

**GOVT. HOLKAR AUTONOMOUS SCIENCE COLLEGE  
INDORE**

**(CENTER FOR EXCELLENCE)**

**Academic Year: 2022-2023**



Affiliated to Devi Ahilya Vishwavidyalaya, Indore

**Syllabus for B.C.A. I Semester**

**Computer Applications**

(Faculty of Computer Science)

**DEPARTMENT OF COMPUTER SCIENCE**

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# GOVT. HOLKAR AUTONOMOUS SCIENCE COLLEGE INDORE

## Semester Syllabus for Undergraduates (Computer Applications)

As recommended by Central Board of Studies of Computer Science and Approved by H E the Governor of M.P.

Academic Year: 2022-2023

### Class: B.C.A. I Semester (Computer Applications) for Regular Student

Govt. Holkar (Model Autonomous) Science College, Indore												
Computer Science Department												
Syllabus Session Year: 2022-23												
Programme: Certificate in Applications								Class: B.C.A. I Semester				
S.No.	Paper	Paper Title	Paper Code	Theory Max. Marks 100				Practical Max. Marks 100				Total Credit
				Credits	CCE	Exter. Asses.	Min Marks	Credits	Inter. Asses.	Exter. Asses.	Min. Mark.	
1	Core Course	Computer Fundamental, Organization and Architecture	S1-51-I	4	40	60	100	2	40	60	100	6
2	Minor	Programmin g & Problem solving through C	S1-51-M	4	40	60	100	2	40	60	100	6

**B.C.A. I Semester Computer Application**  
**S1-51-I: Computer Fundamental, Organization and Architecture**  
**Academic Year: 2022-2023**

<b>Part-A Introduction</b>		
<b>Program:</b> Certificate	<b>Class:</b> B.C.A.	<b>Semester:</b> I
<b>Session: 2022-2023</b>		
<b>Subject: Computer Applications</b>		
<b>Course Code: S1-51-I</b>	<b>Course Title: Computer Fundamental, Organization and Architecture</b>	
<b>Course Type (Core Course/ Elective/ Generic Elective/ Vocational...):</b>	<b>Core Course</b>	
<b>Pre-requisite (If any):</b>	To study this course, a student must have basic knowledge of Computers.	
<b>Course Learning Outcomes (CLO)</b>	<p><b>After the completion of this course, a successful student will be able to:</b></p> <ol style="list-style-type: none"> <li>1. Understand the basic structure, operation and characteristics of digital computer.</li> <li>2. Design simple combinational digital circuits based on given parameters. Understand the working of arithmetic and logic unit.</li> <li>3. Know about hierarchical memory system including cache memories and virtual memory. Know the contributions of Indians in the field of</li> <li>4. Computer architecture and related technologies</li> </ol>	
<b>Credit value</b>	<b>Theory – 4 Credits</b>	
<b>Total Marks</b>	<b>Max. Marks: 40+60</b>	<b>Min. Passing Marks: 35</b>

**B.C.A. I Semester Computer Application**  
**S1-51-I: Computer Fundamental, Organization and Architecture**  
**Academic Year: 2022-2023**

<b>Part-B: Content of the Course</b>		
<b>No. of Lectures (in hours per week):</b>		<b>2 Hrs. per week</b>
<b>Total no. of Lectures:</b>		<b>60 Hrs.</b>
<b>Para.</b>	<b>Topics</b>	<b>No. of Lectures</b>
<b>I</b>	<p><b>Fundamentals of computers:</b> Definition, Characteristics, capabilities and limitations.</p> <p><b>Types of Computers:</b> Analog, Digital, Micro, Mini, Mainframe &amp; Super Computers, Work Station, Server computers. Generations of Computers.</p> <p><b>Smart Systems:</b> definition, characteristics and applications Definition of Embedded system, GIS, GPS, Cloud Computing Uses of computers in e-governance and various public domains and services.</p> <p><b>Block diagrams</b> of computer and its functional units. Concept of hardware, software and firmware. Types of software.</p> <p><b>Input devices:</b> keyboard, scanner, mouse, light pen, bar code reader, OMR, OCR, MICR, track ball, joystick, touch screen camera, mice etc.</p> <p><b>Output devices:</b> monitors classification of monitors based on technology -CRT &amp; flat panel, LCD, LED monitors, speakers, printers dot matrix printer, ink jet printer, laser printer, 3D Printers, Wi-Fi enabled printers, plots and their types, LCD/LED projectors.</p> <p><b>Computer memory and its types,</b> 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.</p>	<b>18</b>
<b>II</b>	<p><b>Fundamentals of Digital Electronics:</b> Data Types, Complements, Fixed-Point Representation. Floating-Point Representation, Binary and other Codes, Error Detection Codes.</p> <p><b>Logic Gates,</b> Boolean Algebra, Map Simplification, Combinational Circuits, Sequential Circuits, simple combinational circuit design problems.</p> <p><b>Combinational Circuits-</b> Adder, Subtractor, Multiplexer. Demultiplexer, Decoders, Encoders.</p> <p><b>Sequential Circuits-</b>Flip-Flops, Registers, Counters.</p>	<b>10</b>
<b>III</b>	<p><b>Basic Computer Organization:</b> Instruction codes, Computer Registers, Computer Instructions, Timing &amp; Control, Instruction Cycle, Memory Reference Instruction, and Input Output &amp; Interrupts.</p> <p>Instruction formats, Addressing modes, Instruction codes, Machine language, Assembly language.</p> <p><b>Register Transfer and Micro operations:</b> Register Transfer Language Register Transfer, Bus &amp; Memory Transfer, Arithmetic Micro Operations, Logic Micro-</p>	<b>10</b>

	operations. Shift Micro-operations	
<b>IV</b>	<p><b>Processor and Control Unit:</b> Hardwired vs. Micro programmed Control Unit, General Register Organization, Stack Organization, and Instruction Format. Data Transfer &amp; Manipulation, Program Control, Introductory concept of RISC, CISC, advantages and disadvantages of both.</p> <p><b>Pipelining:</b> Concept of pipelining, introduction to Pipelined data path and control-Handling Data hazards &amp; Control hazards</p>	<b>10</b>
<b>V</b>	<p><b>Memory and I/O Systems:</b> Peripheral Devices, I/O Interface, <b>Data Transfer Schemes</b>-Program Control, Interrupt, DMA Transfer, I/O Processor.</p> <p><b>Memory Hierarchy,</b> Processor vs. Memory Speed, High Speed Memories, Main memory &amp; its types. Auxiliary memory, Cache Memory, Associative Memory, Interleaving, concept of Virtual Memory. Hardware support for Memory Management.</p> <p><b>Indian contribution to the field</b>-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 Klossa-an-founder of Sun Microsystems, Dr. Vijay P Bhaskar- architect of India's national initiative in supercomputing, and many others,</p> <p>Parallel Computing projects of India PARAM, ANUPAM, FLOSOLVER CHIPPS etc. Other relevant contributors and contributions.</p>	<b>12</b>
<p><b>Keywords/tags:</b> Input Output Devices, Codes, Gates, Circuits, Instruction Formats, Flip-flop, Memory Hierarchy.</p>		

**B.C.A. I Semester Computer Application**  
**S1-51-I: Computer Fundamental, Organization and Architecture**  
**Academic Year: 2022-2023**

**Part-C: Learning Resources**

**Text Books, Reference Books, Other Resources**

**Suggested Readings:**

**Text Book**

- M. Morris Mano, Digital Design, 3.ed. Prentice Hall of India Pvt. Ltd.,
- Heuring Jordan, "Computer System Design & Architecture" (A.W.L.)
- Books published by M.P. Hindi Granth Academy, Bhopal.

**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://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:**

1. <https://nptel.ac.in/courses/106/105/106105163/>

**B.C.A. I Semester Computer Application**  
**S1-51-I: Computer Fundamental, Organization and Architecture**  
**Academic Year: 2022-2023**

<b>Part-D: Assessment and Evaluation</b>				
<b>Internal Assessment:</b> Continuous Comprehensive Evaluation (CCE): <b>40 Marks</b> Shall be based on allotted assignments and Class Test. The division of marks is as follows:		<b>External Assessment:</b> University Exam (UE): <b>60 Marks</b> <b>Time: 03:00 Hours</b>		
<b>A. Submission of Assignment followed by Presentation</b>		<b>Section A:</b> 03 Very Short Questions	03x02 = 06 Marks	
<b>B. Class Test</b>	<b>Best Two test marks 20 Marks</b>	<b>Best two test Marks 40 Marks</b>	<b>Section B:</b> Four Short Questions (200 Words Each)	04x08 = 32 Marks
Test I (Written Test)	20 Marks		<b>Section C:</b> Two Long Questions (500 Words Each)	02x11 = 22 Marks
Test I (Written Test)	20 Marks			
Test III ( Quiz/ Seminar/ Assignment)	20 Marks			
Total Internal Assessment (Theory) Marks (A+B)	<b>40 Marks</b>		Total External Evaluation (Theory) Marks (A+B+ C)	<b>60 Marks</b>
<b>Any remark/ Suggestion: 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.</b>				

**B.C.A. I Semester Computer Application**  
**S1-51-PI : Computer Fundamental and Digital Computer Lab**  
**Academic Year: 2022-2023**

<b>Part-A Introduction</b>			
<b>Program:</b> Certificate	<b>Class:</b> B.C.A.	<b>Semester:</b> I	<b>Session:</b> 2022-2023
<b>Subject: Computer Applications</b>			
<b>Course Code:</b> S1-51-PI	<b>Course Title:</b> Computer Fundamental and Digital Computer Lab		
<b>Course Type (Core Course/ Elective/ Generic Elective/ Vocational...):</b>	Core Course		
<b>Pre-requisite (If any):</b>	Open for All		
<b>Course Learning Outcomes (CLO)</b>	<p><b>On completion of this course, learners will be able to:</b></p> <ol style="list-style-type: none"> <li>1. Familiarity with parts of the computer and peripheral devices used with the computer.</li> <li>2. Realization of the basic logic and universal gates.</li> <li>3. Verify the behavior of logic gates using truth tables.</li> <li>4. Implement Binary-to-Gray, Gray-to-Binary code conversions</li> <li>5. Design half and full adder circuit using basic gates.</li> <li>6. Design and construct flip flops and verify the excitation tables.</li> </ol>		
<b>Credit value</b>	<b>Practical- 2 Credits</b>		
<b>Total Marks</b>	<b>Max. Marks: 40+60</b>	<b>Min. Passing Marks: 35</b>	



**B.C.A. I Semester Computer Application**  
**S1-51-PI : Computer Fundamental and Digital Computer Lab**  
**Academic Year: 2022-2023**

<b>Part-B: Content of the Course</b>		
<b>No. of Lab Practical's (in hours per week):</b>		<b>1 Hrs. per week</b>
<b>Total no. of Labs:</b>		<b>30 Hrs.</b>
<b>Para.</b>	<b>Suggestive list of Practicals</b>	<b>No. of Labs.</b>
	<p><b>I. Computer Fundamentals:</b></p> <ul style="list-style-type: none"> <li>a) Identify various parts of the computer by physical examination.</li> <li>b) Identify various parts inside the CPU like motherboard, SMPS, ports, buses, IC chips, Processor, HDD, and RAM etc.</li> <li>c) Identify various I/O devices available in the lab physically.</li> </ul> <p><b>II. Digital Electronics:</b></p> <ul style="list-style-type: none"> <li>a) Verification and interpretation of truth table for AND, OR, NOT gates</li> <li>b) Verification and interpretation of truth table for NAND, NOR gates</li> <li>c) Verification and interpretation of truth table for Ex-OR, Ex-NOR gates</li> <li>d) Study of half adder using XOR and NAND gates and verification of its operation.</li> <li>e) Study of full adder using XOR and NAND gates and verification of its operation.</li> <li>f) Study of half subtractor and verification of its operation.</li> <li>g) Study of full subtractor and verification of its operation</li> <li>h) Realization of logic functions with the help of NAND –Universal Gates.</li> <li>i) Realization of logic functions with the help of NOR -Universal Gates</li> <li>j) Verify the truth table of RSflip-flops using NAND and NOR gates.</li> <li>k) Verify the truth table of JKflip-flops using NAND and NOR gates</li> <li>l) Verify the truth table of T and D flip-flops using NAND and NOR gates.</li> <li>m) Implementation of 4x1 multiplexer using logic gates.</li> <li>n) Implementation of 1x4 demultiplexer using logic gates.</li> <li>o) Verify Gray to Binary conversion using NAND gates only.</li> <li>p) Verify Gray to Binary conversion using NAND gates only.</li> </ul>	<b>30</b>
<p><b>Keywords/tags: Keywords/tags:</b> Digital Electronics, Logic Gates, AND, OR, NOT, NANAD, NOR, Circuits, DeMorgan's Theorem, Office Tools.</p>		

**B.C.A. I Semester Computer Application**  
**S1-51-PI : Computer Fundamental and Digital Computer Lab**  
**Academic Year: 2022-2023**

**Part-C: Learning Resources**

**Text Books, Reference Books, Other Resources**

**Suggested Readings:**

**Text Book**

- M. Morris Mano, Digital Design, 3.ed. Prentice Hall of India Pvt. Ltd.,
- Heuring Jordan, "Computer System Design & Architecture" (A.W.L.)
- Books published by M.P. Hindi Granth Academy, Bhopal.

**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/>

**B.C.A. I Semester Computer Application**  
**S1-51-PI : Computer Fundamental and Digital Computer Lab**  
**Academic Year: 2022-2023**

<b>Part-D: Assessment and Evaluation</b>	
<b>Internal Assessment (A):</b>	<b>40 Marks</b>
Lab Record / Class interaction/ Quiz	15 Marks
Attendance in the Lab	05 Marks
Assignments ( Industrial Training (10 hours) / Mini Project (Project Demo + Report))	20 Marks
<b>End Semester External Evaluation (B):</b>	<b>60 Marks</b>
Viva Voce on Practical	10 Marks
Practical Record File	10 Marks
Experiments	40 Marks
<b>Total Marks (A+B)</b>	<b>100 Marks</b>

**B.C.A. I Semester Computer Application**  
**S1-51-M : Programming & Problem solving through C**  
**Academic Year: 2022-2023**

<b>Part-A Introduction</b>			
<b>Program:</b> Certificate	<b>Class:</b> B.C.A.	<b>Semester:</b> I	<b>Session:</b> 2022-2023
<b>Subject: Computer Application</b>			
<b>Course Code:</b> S1-51-M	<b>Course Title:</b> Programming & Problem solving through C		
<b>Course Type (Core Course/ Elective/ Generic Elective/ Vocational...):</b>	Minor		
<b>Pre-requisite (If any):</b>	To study this course, a student must have had the subject Physics/ Mathematics in 12 <sup>th</sup> class.		
<b>Course Learning Outcomes (CLO)</b>	<p><b>On completion of this course, learners will be able to:</b></p> <ol style="list-style-type: none"> <li>1. To explore basics of C programming languages.</li> <li>2. To approach the programming tasks using techniques learned and write pseudo-code.</li> <li>3. To choose the right data representation formats based on the requirements of the problem.</li> <li>4. To use the comparisons and limitations of the various programming constructs and choose the right one for the task in hand.</li> <li>5. To identify tasks in which the numerical techniques learned are applicable and apply them to write programs, and hence use computers effectively to solve the task.</li> </ol>		
<b>Credit value</b>	<b>Theory – 4 Credits</b>		
<b>Total Marks</b>	<b>Max. Marks: 40+60</b>	<b>Min. Passing Marks: 35</b>	

**B.C.A. I Semester Computer Application**  
**S1-51-M : Programming & Problem solving through C**  
**Academic Year: 2022-2023**

<b>Part-B: Content of the Course</b>		
<b>No. of Lectures (in hours per week):</b>		<b>2 Hrs. per week</b>
<b>Total no. of Lectures:</b>		<b>60 Hrs.</b>
<b>Para.</b>	<b>Topics</b>	<b>No. of Lectures</b>
<b>I</b>	<p><b>Programming Fundamentals :</b> Program Concept, C language introduction, history of C, Over view of procedural programming and object oriented programming, structure of C program, Algorithms Flow Charts - Symbols, Rules for making Flow chart, Types of flowchart.</p> <p>Techniques of problem solving : Programming Techniques — Top down, Bottom up, Modular, Structured - Features, Merits &amp; Demerits, Programming Logics- Simple Branching, Looping Recursion, Cohesion &amp; Coupling, Programming. Testing &amp; Debugging &amp; their Tools. How to compile and run a C program- steps and detailed procedure</p>	<b>12</b>
<b>II</b>	<p><b>Programming in C:</b> Including features of 'C', C tokens, Variables Expressions, Identifiers, Keywords, Data Types, Constants, Operator Arithmetic, Logical, Relational, Conditional and Bit wise Operators Precedence and Associativity of Operators, evaluations of expressions, Type conversions in expressions, Basic input/output and library functions: Single character input/output i.e. getch(), getchar(), getche(), puts(), putchar() and putchar(), Formatted input output i.e. printf() and scanf().</p>	<b>12</b>
<b>III</b>	<p><b>Decision Making branching:</b> if-else, switch, conditional operator &amp; goto statements If statement, If....Else statement, Nesting or If...Else Statement, else if ladder, conditional operator, goto statement, Switch statement, Compound statement.</p> <p><b>Looping:</b> Introduction, while statement, do statement, for statement, Break and Continue, do- while loops.</p>	<b>12</b>
<b>IV</b>	<p><b>Arrays:</b> what is array, declaring, initializing, and accessing individual elements in an array, manipulating array elements using loops, 2D and 3D array.</p> <p><b>String:</b> declaration, string functions — strcat(), strcpy(), strcmp(), strlen(), strstr().</p> <p><b>Pointers:</b> Overview of Pointers.</p> <p><b>Structures :</b> Structure definition, declaring and initializing Structure variables, the structure tag, period operator , accessing Structure members, Copying &amp; Comparison of structures, the concept or structure of structure , array of structure; arrow operator and nesting of structure, Unions : initialization and use of it in a program.</p> <p><b>Preprocessor,</b> #define, defining functions like macros #error,#include, conditional compilation directives i.e. #if, #else, #elseif and #ifdef &amp; undef</p>	<b>12</b>
<b>V</b>	<p><b>Functions:</b> Utility of functions, Call by value &amp; call by reference categories of functions (i) Introduction (ii) User defined function and library functions, Categories of</p>	<b>12</b>

User defined functions , Return values and their types, Calling a function, void functions, Differentiating between declaration and definition of function argument/parameters in functions, Functions with variable number of arguments, recursion, Function arguments, Return values and nesting of function, Recursion, Calling of functions, Scope and life of variables - local and global variable, Storage class - auto, extern static, register. <b>File Management:</b> Creating or opening a file, types of file, Modes, writing data to the file, reading data from file, deleting a file,	
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**Keywords/tags:** Programming Constructs, Expressions, Control, Arrays, Structure, Preprocessor directives.

**B.C.A. I Semester Computer Application**  
**S1-51-M : Programming & Problem solving through C**  
**Academic Year: 2022-2023**

**Part-C: Learning Resources**

**Text Books, Reference Books, Other Resources**

**Suggested Readings:**

- The C Programming Language : B.W. Kernighan & D.M Ritchie
- The Sprit of C : Cooper, Mullish
- Programming in ANSI-C : E. Balagurusami, TMH Publication
- Programming in C : Schaum Outline, McGraw-Hill
- Let us C : Kanetkar Y
- An introduction to C programming — Amit Saxena, Anamaya Publishers, New Delhi
- Books published by M.P. Hindi Granth Academy, Bhopal.

**Suggestive digital platform web links :**

- <https://www.programiz.com/c-programming/c-if-else-statement>
- <https://javatutoring.com/control-statements-in-c/>
- <https://www.programiz.com/c-programming/c-arrays>
- [https://www.tutorialspoint.com/cprogramming/c\\_structures.ht](https://www.tutorialspoint.com/cprogramming/c_structures.ht)
- <https://beginnersbook.com/2014/01/c-functions-examples/>
- <https://www.javatpoint.com/data-types-in-c>
- <http://www.mphindigranthacademy.org/>

**Suggested equivalent online courses:**

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

**B.C.A. I Semester Computer Application**  
**S1-51-M : Programming & Problem solving through C**  
**Academic Year: 2022-2023**

<b>Part-D: Assessment and Evaluation</b>				
<b>Internal Assessment:</b> Continuous Comprehensive Evaluation (CCE): <b>40 Marks</b> Shall be based on allotted assignments and Class Test. The division of marks is as follows:		<b>External Assessment:</b> University Exam (UE): <b>60 Marks</b> <b>Time: 03:00 Hours</b>		
<b>A. Submission of Assignment followed by Presentation</b>		<b>Section A:</b> 03 Very Short Questions	03x02 = 06 Marks	
<b>B. Class Test</b>	<b>Best Two test marks 20 Marks</b>	<b>Best two test Marks 40 Marks</b>	<b>Section B:</b> Four Short Questions (200 Words Each)	04x08 = 32 Marks
Test I (Written Test)	20 Marks		<b>Section C:</b> Two Long Questions (500 Words Each)	02x11 = 22 Marks
Test I (Written Test)	20 Marks			
Test III ( Quiz/ Seminar/ Assignment)	20 Marks			
Total Internal Assessment (Theory) Marks (A+B)	<b>40 Marks</b>	Total External Evaluation (Theory) Marks (A+B+ C)	<b>60 Marks</b>	
<b>Any remark/ Suggestion: 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.</b>				



**B.C.A. I Semester Computer Application**  
**S1-51-PM : Programming & Problem solving through C Lab**  
**Academic Year: 2022-2023**

<b>Part-A Introduction</b>			
<b>Program:</b> Certificate	<b>Class:</b> B.C.A.	<b>Semester:</b> I	<b>Session:</b> 2022-23
<b>Subject: Computer Application</b>			
<b>Course Code:</b> S1-51-PM	<b>Course Title:</b> Programming & Problem solving through C Lab		
<b>Course Type (Core Course/ Elective/ Generic Elective/ Vocational...):</b>	Minor		
<b>Pre-requisite (If any):</b>	To study this course, a student must have had the subject Physics/ Mathematics in 12 <sup>th</sup> class.		
<b>Course Learning Outcomes (CLO)</b>	<p><b>On completion of this course, learners will be able to:</b></p> <ol style="list-style-type: none"> <li>1. To understand how computer works and will be able to understand and visualize the inner working of computer.</li> <li>2. To understand the syntax and semantics of the C language.</li> <li>3. To recognize how to develop and implement a program in the C language.</li> <li>4. To recollect various programming constructs and to develop C programs.</li> <li>5. To acquire logical thinking, Implement the algorithms and analyze their complexity.</li> </ol>		
<b>Credit value</b>	<b>Practical- 2 Credits</b>		
<b>Total Marks</b>	<b>Max. Marks: 40+60</b>	<b>Min. Passing Marks: 35</b>	

**B.C.A. I Semester Computer Application**  
**S1-51-PM : Programming & Problem solving through C Lab**  
**Academic Year: 2022-2023**

<b>Part-B: Content of the Course</b>		
	<b>No. of Lab Practical's (in hours per week):</b>	<b>2 Hrs. per week</b>
	<b>Total no. of Labs:</b>	<b>30 Hrs.</b>
	<b>Suggestive list of Practicals</b>	<b>No. of Labs.</b>
	<p><b>List of Practical:</b></p> <ol style="list-style-type: none"> <li>1. Write a Program to print different data types in 'C' and their ranges.</li> <li>2. Write an Algorithm &amp; Flowchart to convert temperature from Celsius to Fahrenheit.</li> <li>3. Write an algorithm &amp; flowchart to find the smallest and largest number of among the three numbers.</li> <li>4. Write a program to calculate simple and compound interest.</li> <li>5. Write a C program to find the roots of a quadratic equation.</li> <li>6. Write a C program to make a simple calculator using switch...case.</li> <li>7. Write a C program to print natural numbers from 1 to n.</li> <li>8. Write a C program to find the factorial of a given number.</li> <li>9. Write a program in C to check a given number is even or odd using the function.</li> <li>10. Write a C program to access elements of an array using pointers.</li> <li>11. Write a C program to calculate the average of array elements.</li> <li>12. Write a C program to store information of 10 students using structures.</li> <li>13. Add two complex numbers by passing structures to a function.</li> <li>14. Write a C program to find the length of a string.</li> <li>15. Write a C program to reverse a string using recursion.</li> <li>16. Write a C Program to find largest element in an array.</li> <li>17. Write a C program to add two matrices using multi-dimensional arrays.</li> <li>18. Write a C program to store information of students using structure.</li> <li>19. Write a C program to Print Pyramid.</li> <li>20. Write a C program to Print Patterns.</li> </ol>	<b>30</b>
<p><b>Keywords/tags:</b> Programming Constructs, Expressions, Control, File Handling, Arrays, Structure, Preprocessor directives.</p>		

**B.C.A. I Semester Computer Application**  
**S1-51-PM : Programming & Problem solving through C Lab**  
**Academic Year: 2022-2023**

**Part-C: Learning Resources**

**Text Books, Reference Books, Other Resources**

**Suggested Readings:**

- The Sprit of C : Cooper, Mullish
- Programming in ANSI-C : E. Balagurusami, TMH Publication
- Programming in C : Schaum Outline, McGraw-Hill
- Let us C : Kanetkar Y
- An introduction to C programming — Amit Saxena, Anamaya Publishers, New Delhi
- Books published by M.P. Hindi Granth Academy, Bhopal

**Suggestive digital platform web links :**

- <https://javatutoring.com/control-statements-in-c/>
- <https://www.orogramiz.com/c-programming/c-arrays>
- <https://www.tutorialsooint.com/corcoerammin c structures.htm>
- <https://beginnersbook.com/2014/01/c-functions-examples/>
- <https://www.javatpoint.com/data-tYoes-in-c/>
- <http://www.mphindigranthacademy.org/>

**Suggested equivalent online courses:**

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

**B.C.A. I Semester Computer Application**  
**S1-51-PM : Programming & Problem solving through C Lab**  
**Academic Year: 2022-2023**

<b>Part-D: Assessment and Evaluation</b>	
<b>Internal Assessment (A):</b>	<b>40 Marks</b>
Lab Record / Class interaction/ Quiz	15 Marks
Attendance in the Lab	05 Marks
Assignments ( Industrial Training (10 hours) / Mini Project (Project Demo + Report))	20 Marks
<b>End Semester External Evaluation (B):</b>	<b>60 Marks</b>
Viva Voce on Practical	10 Marks
Practical Record File	10 Marks
Experiments	40 Marks
<b>Total Marks (A+B)</b>	<b>100 Marks</b>

## BCA I Semester Computer Application

### S1-51-G1 : English Language

Academic Year: 2022-2023

<b>Part-A Introduction</b>			
<b>Program:</b> Certificate	<b>Class:</b> BCA	<b>Semester :</b> I	<b>Session:</b> 2022-23
<b>Course Code:</b> S1-51-G1	<b>Course Title:</b> English Language		
<b>Course Type (Core Course/ Elective/ Generic Elective/ Vocational...):</b>	<b>Foundation Course</b>		
<b>Pre-requisite (If any):</b>	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.		
<b>Course Learning Outcomes (CLO)</b>	<b>Through this course the students will be able to:</b> <ol style="list-style-type: none"><li>1. Prepare for various competitive exams by developing their English language competence.</li><li>2. Promote their comprehension skills by being exposed to a variety of texts and their interpretations.</li><li>3. Build and enhance their vocabulary.</li><li>4. Develop their communication skills by strengthening grammar and usages.</li><li>5. Inculcate values which make them aware of national heritage and environmental issues, making them responsible citizens.</li></ol>		
<b>Credit value</b>	Theory – 2 Credits		
<b>Total Marks</b>	<b>Max. Marks: 50</b>	<b>Min. Passing Marks: 17</b>	
<b>Part-B: Content of the Course</b>			
<b>No. of Lectures (in hours per week):</b>	<b>1 Hrs. per week</b>		
<b>Total no. of Lectures:</b>	<b>30 Hrs.</b>		
<b>Para.</b>	<b>Topics</b>		<b>No. of Lectures</b>
<b>I</b>	<b>Reading, Writing and Interpretation Skills:</b> <ol style="list-style-type: none"><li>1. Where The Mind is Without Fear- Rabindranath Tagore [Key Word: Patriotism</li><li>2. National Education - M. K. Gandhi [Key Word: Edification)</li><li>3. The Axe- R.K Narayan {Key Word: Environment]</li><li>4. The Wonder That Was India- A.L Basham (an excerpt) [Key Word: Indianness]</li><li>5. Preface to the Mahabharata C. Rajagopalachari [Key Word: Indian</li></ol>		<b>05</b>

	Mythology]	
<b>II</b>	<b>Comprehension Skill:</b> Unseen Passage followed by Multiple choice questions.	<b>05</b>
<b>III</b>	<b>Basic Language Skills:</b> Vocabulary Building: Suffix, Prefix, Synonyms, Antonyms, Homophones, Homonyms and One-word substitution. Basic Grammar: Noun, Pronoun, Adjective, Verb, Adverb, Prepositions, Articles, Time and Tense.	<b>05</b>
<b>Part-C: Learning Resources</b>		
<b>Text Books, Reference Books, Other Resources</b>		
<p><b>Suggested Readings:</b></p> <ul style="list-style-type: none"> <li>• Essential English Grammar — Raymond Murphy, Cambridge University Press.</li> <li>• Practical English Grammar Exercises I - A. J. Thomson &amp; A. V. Martinet, Oxford India.</li> <li>• Practical English Usage - Michael Swan, Oxford</li> <li>• English Grammar in Use — Raymond Murphy, Cambridge University Press.</li> </ul> <p><b>Suggestive digital platform web links :</b></p> <ul style="list-style-type: none"> <li>• <a href="https://nptel.ac.in/courses/109/106/109106124/">https://nptel.ac.in/courses/109/106/109106124/</a></li> <li>• <a href="https://nptel.ac.in/courses/109/107/109107189/">https://nptel.ac.in/courses/109/107/109107189/</a></li> </ul>		
<b>Part-D: Assessment and Evaluation</b>		
<b>Max Marks: 50</b>	<b>Internal Assessment 20 Marks</b>	<b>External Assessment: 30 Marks</b>
	<b>Total: 50</b>	
<p><b>Internal Assessment:</b> Continuous Comprehensive Evaluation (CCE): <b>20 Marks</b> Shall be based on allotted assignments and Class Test.</p>		<p><b>External Assessment:</b> University Exam : <b>30 Marks</b> Thirty Multiple choice/ Objective/ True-False type questions to be asked. Each question carries one mark.</p>
<p><b>Any remark/ Suggestion: 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.</b></p>		

**BCA I Semester Computer Application**  
**S1-51-G2: Yoga and Meditation Academic**  
**Year: 2022-2023**

<b>Part-A Introduction</b>			
<b>Program:</b> Certificate	<b>Class:</b> B.C.A.	<b>Semester:</b> I	<b>Session:</b> 2020-2021
<b>Subject: Computer Application</b>			
<b>Course Code:</b> S1-51-G2	<b>Course Title:</b> Yoga and Meditation Academic		
<b>Course Type (Core Course/ Elective/ Generic Elective/ Vocational...):</b>	Foundation Course		
<b>Pre-requisite (If any):</b>	This course is compulsory for all.		
<b>Course Learning Outcomes (CLO)</b>	<b>After studying this course, students will be able to::</b> <ul style="list-style-type: none"> <li>• Take care of their own Physical, Mental, emotional, social and spiritual health.</li> </ul>		
<b>Credit value</b>	Theory – 2 Credits		
<b>Total Marks</b>	<b>Max. Marks:</b> 50	<b>Min. Passing Marks:</b> 17	
<b>Part-B: Content of the Course</b>			
<b>No. of Lectures (in hours per week):</b>		<b>1 Hrs. per week</b>	
<b>Total no. of Lectures:</b>		<b>15 Hrs.</b>	
Para.	Topics	No. of Lectures	
<b>I</b>	<b>Introduction to Yoga and Yogic Practices</b> 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 <b>Key Words:</b> History and Development of Yoga, Shatkarma, Common Yogic Practices.	<b>10</b>	
<b>II</b>	<b>Introduction to Yoga and Yogic Practices</b> 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	<b>10</b>	

	<b>Key Words:</b> History and Development of Yoga, Shatkarma, Common Yogic Practices.		
<b>III</b>	<b>Practices leading to Meditation</b> 1. Recitation of Pranava Mantra 2. Recitation of Hymns, in vocations and prayers 3. Anter Maun 4. Breath Meditation 5. Om Dhyana <b>Key Words:</b> Pranav Mantra, Antermaun, Breath Meditation, Om Dhyan.		<b>10</b>
<b>Part-C: Learning Resources</b>			
<b>Text Books, Reference Books, Other Resources</b>			
<b>Suggested Readings:</b> <b>Resources Suggested Readings:</b> <ol style="list-style-type: none"> <li>1. Singh S. P &amp; Yogi Mukesh: Foundation of Yoga, Standard Publication, New Delhi, 2010.</li> <li>2. Swami Dharendra Brahmchari: Yogasana Vijnana, Dharendra Yoga Publication, New Delhi, 1966.</li> <li>3. Saraswati, Swami Satyanand: Asana, Pranayama, Mudra, Bandha (APMB), Yoga Publication Trust, Munger, 2013.</li> <li>4. H. R. Nagendra: Asana, Pranayama, Mudra, Bandha, Swami Vivekananda YogPrakashan, Bangalore, 2002.</li> <li>5. Ishwar Bhardwaj: SaralYogasana, Satyam Publishing House, New Delhi, 2018.</li> <li>6. Shri Rai Singh Chouhan: Mudra Rahasya, Bhartiya Yog Sansthan, New Delhi, 2014.</li> <li>7. Dr. Vishwanath Prasad Sanha: Dhyan Yoga, Bhartiya Yog Sansthan, New Delhi, 1987.</li> <li>8. Shri Deshraj: Dhyan Sadhana, Bhartiya Yoga Sansthan, New Delhi, 2015.</li> </ol> <b>Suggestive digital platforms web links:</b> <ol style="list-style-type: none"> <li>1. <a href="http://www.rishikeshnathyogshala.com">www.rishikeshnathyogshala.com</a></li> </ol>			
<b>Suggested equivalent online courses:</b> <ul style="list-style-type: none"> <li>• <a href="https://sahayji.com/hathayoga-course">https://sahayji.com/hathayoga-course</a></li> </ul>			
<b>Part-D: Assessment and Evaluation</b>			
<b>Max Marks: 50</b>	<b>Internal Assessment: 20 Marks</b>	<b>External Assessment: 30 Marks</b>	<b>Total: 50 Marks</b>
<b>Internal Assessment:</b> Continuous Comprehensive Evaluation (CCE): <b>20 Marks</b> Shall be based on allotted assignments and Class Test.		<b>External Assessment:</b> University Exam : <b>30 Marks</b> Thirty Multiple choice/ Objective/ True-False type questions to be asked. Each question carries one mark.	
<b>Any remark/ Suggestion: 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.</b>			