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| **Vivekananda Institute of Professional Studies** |
| **(Affiliated to: GGSIP University, Approved by AICTE & Recognized by Bar Council of India)** |
| **Grade “A” Accredited by NAAC, Accredited by NBA for MCA, Recognized under Section 2(f) by UGC** |
| **ISO 9001 : 20015 Certified Institution** |

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| **Academic Session: Aug – Dec 2020** | | | **Name of Program : BCA** | | | | |
| **Name of Faculty** | **Dr. Neetu Goel** | | **Email Id of Faculty** | | neetu.goel@vips.edu | | |
| **Semester:** | **1st** | **Paper Code: 105** | **Credits: 4** | | **Total No of Lectures: 53** |  | |
| **Course Name: Introduction to Programming Language using C** | | | | | | | |
| **No of hours allotted per week: 4** | | | | | | | |
| **Objectives of the Course:**   * To be able to build own logic for a given problem and finally develop one’s own programs * To understand the syntax and the semantics of C programming language. | | | | | | |
| **Teaching pedagogy (Case Based Discussions/Problem Based Learning/Projects/Presentations/ Readings from books, magazines, research papers etc.):**   * Theory session is supported by problem discussion based on the concept. * Coding questions based on real life * Group activities to learn the concept in an interesting way. * Projects and practical file * White board/ Lecture/ Projector. | | | | | | |
| **Resources (Recommended Texts/Reference Books used, Recommended Resources):**  **Text Book:**  **[**T1] Ashok N. Kamthane, “Computer Basics and C Programming”, Pearson Education.  [T2] E. BalaGuruswamy, “Programming in ANSI C”, 2008.  [T3] V Rajaraman, “Computer Basics and C Programming”, PHI.  **Reference Book:**  [R1] Herbert Schildt, “C The Complete Reference” Fourth Edition, 2000.  [R2] Yashwant Kanetkar, “Let us C” eighth edition, 2002.  [R3] Kernighan and d. Ritchie, “The ANSI C Programming Language”, 2000.  [R4] Stephenn Prata, “C Primer Plus” Fourth Edition, 2001.  [R5] Schaum’s Outline Series, “Programming with C”, 2nd Edition | | | | | | |
| **Course Outcomes:**  **CO 1** Develop programming skills by learning the fundamentals of structured programming using C Language.  **CO 2** Design and develop programs using arrays, storage classes, functions and to understand memory management through pointers  **CO 3** Critically analyze real world problems using structures, unions and develop applications for handling text and binary files.  **CO 4** Explore the use of command line arguments, string manipulation and standard library functions. | | | | | | |
| **Assessment Method** | | | | **Course Outcome Achieved** | | |
| **Quiz** | | | | **CO1** | | |
| **Class Tests** | | | | **CO1, CO2** | | |
| **Vivas** | | | | **CO1, CO2, CO3, CO4** | | |
| **Take home assignments** | | | | **CO4** | | |
| **Program Outcomes (PO) -**  **PO1:** Develop and apply acquired knowledge of mathematics and computer science and applications to solve complex computational problems in real life.  **PO2:** Gain proficiency in algorithmic principles and programming skills for application development  **PO3:** Apply modern computing tools and techniques to solve real world problems.  **PO4:** Explore literature, build, design and conduct algorithmic experiments, so as to develop research, interpretation and inference skills  **PO5:** Develop communication skills to create reports and present effectively  **PO6:** Analyze responsibility as a leader ensuring efficient and effective delivery of a project  **PO7:** Design optimal system solutions analyzing their global, economic, environmental and social impact  **PO8:** Enhance creativity and entrepreneurial vision to create value  Map the COs with POs from 1 to 3 where – 1 implies Low, 2 implies Medium and 3 implies High | | | | | | | |
| |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | Program level Outcomes 🡪 | | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | | CO 1 |  | 3 | 2 | 2 | 2 |  | 2 |  | 1 | | CO 2 |  | 2 | 2 | 2 |  | 1 | 2 | 2 | 2 | | CO 3 |  | 1 | 2 | 2 |  |  | 2 |  | 2 | | CO 4 |  | 1 | 2 |  | 2 |  | 2 | 1 | 2 | | AVG |  |  |  |  |  |  |  |  |  | | | | | | | | |
| Lesson Plan | | | | | | | |
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| **Lecture No.** | **Topic/ Contents Details with subtopics** | **Course Outcome to be Achieved** | **Teaching Pedagogy** | | **Reading Material** | **Remarks** | |
| L1, 2 | Unit 1 “Introduction of Syllabus, C basics: C character set, Identifiers and keywords | CO1 | Class discussions Sample C Programs  Code Blocks | | T1 |  | |
| L3, 4 | Overview Data types, constants, variables Declarations, expressions statements, symbolic constants, compound statements | CO1 | Writing first C program  PPT  Code Blocks | | T1 |  | |
| L5,6,7 | arithmetic operators, unary operators relational and logical operators, assignment operators Example of various operator, Conditional operators, bit operators | CO1 | Example Practical Programs  Code Blocks | | T1 |  | |
| L8,9 | If statement if¦ - else statement, if¦ - else if¦ -else statement Nested If statement,  Nested If-else | CO1 | Coding Questions  Code Blocks | | T2 |  | |
| L10, 11 | Looping using for loop For loop example | CO1 | Practical examples and Coding programs Code Blocks | | R2, T2 |  | |
| L12,13 | while statement, do¦- while statement Example of while and do -while | CO1 | Practical examples and Coding programs Code Blocks | | R2, T2 |  | |
| L14,15,16,  17 | switch statement nested control statement, Jump statements: break operator, continue operator, comma operator, goto statement Examples of Jump statements | CO1 | Coding Questions for real world examples Class discussions  Code Blocks | | T1, T2, R2 |  | |
| L18 | **Unit 1 Test** |  |  | |  |  | |
| L19, 20,21 | **Unit 1I Overview**  Function: declaration, definition & scope and function call Type of function (with and without parameter) | CO2 | Class discussions + PPT + Code Blocks | | R2, T2 |  | |
| L22 | Recursion. | CO2 | Coding Questions Code Blocks | | T2 |  | |
| L23 | CALLING FUNCTIONS: call by value, call by Reference | CO2 | Class discussions  Code Blocks | | T2 |  | |
| L24 | Storage classes: auto, extern (global), static & register | CO2 | Class discussions + PPT + Code Blocks | | T1, T2 |  | |
| L25,26,27 | Arrays, 1-D array initialization, declaration 2D arrays, initialization, declaration Multidimensional arrays | CO2 | High order thinking coding questions on arrays Code Blocks | | T1, T2 |  | |
| L28,29 | pointers, array & pointer relationship, pointer arithmetic dynamic memory allocation, pointer to arrays, array of pointers | CO2 | Coding Questions and practical implementation on system   Code Blocks | | T1, T2 |  | |
| L30,31 | pointer to functions, array of pointers to functions | CO2 | PPT  Code Blocks | | R3 |  | |
| L32,33 | Preprocessor directives: #include, #define, macros with arguments the operators # and ##, conditional compilations, multiple file Programming | CO2 | Class discussion + PPT + Code Blocks | | R3 |  | |
| L34,35,36 | **Unit III Overview** Structures, unions (initialization and declaration structure passing to functions bit fields | CO3 | Real Life problem-based coding questions  PPT  Code Blocks | | T2, R2 |  | |
| L37,38 | Intro to union, Structure v/s Union Enum, typedef | CO3 | Class discussion + PPT + Code Blocks | | T2 |  | |
| L39,40,41, 43,44 | Introduction of file handling Function used for file handling file handling(Binary and Txt) file I/O operation File Handling example | CO3 | Problem Based Coding Questions  Code Blocks | | R2 |  | |
| L45 | **Unit III Test** | CO3 | Code Blocks | | T2 |  | |
| L46 | **Unit IV Overview** |  | Class discussion + PPT + Code Blocks | |  |  | |
| L47 | UNIT-IV Definition. declaration of string | CO4 | Practical coding questions  PPT  Code Blocks | | T2 |  | |
| L48 | String function | CO4 | Practical implementation on System   PPT  Code Blocks | | T2 |  | |
| L49 | Standard library functions stdio.h.stdlib.h.conio.h | CO4 | Class discussion + Code Blocks | | T2 |  | |
| L50 | ctype.h.math.h, process.h | CO4 | Group learning+ PPT + Code Blocks | | T1 |  | |
| L51 | Miscellaneous Standard library functions | CO4 | Class discussion + PPT + Code Blocks | | T1 |  | |
| L52 | Usage of command line arguments | CO4 | Practical questions on system+ PPT + Code Blocks | | T1 |  | |
| L53 | Previous Years Question Paper Discussion | CO1, CO2, CO3, CO4 | Class discussion + Paper Bank reading + Revision | | Paper Bank |  | |