Perspective, 2nd Edition Pearson Education. 2. W. Stallings, Operating Systems, Internals & Design Principles, 8th Edition, Pearson Education. 3. M. Milenkovic, Operating Systems- Concepts and design, Tata McGraw Hill. 4. Operating System design and Concepts by Milan Milenkovic.
Suggestive Digital Platform Web Links:
https://www.eshiksha.mp.gov.in/mpdhe https://epgp.inflibnet.ac.in
Suggested Equivalent Online Courses:
https://nptel.ac.in/courses/106/102/106102132/

Prof. (Dr.) Umesh Kumar Singh
Dean, Faculty of Engineering Sciences,
Vikram University, Ujjain (MP)

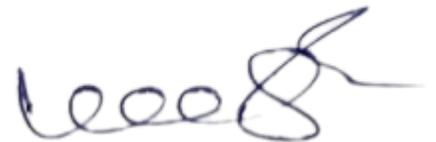| Part D: Assessment and Evaluation		
Suggested Continuous Evaluation Methods: Maximum Marks: **100** Continuous Comprehensive Evaluation (CCE): **30** Marks University Exam (UE): **70** Marks		
Internal Assessment: Continuous Comprehensive Evaluation (CCE)		**Total Marks: 30**
External Assessment: University Exam Section Time: 03.00 Hours	**Section (A) :** Very Short Questions **Section (B) :** Short Questions **Section (C) :** Long Questions	**Total Marks: 70**

Prof. (Dr.) Umesh Kumar Singh
Dean, Faculty of Engineering Sciences,
Vikram University, Ujjain (MP)

	PART A: Introduction			
Program: **Certificate**		Class: **B.C.A.**	Year: **I Year**	Session: **2025-26**
Subject: **Computer Applications**				
1.	Course Code			
2.	Course Title	**Operating System (Practical)**		
3.	Course Type (Core Course/DSE/Minor/MD-ID/ SEC/VOC)	**Minor – 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. Operate the Linux system. 2. Do administration 3. Do Shell programming		
6.	Credit Value	**Practical – 01 Credits**		
7.	Total Marks	Max. Marks: **100**		Min. Passing Marks: **35**

PART B: Content of the Course	
No. of Lab Practical's (in hours per week): **1 hours per week**	
Total No. of Lab.: **15 Hrs.**	
Suggestive list of Practical's	**No. of Labs.**
1. Linux Directory Commands: pwd, mkdir, rm -rf, ls, cd, cd / , cd ~ 2. Linux File Commands: touch, cat, cat >, cat >>, rm , cp, mv, rename 3. Linux Permission Commands: su, id, useradd, passwd, groupadd, chmod, groupdel, chown, chgrp 4. Linux File Content & Filter Commands: head, tail, tac, more, less, grep, cat, cut, grep, comm, sed, tee, tr, uniq, wc, od, sort, diff. 5. Linux Utility Commands: find, bc, locate, date, cal, sleep, time, df, mount, exit, clear, gzip, gunzip. 6. Linux Networking Commands: ip, ssh, mail, ping, host 7. Edit Crontab file: to wall message on system on particular time automatically. 8. Vi editor: Create file, edit, save and quit. Highlighting the searched term within a file. cut, yank, undo.	15 Hrs.

PART C: Learning Resources
Textbooks, Reference Books, Other Resources

Prof. (Dr.) Umesh Kumar Singh
Dean, Faculty of Engineering Sciences,
Vikram University, Ujjain (MP)

Suggested Readings:
Textbooks:
1. A Silberschatz, P.B. Galvin, G. Gagne, Operating Systems Concepts, 8th Edition, John Wiley Publications.
2. A.S. Tanenbaum, Modern Operating Systems, 3rd Edition, Pearson Education.
3. Operating System by Peterson.
4. मध्य प्रदेश हिन्दी ग्रंथ अकादमी की पुस्तकें।

Reference Books:
1. G. Nutt, Operating Systems: A Modern Perspective, 2nd Edition Pearson Education.
2. W. Stallings, Operating Systems, Internals & Design Principles, 8th Edition, Pearson Education.
3. M. Milenkovic, Operating Systems- Concepts and design, Tata McGraw Hill.
4. Operating System design and Concepts by Milan Milenkovic.
Suggestive Digital Platform Web Links:
https://www.eshiksha.mp.gov.in/mpdhe
https://epgp.inflibnet.ac.in
Suggested Equivalent Online Courses:
https://nptel.ac.in/courses/106/102/106102132/

PART D: Assessment and Evaluation			
Suggested Continuous Evaluation Methods:			
Internal Assessment	**Marks**	**External Assessment**	**Marks**
Class Interaction/Quiz		Viva voce practical	
Attendance		Practical record file	
Assignments (Charts/ Model/Seminar/Rural Services/ Technology Dissemination/Report of Excursion/Lab visit/ Survey/Industrial Visit)		Table work/Experiment	
Total	**30**		**70**

Prof. (Dr.) Umesh Kumar Singh
Dean, Faculty of Engineering Sciences,
Vikram University, Ujjain (MP)

Ability Enhancement Course (AEC) -- प्रथम प्रश्न पत्र – हिन्दी भाषा और संस्कृति

(भाग – अ) परिचय

कार्यक्रम : यू.जी. लेवल प्रमाण पत्र	कक्षा : बी.ए. / बी.कॉम / बी.एस.सी. / बी.एच.एससी. / बी.सी.ए / बी.बी.ए. (प्रथम वर्ष)	वर्ष 2025–26
विषय :–	Ability Enhancement Course (AEC)	
पाठ्यक्रम कोड		
पाठ्यक्रम का शीर्षक : पाठ्यक्रम का प्रकार	हिन्दी भाषा और संस्कृति Ability Enhancement Course (AEC)	
पाठ्यक्रम अपेक्षित	कक्षा 12 वीं उत्तीर्ण किसी भी विषय समूह से प्रमाण पत्र किया हो पात्र है ।	
पाठ्यक्रम अध्ययन की उपलब्धि (लर्निंग आउटकम) CLO	1 – भारतीय ज्ञान परम्परा से विद्यार्थियों को अवगत एवं लाभान्वित करवाना । 2 – इस पाठ्यक्रम के अध्ययन से विद्यार्थी हिन्दी के प्रसिद्ध रचनाकारों एवं उनकी रचनाओं से परिचित हो सकेंगे। 3 – पठित रचनाओं के माध्यम से विद्यार्थी देश की संस्कृति चेतना,संस्कार एवं राष्ट्रीय भावना से परिचित हो सकेंगें 4 – व्याकरण एवं भाषा ज्ञान का बोध । 5 – सामान्य शब्दावली और विशेष शब्दावली के अध्ययन द्वारा भाषा एवं संस्कृति बोध का विकास करना । 6 – विशेष शब्दावली (बीज शब्द / की वर्ड) से परिचित करवाते हुए बोध के स्तर को विकसित करना । 7 – प्रतियोगी परीक्षाओं हेतु तैयार करना ।	
क्रेडिट	02 क्रेडिट	
कुल अंक	100 अंक	
उत्तीर्ण अंक	35 अंक	

डॉ. पुष्पा ठाकुर

अध्यक्ष
केन्द्रीय अध्ययन मण्डल
(हिन्दी भाषा)
उच्च शिक्षा विभाग म.प्र. शासन

(भाग—ब) कोर्स सामग्री
व्याख्यान की कुल संख्या : वर्ष में अधिकतम 30 घंटे

इकाई	विषय	व्याख्यान की संख्या
इकाई –1	1. भारतीय ज्ञान परम्परा एक परिचय 2. भारतीय ज्ञान परम्परा में हिन्दी भाषा 3. महर्षि पाणिनि – जीवन व दर्शन गतिविधियॉ– भारतीय ज्ञान परम्परा पर आधारित पोस्टर सृजन भारतीय ज्ञान परम्परा से संवधित ग्रंथों/पुस्तकों का अवलोकन	6 घंटे
इकाई –2	1. मैथिलीशरण गुप्त : परिचय पाठ : मातृभूमि (कविता) 2. सूर्यकांत त्रिपाठी 'निराला : परिचय पाठ : भारत वंदना (कविता) 3. प्रेमचन्द : परिचय पाठ : शतरंज के खिलाडी (कहानी) गतिविधियॉ– कविता का सस्वर वाचन कहानी वाचन	6 घंटे
इकाई –03	1. वैचारिक – भारतीय भाषाओं में राम 2. आचार्य रामचन्द्र शुक्ल : परिचय पाठ : उत्साह (भावमूलक निबन्ध) 3. रामधारी सिंह दिनकर : परिचय पाठ : भारत एक है (संस्कृति) लेख 4. शरद जोशी : परिचय पाठ :– अफसर (व्यंग्य) गतिविधियॉ– निबंध लेखन का अभ्यास भारतीय संस्कृति पर आलेख लेखन	6 घंटे
इकाई –04	हिन्दी व्याकरण 1. शब्द रचना : उपसर्ग एवं प्रत्यय 2. शब्द प्रकार : तत्सम, तद्भव, देशज, विदेशी, संकर, नव निर्मित शब्द 3. पर्यायवाची, विलोमार्थी, अनेक शब्द के लिए एक शब्द गतिविधियॉ– शब्द रचना संबंधी समूह चर्चा देशज–विदेशी शब्द सूची बनाना	6 घंटे
इकाई –05	हिन्दी व्याकरण 1. हिन्दी के प्रमुख विराम चिह्न 2. संक्षेपण बीज शब्द – धर्म, अद्वैत, भाषा, अवधारणा गतिविधियॉ– अनुच्छेद/श्रुतलेख के माध्यम से विराम–चिह्नो का अभ्यास 3. संक्षेपण का अभ्यास	6 घंटे

अध्यक्ष
केन्द्रीय अध्ययन मण्डल
(हिन्दी भाषा)
उच्च शिक्षा विभाग म.प्र. शासन

सार बिन्दु (की वर्ड) / टैग		
सर्च करे :		
मैथिलीशरण गुप्त :	मैथिलीशरण गुप्त की कविता— मातृभूमि	
सूर्यकान्त त्रिपाठी निरालाः भारत वंदना	सूर्यकान्त त्रिपाठी निरालाः भारत वंदना	
प्रेमचन्द	प्रेमचन्द – शतरंज के खिलाडी	
रामधारी सिंह दिनकर	भारत एक है।	
आचार्य रामचन्द्र शुक्ल	उत्साह निबन्ध	
भारतीय ज्ञान परम्परा	भारतीय ज्ञान परम्परा और हिन्दी भाषा	
धर्म क्या है ?		
शब्द रचना, शब्द प्रकार पर्यायवाची शब्द		
विलोम शब्द अनेक शब्द के लिए एक शब्द		
विराम चिह्न		
संक्षेपण		

Ashley(-ye)
डॉ. पुष्पा '२)।१५-२)

अध्यक्ष
केन्द्रीय अध्ययन मण्डल
(हिन्दी भाषा)
उच्च शिक्षा विभाग म.प्र. शासन

(भाग - स)

अनुशंसित अध्ययन संसाधन

पाठ्य पुस्तकें , सन्दर्भ पुस्तकें , अन्य संसाधन

1.	प्रेमचन्द – मानसरोवर खण्ड 3
2.	आचार्य रामचन्द्र शुक्ल - चिन्तामणि , भाग –1
3.	शरद जोशी – "कहा जाता है " (व्यग्य संग्रह)
4.	डॉ. वासुदेव नन्दन प्रसाद : आधुनिक हिन्दी व्याकरण ओर रचना , भारती भवन, ठाकुर बाड़ी रोड, पटना , बिहार
5.	डॉ. राजेश्वर चतुर्वेदी : हिन्दी व्याकरण – उपकार प्रकाशन , आगरा उ.प्र.
6.	भारतीय ज्ञान परम्परा – विविध आयाम सम्पादक – प्रो. सरोज शर्मा, शिप्रा प्रकाशन – नई दिल्ली
7.	प्राचीन भारतीय ज्ञान परम्परा लेखक – डॉ. अश्विन कुमार राठौर , प्रकाशक – श्री सॉईनाथ. प्रकाशन– नागपुर
8.	हिन्दी ज्ञान कोश
9.	इन्टरनेट सामग्री – टैग में उल्लेखित

डॉ. पुष्पा शास्त्र

अध्यक्ष
केन्द्रीय अध्ययन मण्डल
(हिन्दी भाषा)
उच्च शिक्षा विभाग म.प्र. शासन

भाग द

अनुशंसित मूल्यांकन विधि

अधिकतम अंक – 100

केवल बाह्य मूल्यांकन

आकलन अनुभाग	(अ) तीन अतिलघु प्रश्न (प्रत्येक 50 शब्द)	03 X 04 = 12
विश्वविद्यालय परीक्षा	(ब) चार लघु प्रश्न (प्रत्येक 200 शब्द)	04 X 13 = 52
	(स) दो दीर्घ प्रश्न (प्रत्येक 500 शब्द)	02 X 18 = 36
समय– 2 घण्टे		
		कुल अंक 100

Ashcalilzi अत्यर्थम्
डॉ. गुप्ता

अध्यक्ष
केन्द्रीय अध्ययन मण्डल
(हिन्दी भाषा)
उच्च शिक्षा विभाग म.प्र. शासन

UG I Year: Ability Enhancement Course
Session 2025-26

Course Code	
Course Title	**English Language and Indian Culture**
Course Type	AEC Ability Enhancement Course (English Language)
Course Learning Outcomes (CLO)	By the end of this course, students will be able to - • imbibe values which make them aware of national heritage and making them responsible citizens • critically read texts to identify main ideas, infer meanings, and assess the author's purpose. • use grammar and vocabulary effectively for communication • write appropriate correspondence and reports for various professional and social contexts. • Prepare for various competitive exams by developing their English Language competence
Credit Value	02
Total Marks	Max Marks - 100 Min. passing Marks – 35 Exam Duration – 02 Hours

Part B – Content of the Course

Total No. of Lectures: 30

Unit	Topics	No. of Lecture
I	**Understanding Indian Culture** 1. Rabindranath Tagore – "Where the mind is without fear" 2. Swami Vivekananda – "Chicago Speech (1893)" 3. R K Narayan – "Astrologer's Day" 4. Introduction to Sundarkand of Valmiki's *Ramayan* 5. A.L Basham: "The wonder that was India" (an excerpt) ***Keywords:*** Heritage, Diversity, Pluralism, Values, Patriotism, Spirituality, Humanism, Social Harmony, Tradition, Modernity. ***Activity:*** - Group Discussion on theme - "fearless thinking & nationalism" (Tagore), "religious harmony & tolerance" (Vivekananda), "social observations" (R.K. Narayan). - Creative Expression — Poster or Collage on "What Indian culture means to me,"	12

APandey
7·7·25

	- A short presentation on a specific cultural aspect of the students' home state (e.g., a festival, a craft, a local custom).		
II	**Comprehension Skills** 1. Reading Techniques: Skimming, Scanning 2. Identifying the Main Idea and Theme 3. Making Inferences and Drawing Conclusions 4. Analysing unseen passages on Indian history, society, and art. *Keywords* - Inference, Main Idea, Theme, Tone, Purpose, Context Clues, Summary, Paraphrasing, Critical Reading. *Activity:* - Worksheets with unseen passages followed by questions on comprehension, vocabulary, and inference. - Summarizing articles from newspapers or magazines on cultural or social issues in India	02	
III	**Basic Language Skills** Grammar: 1. Parts of Speech 2. Articles 3. Subject-Verb Agreement 4. Tenses and their application **Vocabulary:** 1. Synonyms, Antonyms, Homonyms, and Homophones 2. One-word substitutes 3. Word formation: Suffixes and Prefixes *Keywords* – Tense, Agreement, Clause, Phrase, Synonym, Antonym, Prefix, Suffix. *Activity:* 4. Grammar exercises (fill-in-the-blanks, error correction, sentence transformation). 5. Vocabulary-building games and quizzes.	08	
IV	**Writing Skills** 1. The Writing Process: Pre-writing, Drafting, Revising, and Editing. 2. Paragraph Writing: Structure, Topic Sentence, and Coherence. 3. Letter writing: Formal/Informal	04	

APandey
7.7.25

	Keywords: Cohesion, Coherence, Topic Sentence, Drafting, Revising, Editing. *Activity*: 1. Paragraph on given topics (e.g., "My Favourite Indian Festival," or "The Importance of Technology in Modern India"). 2. Letter / Application writing exercises 3. Essay Writing on contemporary relevant issues.		
V	**Situational Conversation– Context, Audience, Purpose, Type, Register** 1. Meeting/Greeting – Introducing Self; Introducing people to one another 2. Apologies/Responses 3. Enquiring about a Course/ Requesting Information 4. Agreeing/Disagreeing (with a Proposal) *Keywords* - Register, Tone, Style, Audience, Purpose, Context, Etiquette, Persuasion. *Activity*: 1. Introducing and Greeting (e.g., formal business meeting, college orientation, conference with a guest speaker, informal club gathering). 2. Debate – Agreeing & Disagreeing with Proposals - such as: *"The college should make attendance optional for lectures."*	04	

Part C – Learning Resources
Textbooks, Reference Books, Other Resources

1. Tagore, R. (1912). *Gitanjali (Song Offerings)*. London: Macmillan. "Where the Mind is Without Fear" is Poem No. 35 in this collection.)
2. Complete Works of Swami Vivekananda. Vol . 1. Advaita Ashrama (Publication Department of Ramakrishna Math, Belur Math, Kolkata).
3. Swami Tapasyananda, Sundarkandam of *Srimad Valmiki Ramayana*. Sri ram Krishna Math, Madras
4. Narayan, R.K. *Malgudi Days*. Indian Thought Publications; 1st edition (11 December 2019); ISBN-10 : 9788185986173
5. *Cultural Heritage of India* by S. Radhakrishnan & Haridas Bhattacharyya (ed.)
6. *A Course in English Grammar and Composition* by Geetha Nagaraj
7. *Functional English* by Dr. P. Kiranmai Dutt & Geetha Rajeevan (Foundation Books / Cambridge India)
8. *Communicative English* by E. Suresh Kumar, P. Sreehari, and J. Savithri (Orient Black Swan)
9. *Practical English Usage* by Michael Swan (Oxford)
10. *Modern English Grammar* by N.Krishnaswamy, Macmillion Publication

A Pandey
7·7·25

11. *Developing Reading Skills*: A Practical Guide to Reading Comprehension Exercises" by Francoise Grellet (Cambridge)

12. *Writing Skills* by Norman Coe, Robin Rycroft & Pauline Ernest (Cambridge)

Suggested Equivalent Online Course

1. NPTEL Course – "Communication Skills" (by IIT Kharagpur)
   https://nptel.ac.in/courses/109/106/109106175/

2. Swayam Course – "English Language for Competitive Exams" (by IIT Madras
   https://onlinecourses.nptel.ac.in/noc23_hs51/preview

3. British Council India – "Learn English: Speaking and Writing Skills"
   https://www.britishcouncil.in/english/courses-adults/learnonline

4. Coursera – "Write Professional Emails in English" (by Georgia Tech)
   https://www.coursera.org/learn/professional-emails-english

<div align="center">

Part D – Assessment and Evaluation

</div>

Suggested Continuous Evaluation Methods:

Maximum Marks: 100 marks

External Assessment: University Exam Time:	Section A – Very Short Questions (50 words)	5x4=20
	Section B – Short Questions (200 words) 5 questions	
	Section C – Long Answer Questions (400 words) Two Questions to be attempted out of 4 questions	5x10=50
		2x15=30

Professor & Head
School of Studies In English
Vikram University, UJAIN

A Pandey

7-7-25

Signature – Chairman, Central Board of Studies

सैद्धांतिक प्रश्नपत्र के पाठ्यक्रम हेतु प्रारूप

<table>
<tr><td colspan="4" align="center">भाग : परिचय</td></tr>
<tr><td>कार्यक्रम: स्नातक प्रथम वर्ष</td><td colspan="2">कक्षा: बी.ए./बी.कॉम./बी.एससी./बी.एच.एससी./ बी.सी.ए./बी.बी.ए. (प्रथम वर्ष)</td><td>सत्र- 2025 - 26</td></tr>
<tr><td colspan="4" align="center">विषय: Value Added Course (VAC)</td></tr>
<tr><td>1</td><td colspan="3">पाठ्यक्रम का कोड</td></tr>
<tr><td>२</td><td colspan="2">पाठ्यक्रम का शीर्षक</td><td>भारत बोध (Understanding India)</td></tr>
<tr><td>3</td><td colspan="2">पाठ्यक्रम का प्रकार: (कोर कोर्स/वोकेशनल)</td><td>VAC</td></tr>
<tr><td>4</td><td colspan="2">पूर्वापेक्षा (यदि कोई हो)</td><td>कक्षा 12 वी उत्तीर्ण</td></tr>
<tr><td>5</td><td colspan="2">पाठ्यक्रम अध्ययन की परिलब्धियां (कोर्स लर्निंग आउटकम)</td><td>इस कोर्स का अध्ययन करने के बाद,

1. भारत के ऐतिहासिक, सांस्कृतिक और संवैधानिक स्वरूप की मूलभूत समझ विकसित करना।

2. भारतीय शिक्षा पद्धति, ज्ञान परंपरा और राष्ट्रीय मूल्यों के प्रति छात्रों में संवेदनशीलता उत्पन्न करना।

3. भारत की स्वतंत्रता संग्राम, लोकतांत्रिक विकास और वैश्विक भूमिका को समझने में सहायता करना।

4. संविधान में निहित दायित्वों एवं अधिकारों की जानकारी देकर छात्रों को जिम्मेदार नागरिक बनाना।</td></tr>
<tr><td></td><td colspan="2">क्रेडिट मान</td><td>2</td></tr>
<tr><td>7</td><td colspan="2">कुल अंक</td><td>100</td></tr>
</table>

<table>
<tr><td colspan="3" align="center">भाग ब - पाठ्यक्रम की विषयवस्तु</td></tr>
<tr><td colspan="3">व्याख्यान की कुल संख्या (प्रति सप्ताह घंटे में): घंटे
कुल व्याख्यान - 30 घंटे</td></tr>
<tr><td>ईकाई</td><td>विषय</td><td>व्याख्यान की संख्या</td></tr>
<tr><td>I</td><td>भारतीय इतिहास और सांस्कृतिक विरासत</td><td>06</td></tr>
</table>

Acharya

- सिन्धु, वैदिक, और शास्त्रीय काल की विशेषताएँ
- सह-अस्तित्व और बहुलता की भारतीय अवधारणा
- सांस्कृतिक प्रतीक: धर्म, स्थापत्य, संगीत, नाट्य, लोकाचार
- 'वसुधैव कुटुम्बकम्', 'सर्वे भवन्तु सुखिनः' जैसे सूत्रों की आधुनिक प्रासंगिकता

गतिविधियाँ:

- 'लोक से संवाद' कार्यक्रम - परिवार या समुदाय के किसी बुजुर्ग से पारंपरिक जीवन-मूल्य एवं ज्ञान पर चर्चा, और उसका लेखा-जोखा।

असाइनमेंट विषय:

- अपने गाँव या नगर की किसी स्थानीय सांस्कृतिक धरोहर/पर्व/लोककलाओं का लघु लेख चित्रों सहित तैयार करें (500 शब्द)।

भारतीय संविधान और नागरिक दायित्व

- वैदिक राजधर्म और आधुनिक संविधान
- मूल अधिकार और कर्तव्य: धर्म-कर्तव्य-नैतिकता
- युवा नागरिक और लोकतांत्रिक भागीदारी
- शिक्षा का राष्ट्रनिर्माण में योगदान

गतिविधियाँ:

II

- **'जननीति संवाद'** - छात्रों के बीच *मॉक संविधान सभा* या *युवा संसद* का आयोजन, जिसमें भारत के मूल मूल्य प्रस्तुत करें।

06

असाइनमेंट विषय:

- किसी एक मौलिक अधिकार और उससे जुड़े कर्तव्य का वैदिक/शास्त्रीय दृष्टिकोण से विश्लेषण करें।

	• भारतीय लोकतंत्र में युवाओं की भूमिका पर 'स्वराज से सुराज तक' दृष्टिकोण में निबंध (400 शब्द)।		
III	**भारतीय ज्ञान परंपरा और शिक्षा दृष्टिकोण** • भारतीय ज्ञान के स्रोत: वेद, उपनिषद, दर्शन, स्मृति, लोक-साहित्य • गुरुकुल परंपरा: शिष्य-केंद्रित शिक्षण, वाचिक परंपरा और स्मृति आधारित अधिगम • शिक्षा का उद्देश्य: आत्मोत्कर्ष एवं लोकसंग्रह • शिक्षक की भूमिका: 'आचार्य देवो भवः', चरित्र निर्माण, सामाजिक पुनर्निर्माण में योगदान **गतिविधियाँ:** • 'ज्ञानवार्ता' गोष्ठी - शास्त्रीय शिक्षा पर आधारित शिक्षण पद्धति (उदाहरण: संवाद, स्मृति आधारित अभ्यास) का डेमो प्रस्तुत करना। • श्लोक-गायन और उसका अर्थार्थ संवाद - विशेष रूप से शिक्षावल्ली (तैत्तिरीयोपनिषद्), गीता आदि से। **असाइनमेंट विषय:** • किसी वैदिक ऋचा या उपनिषद वाक्य के आधार पर भारतीय शिक्षा के उद्देश्य का विवेचन करें। • अपने विद्यालय/ग्राम/परिवार में देखे गए गुरु-शिष्य परंपरा या जीवन-परमार्थ के उदाहरण पर लघु लेख।	06	
IV	**भारत का जीवन-दर्शन और सतत भविष्य की अवधारणा** • भारतीय जीवन-दृष्टि: पुरुषार्थ चतुष्टय, आश्रम व्यवस्था और कर्तव्य आधारित नैतिकता	06	

	• प्रकृति के साथ सामंजस्य: यज्ञ, पंचमहाभूत, ऋतुचक्र और पर्यावरण संतुलन • भारतीय अर्थदर्शन: अर्थशास्त्र, स्वदेशी, श्रम-संस्कृति और लोक-उद्यम • सतत विकास और पर्यावरणीय न्याय की भारतीय अवधारणा **गतिविधियाँ:** • 'सादा जीवन उच्च विचार' विषय पर पोस्टर या स्लोगन लेखन • भारतीय पर्यावरणीय परंपराओं (जैसे यज्ञ, वृक्ष-पूजन, नदी महोत्सव आदि) पर समूह प्रस्तुति **असाइनमेंट विषय:** • पंचमहाभूत और भारतीय जीवन-दृष्टि" • स्वदेशी से 'आत्मनिर्भर भारत' तक की यात्रा	
V	**Unit 5: समकालीन भारत और वैश्विक भूमिका** • स्वतंत्रता संग्राम में धार्मिक, सांस्कृतिक और बौद्धिक नेतृत्व की भूमिका • भारत का योगदान: अंतरिक्ष विज्ञान, योग, कूटनीति, शांति दर्शन • 'आत्मनिर्भर भारत': परंपरा और नवाचार का समन्वय • वैश्विक परिप्रेक्ष्य में भारत: 'सॉफ्ट पावर', बहुध्रुवीय विश्व में भूमिका **गतिविधियाँ:** • छात्रों द्वारा नीति-विकल्प प्रस्तुत करना (Indian Model vs Western Model)	06

- "भारत@2047" विषय पर निबंध

असाइनमेंट विषय:

- "ग्लोबल भारत और सांस्कृतिक नेतृत्व की संभावना"
- "तकनीक और नैतिकता: भारतीय समन्वय की खोज"

भाग स- अनुशंसित अध्ययन संसाधन
पाठ्यपुस्तकें, संदर्भ पुस्तके, अन्य संसाधन

सन्दर्भ ग्रन्थ सूची

1. काटदरे, इंदुमति। *भारतीय शिक्षा: संकल्पना एवं स्वरूप।* पुनरुत्थान प्रकाशन सेवा ट्रस्ट, अहमदाबाद।

2. कुमार, कृष्ण। *प्राचीन भारतीय शिक्षा पद्धति।* श्री सरस्वती सदन, दिल्ली।

3. सलूजा, चंद किरण। (2023)। *शिक्षा: भारतीय परिप्रेक्ष्य।* संस्कृत संवर्धन प्रतिष्ठान, नई दिल्ली।

4. कपूर, कपिल एवं सिंह, अवधेश कुमार (संपादक)। (2005)। *Indian Knowledge Systems* (खंड 1-2)। इंडियन इंस्टिट्यूट ऑफ एडवांस्ड स्टडी, शिमला; डी.के. प्रिंटवर्ल्ड, नई दिल्ली।

5. स्वरूप, देवेंद्र। *संस्कृति एक: नाम-रूप अनेक।* प्रतिभा प्रकाशन, नई दिल्ली।

6. स्वरूप, देवेंद्र (संपादक)। (2010)। *राष्ट्रीय शिक्षा आंदोलन का इतिहास (हिंदी संस्करण)।* प्रतिभा प्रतिष्ठान, नई दिल्ली।

7. अग्रवाल, वासुदेव शरण (संपादक)। (2023)। *राष्ट्र, धर्म और संस्कृति (निबंध संचयन)।* प्रभात प्रकाशन, नई दिल्ली।

8. मिश्र, रामेश्वर 'पंकज'। (2024)। *अद्वितीय समाजशास्त्र।* प्रभात प्रकाशन, नई दिल्ली।

9. पाण्डेय, ओम प्रकाश (संपादक)। (2023)। *भारत वैभव।* राष्ट्रीय पुस्तक न्यास (एनबीटी), नई दिल्ली।

10. सुब्बारायप्पा, बी.वी. । *भारतीय विज्ञान परंपरा।* राष्ट्रीय पुस्तक न्यास (एनबीटी), नई दिल्ली।

ई स्रोत

https://www.youtube.com/watch?v=VUOyldPx8h4

https://www.youtube.com/watch?v=1livkUGjeFA&list=PLfGFNxUDX0eholQwKZ2ekqaxY3PDtoDq-&index=4

https://www.youtube.com/watch?v=SuMnvLxc9ic

https://www.youtube.com/watch?v=iPuRqFImoSc

https://www.youtube.com/watch?v=YZQeUq5d48Q&list=PL_a1TI5CC9RG8wPaNNDOk6VjSdhe0KsHE&index=6

https://www.youtube.com/watch?v=9PLs_N6WbxE

भाग द - अनुशंसित मूल्यांकन विधियां		
अनुशंसित सतत मुल्यांकन विधियांः अधिकतम अंक: 100 न्यूनतम अंक 35 विश्वविद्यालयीन परीक्षा: 100		
आकलनः विश्वविद्यालयीन परीक्षा समय: 02 घंटे	अनुभाग (अ) पांच लघु प्रश्न अनुभाग (ब) पांच दीर्घ उत्तरीय प्रश्न	कुल अंक: 100
कोई टिप्पणी/सुझावः		

Ashakya

डॉ. पुष्पा शाक्य
प्राध्यापक
अध्यक्षा, अध्ययन परिषद
दे.अ.वि. विद्यालय इन्दौर

Practical Paper

Part A Introduction

Program: Certificate Course	Class :B.Sc.	Year: I	Session: 2025-26

Subject: NCC

1	Course Code	
2	Course Title	
3	Course Type (Core Course/ Discipline Specific Elective/ Elective/ Generic Elective /Vocational/...)	Multidisciplinary Course (UG)
4	Pre-requisite (if any)	To study this course, a student must have passed 12th with any subject and must be medically fit.
5	Course Learning outcomes (CLO)	Students will understand general and words of command, foot drill and basics of arms drill. Aim of this course is to inculcate a sense of discipline, create self confidence and to create a human resource of organized, trained and motivated youth.
6	Credit Value	1+2 = 3
7	Total Marks	Max. Marks: 100	Min. Passing Marks:35

Part B- Content of the Course

Total No. of Lectures-Tutorials-Practical (in hours per week): L-T-P: 15 hours

Unit	Topics	No. of Lectures
Unit-I	Drill —general, and words of command -Foot drill-Saavdhan, Vishram, Aaram Se and Mudna -Khade Khade salute Karna, Parade Par Visarjan and line tod -Arms drill-rifle ke saath saavdhan, vishram and aaram se	15
Unit-II	-Group discussion on current affairs and issues -public speaking/extempore	8

Keywords/Tags: NCC, Drill

Pooja 3/7/2025

II	Unit-II-Leadership	15
	-Introduction and types of leadership -Leadership traits -Leadership lessons hidden in Vedas - Leadership case studies of Field Marshal General Sam H.F.J. Manekshaw and General K.M Cariappa -Stories of Chanakya, Shivaji, Netaji	
III	Unit-III- Health & Hygiene - The Ancient Way (Ayurvedic Way) -Ayurveda for Wellness- Tridosha theory (Vata, Pitta, Kapha) and diet planning -Naturopathy, seasonal food habits from Indian tradition -Traditional Indian diet (Millets, Balanced Thali) -Sanitation Practices from Ancient Texts	15

Keywords/Tags: NCC, Leadership, Health and Hygiene

Part C-Learning Resources
Text Books, Reference Books, Other resources

S. No.	Name of Writers	Name of Book	Name of Publishers	Year of Publication
1	Gupta, R.K.	NCC National Cadet Corps (Hindi & English)	Ramesh Publication	2021
2		Hand Book of NCC	Kanti Publication, Itawa	2017
3		Hand book of NCC an unique book for NCC Cadets	Naveen Publication	2019
4	Ranjan, Shashi and Kumar, Ashish	Handbook of NCC	Goodwin Publication	2021
5	Chauhan, Lt.(Dr.) Rajeev Kumar	NCC National Cadet Corps	Aakriti Publication	2021
6	Charak	Charak Samhita		
7	Sushruta	Charak Sushruta		

Suggested equivalent online courses:

Part D-Assessment and Evaluation

Suggested Continuous Evaluation Methods:

Maximum Marks :

Continuous Comprehensive Evaluation (CCE) : Marks University Exam (UE): Marks

External Assessment : University Exam Section Time :	Section(A) : Very Short Questions Section (B) : Short Questions Section (C) : Long Questions	100

Poja 3/7/2025

PART A: Introduction				
Program :Certificate Course	**Class :**	**Year :1ˢᵗ Year**		**Session :2025 – 26**
Subject: SEC				
1.	**Course Code**			
2.	**Course Title**	**Digital Marketing**		
3.	**Course Type**	**SEC**		
4.	**Pre-Requisite**	NIL		
5.	**Course Learning Outcomes (CLO)**	**On successful completion of this course, the students will be able to:** 1. Explain the concepts and tools of digital marketing. 2. Apply digital marketing strategies using Indian cultural and traditional insights. 3. Design and execute a digital marketing campaign. 4. Analyze the legal framework and ethical responsibilities involved in digital marketing.		
6.	**Expected Job Role / career opportunities**	• Digital Marketing Executive / Specialist • SEO (Search Engine Optimization) Analyst • Social Media Manager / Executive • Affiliate Marketing Coordinator • E-commerce Executive		
7.	**Credit Value (Theory)**	**3 Credit**		
8.	**Total Credit Value**	**3 Credit**		
9.	**Total Marks**	Max. Marks: 100		Min. Passing Marks: 35
PART B : Content of the Course (Theory)				
Total No. of Lectures:15 Hrs., L – T – P :1 – 0 – 0				
Unit	**Topics**			**No. of Lectures (15 Hrs.)**
I	**Introduction to Digital Marketing:** Meaning, scope, and significance of digital marketing**;** Difference between digital and traditional marketing**;** Overview of digital marketing channels: SEO, SEM, Social Media, Email; Career opportunities in digital marketing**.** **Practical Activities-** • Students analyze different digital marketing channels (e.g., social media, search engines, email, display ads) and identify their advantages and disadvantages. • Students debate ethical issues in digital marketing, • Students will analyze Indian brands (e.g., Amul, Tanishq, Paper Boat, FabIndia) that integrate traditional values with modern marketing approaches. • Group presentation or written report based on selected case.			**18**

II	**Customer Research: Digital Consumer Behavior:** Characteristics and factors affecting; Digital Marketing Strategy and Campaign Planning: Segmentation and targeting in the digital environment; **Practical Activity-** • List out various e-commerce apps/platforms. • Students will explore campaigns (e.g., Surf Excel's "Daag Acche Hain – Holi", Cadbury's Diwali campaigns) to study targeting, emotions, platform use, and outcomes. Comparative analysis and class discussion to be encouraged. • Choose a marketing-related topic (e.g., influencer marketing, consumer behaviour trends, and sustainability in branding). • Create engaging and informative content using simple tools like Canva or Google Docs.		15
III	**Legal & Ethical Issues in Digital Marketing:** Meaning of ethics in digital marketing, Importance of ethical behavior for brand image and customer trust; Data Protection Laws in India **Practical Activity-** • Students examine real or hypothetical digital ads and identify potential legal or ethical violations. • Role-play a scenario where a marketing team debates whether to use consumer data without consent.		12

Keywords/Tags: *Digital Marketing, Content Marketing, Legal & Ethical Issues, Customer Research, Strategy, Technology*

Part C-Learning Resources
Text Books, Reference Books, Other resources
• Mathur, Vibha & Arora, Saloni. (2020). Digital Marketing. PHI Learning. • Babu KG Raja Sabarish, Anbazhagan B, Meenakumari S. (2023). Digital Marketing. Sultan Chand & Sons. • Swaminathan T. N. & Karthik Kumar. (2019). Digital Marketing: From Fundamentals to Future. Cengage India. • Chaffey, D. (2022). Digital marketing: Strategy, implementation and practice (8th ed.). Pearson. • Deiss, R., & Henneberry, R. (2020). Digital marketing for dummies (2nd ed.). Wiley. • Mahadevan, B. (2022). Textbook on Indian knowledge systems. Indian Institute of Management Bangalore. • The Readers Paradise. (2025). Indian knowledge system: Principles and practices.
Suggestive digital platforms web links: SWAYAM Course: Digital Marketing https://onlinecourses.swayam2.ac.in/ugc19_hs26/preview

Part D- Assessment and Evaluation		
Suggested Continuous Evaluation Methods:		
Internal Assessment: No Internal Assessment	Class Test Assignment/Presentation	Nil
External Assessment: University Exam Section: Time : 03.00 Hours	**Section (A):** Objective Type Questions	10 Marks
	Section (B) : Short Questions (200 Words Each)	40 Marks
	Section (C) : Long Questions (500 Words Each)	50 Marks
Any remarks/suggestions:		