### DEPARTMENT OF COMPUTER SCIENCE & APPLICATIONS KURUKSHETRA UNIVERSITY, KURUKSHETRA

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| **Session: 2023-24** | | | |
| **Part A - Introduction** | | | |
| Subject | COMPUTER SCIENCE | | |
| Semester | II | | |
| Name of the Course | Web Development | | |
| Course Code | B23-CSE-201 | | |
| Course Type: (CC/MCC/MDC/CC- M/DSEC/VOC/DSE/PC/AEC/ VAC) | CC | | |
| Level of the course (As per Annexure-I) | 100-199 | | |
| Pre-requisite for the course (if any) |  | | |
| Course Learning Outcomes(CLO): | After completing this course, the learner will be able to:   1. learn the basics of web development. 2. understand different types of web pages and websites. 3. implement HTML and CSS for web page designing. 4. Understand the design of web crawlers and search engines.   5\*. to implement the programs based on various web development concepts. | | |
| Credits | Theory | Practical | Total |
| 3 | 1 | 4 |
| Contact Hours | 3 | 2 | 5 |
| **Max. Marks:100(70(T)+30(P))**  **Internal Assessment Marks:30(20(T)+10(P)) End Term Exam Marks: 70(50(T)+20(P))** | | **Time: 3 Hrs.(T), 3Hrs.(P)** | |
| **Part B- Contents of the Course** | | | |
| **Instructions for Paper-Setter**  The examiner will set a total of nine questions. Out of which, the first question will be compulsory. The remaining eight questions will be set from four units selecting two questions from each unit. The examination will be of three-hour duration. All questions will carry equal marks. The first question will comprise short answer-type questions covering the entire syllabus.  The candidate will have to attempt five questions, selecting one from each unit. The first question will be compulsory. | | | |

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| The practicum will be evaluated by an external and an internal examiner. The examination will be of three-hour duration. | | |
| **Unit** | **Topics** | **Contact Hours** |
| I | Introduction to Internet and World Wide Web (WWW); Evolution and History of World Wide Web, Web Pages and Contents, Web Clients, Web Servers, Web Browsers; Hypertext Transfer Protocol, URLs; Searching, Search Engines and Search Tools.  Web Publishing: Hosting website; Internet Service Provider; Planning and designing website; Web Graphics Design, Steps For Developing website | 10 |
| II | Creating a Website and Introduction to Markup Languages (HTML and DHTML), HTML Document Features & Fundamentals, HTML Elements, Creating Links; Headers; Text styles; Text Structuring; Text colour and Background; Formatting text; Page layouts, Images; Ordered and Unordered lists; Inserting Graphics; Table Creation and Layouts; Frame Creation and Layouts; Working with Forms and Menus; Working with Radio Buttons; Check Boxes; Text Boxes, HTML5. | 10 |
| III | Introduction to CSS (Cascading Style Sheets): Features, Core Syntax, Types, Style Sheets and HTML, Style Rule Cascading and Inheritance, Text Properties, CSS Box Model, Normal Flow Box Layout, Positioning, and other useful Style Properties; Features of CSS3. | 10 |
| IV | The Nature of JavaScript: Evolution of Scripting Languages, JavaScript-Definition, Programming for Non-Programmers, Introduction to Client–Side Programming, Enhancing HTML Documents with JavaScript. Static and Dynamic web pages | 10 |
| V\* | Practicum:  Students are advised to do laboratory/practical practice not limited to but including the following types of problems:   * Create a web page using ordered list and unordered list. * Design a web page to show your institute with hyperlinks. * Create your resume on HTML page. * Create a web page and divide the web page into four frames. In one frame create three links that will display different HTML forms in the remaining three frames respectively. * Create a web page to show the record of the college in the form of a table. * Write an HTML code to add internal CSS on a webpage * Design a blog-style personal website. | 25 |

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|  | * Design a web page to display your college with hyperlinks. * Write a JavaScript function to calculate the sum of two numbers. * Write a JavaScript program to find the maximum number in an array. * Write a JavaScript function to check if a given string is a palindrome (reads the same forwards and backward). * Write a CSS file and attach it to any 3 HTML web pages. * Use Div and span in a page and color two words with the same colors. * Using HTML, CSS create a styled checkbox with animation on state change * Design a web page that is like a compose page of e-mail. It should have:  1. Text boxes for To, CC, and BCC respectively. 2. Text field for the message. 3. Send button. 4. Option for selecting a file for attachment 5. After clicking a send button a new page should open with the display message “Message has been sent”. |  |
| **Suggested Evaluation Methods** | | |
| **Internal Assessment:**   * **Theory**   + Class Participation: 5   + Seminar/presentation/assignment/quiz/class test etc.: 5   + Mid-Term Exam: 10 * **Practicum**   + Class Participation: 5   + Seminar/Demonstration/Viva-voce/Lab records etc.: 5   + Mid-Term Exam: NA | | **End-Term Examination:** A three-hour exam for both theory and practicum.  **End Term Exam Marks: 70(50(T)+20(P))** |
| **Part C-Learning Resources** | | |
| **Recommended Books/e-resources/LMS:**   * Raj Kamal, Internet and Web Technologies, Tata McGraw-Hill. * Ramesh Bangia, Multimedia and Web Technology, Firewall Media. * Thomas A. Powell, Web Design: The Complete Reference, Tata McGraw-Hill * Wendy Willard, HTML Beginners Guide, Tata McGraw-Hill. * Deitel and Goldberg, Internet and World Wide Web, How to Program, PHI * David Flanagan, JavaScript: The Definitive Guide: The Definitive Guide. * Kogent Learning, Web Technologies: HTML, JavaScript, PHP, Java, JSP, XML, AJAX – Black Book, Wiley India Pvt. Ltd. | | |

\*Applicable for courses having practical components.

### DEPARTMENT OF COMPUTER SCIENCE & APPLICATIONS KURUKSHETRA UNIVERSITY, KURUKSHETRA

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| **Session: 2023-24** | | | |
| **Part A - Introduction** | | | |
| Subject | COMPUTER SCIENCE | | |
| Semester | II | | |
| Name of the Course | Programming with C++ | | |
| Course Code | B23-CSE-202 | | |
| Course Type: (CC/MCC/MDC/CC- M/DSEC/VOC/DSE/PC/AEC/ VAC) | DSEC | | |
| Level of the course (As per Annexure-I | 100-199 | | |
| Pre-requisite for the course (if any) |  | | |
| Course Learning Outcomes(CLO): | After completing this course, the learner will be able to:   1. understand the basic concept of C++; 2. acquire the knowledge of C++ operators, hierarchy and precedence, and various control structures 3. learn to use arrays and strings in C++ programs; 4. get familiar with OOPS concepts with C++   5\*. to understand the programming with C++ for Object-Oriented methodologies. | | |
| Credits | Theory | Practical | Total |
| 3 | 1 | 4 |
| Contact Hours | 3 | 2 | 5 |
| **Max. Marks:100(70(T)+30(P))**  **Internal Assessment Marks:30(20(T)+10(P)) End Term Exam Marks: 70(50(T)+20(P))** | | **Time: 3 Hrs.(T), 3Hrs.(P)** | |
| **Part B- Contents of the Course** | | | |
| **Instructions for Paper-Setter**  The examiner will set a total of nine questions. Out of which the first question will be compulsory. The remaining eight questions will be set from four units selecting two questions from each unit. The examination will be of three-hour duration. All questions will carry equal marks. The first question will comprise short answer-type questions covering the entire syllabus.  The candidate will have to attempt five questions, selecting one from each unit. The first question will be compulsory.  The practicum will be evaluated by an external and an internal examiner. The examination will be of three-hour duration. | | | |

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| **Unit** | **Topics** | **Contact Hours** |
| I | **Elements to C++**: Character Set, Keywords, Identifiers, Constants, Variables, Date Types: User-Defined, Built-in, Derived Data Types, Reference Variables Constants, Symbolic constants, Type Conversion, and Type Casting.  **Input Output in C++**: Unformatted and Formatted I/O Operations. I/O using insertion and extraction operators and streams in C++.  **Operators in C++**: Arithmetic, Relational, Logical, Ternary, and other type of operators, Precedence & associativity of Operators. | 10 |
| II | **Decision and Control Structures**: if statement, if-else statement, nested if, if-else-if ladder, switch case statement, break and continue, goto statement, nested switch case statement. **Loops**: while loop, do-while loop, for loop.  **Arrays and strings**: Array definition, initialization, multidimensional arrays, Manipulation of array elements.  **Functions**: Declaration and Definition, return values, arguments, passing parameters by value, call by reference, call by pointer, Recursion, Inline Functions, Function overloading. | 10 |
| III | Pointers, structures, and union in C++.  **Object-oriented features of C++**: Class and Objects, Data hiding & encapsulation, abstraction, Data Members and Member Functions, accessing class members, empty class, local class, global class, Scope Resolution Operator and its Uses, Static Data Members, Static Member Functions, Structure vs Class, Friend function and friend class.  **Constructors and Destructors**: Constructors, Instantiation of objects, Default constructor, Parameterized constructor, Copy constructor and its use, Destructors, , Dynamic initialization of objects. | 10 |
| IV | **Operator Overloading:** Overloading unary and binary operators: arithmetic operators, manipulation of strings using operators.  **Inheritance**: Derived class, base class, Accessing the base class member, Inheritance: multilevel, multiple, hierarchical, hybrid; Virtual base class, Abstract class.  Virtual Functions, pure virtual functions; Polymorphism & its types | 10 |
| V\* | Practicum:  Students are advised to do laboratory/practical practice not limited to but including the following types of problems:   * Write a C++ program to print the following lines:   + Your introduction   + Your institute introduction * Write a program that accepts principle, rate, and time from the user and prints the simple interest. * Write a program to swap the values of two variables. * Write a C++ program to prompt the user to input 3 integer values and print these in forward and reversed order. * WAP to accept and display distance in feet and inches. * Write a program to swap the values of two variables without using a third variable. * Write a program to check whether the given number is even or odd (using ?: ternary operator). * Write a program to check whether the given number is positive or negative (using?: ternary operator). | 25 |

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|  | * Write a program that inputs three numbers and displays the largest number using the ternary operator. * WAP to initialize data members of the class using the constructor. * Pass values to the constructor and initialize the members of that class to those values. * Create a class called cube with the data members   Length, Breadth, Height   * + Members functions:     - To accept the details.     - To calculate the volume of the cube.     - To display the details. * WAP to calculate the sum using constructor overloading. * WAP to demonstrate the use of destructor. * Create a C++ Program to show the order of constructor and destructor. * C++ Program to Find the Number of Vowels, Consonants, Digits, and White Spaces in a String * C++ Program to Multiply Two Matrices by Passing Matrix to Function * Increment ++ and Decrement -- Operator Overloading in C++ Programming * C++ Program to Add Two Complex Numbers * C++ Program to Show Function Overriding * C++ Program to Show Polymorphism in Class * C++ Program to Show Function Overloading * C++ Program to Show Inheritance |  |
| **Suggested Evaluation Methods** | | |
| **Internal Assessment:**   * **Theory**   + Class Participation: 5   + Seminar/presentation/assignment/quiz/class test etc.: 5   + Mid-Term Exam: 10 * **Practicum**   + Class Participation: 5   + Seminar/Demonstration/Viva-voce/Lab records etc.: 5   + Mid-Term Exam: NA | | **End-Term Examination:** A three-hour exam for both theory and practicum.  **End Term Exam Marks: 70(50(T)+20(P))** |
| **Part C-Learning Resources** | | |
| **Recommended Books/e-resources/LMS:**   * Herbert Scildt, C++, The Complete Reference, Tata McGraw-Hill * Robert Lafore, Object Oriented Programming in C++, SAMS Publishing * Bjarne Stroustrup, The C++ Programming Language, Pearson Education * Balaguruswami, E., Object Oriented Programming In C++, Tata McGraw-Hill. * Richard Johnson, An Introduction to Object-Oriented Application Development, Thomson Learning. | | |

\*Applicable for courses having practical components.

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| **Session: 2023-24** | | | | | |
| **Part A - Introduction** | | | | | |
| Subject | | COMPUTER SCIENCE/ COMPUTER APPLICATIONS | | | |
| Semester | | II | | | |
| Name of the Course | | Programming Methodologies | | | |
| Course Code | | B23-CSE-203 (Common with B23-CAC-203) | | | |
| Course Type: (CC/MCC/MDC/CC- M/DSEC/VOC/DSE/PC/AEC/ VAC) | | CC-M | | | |
| Level of the course (As per Annexure-I | | 100-199 | | | |
| Pre-requisite for the course (if any) | |  | | | |
| Course Learning Outcomes (CLO): | | After learning this course students will be able to:   1. To familiarize the students with the concept of problem-solving using algorithms and flowcharts. 2. To familiarize the students with the concept of program and debugging. 3. To make the students familiar with the basic programming constructs. 4. To understand various programming methodologies. 5. To understand the various programming methodologies by implementing these practically. | | | |
| Credits | | Theory | Practical | Total | |
| 1 | 1 | 2 | |
| Contact Hours | | 1 | 2 | 3 | |
| **Max. Marks:50(30(T)+20(P))**  **Internal Assessment Marks:15(10(T)+5(P)) End Term Exam Marks:35(20(T)+15(P))** | | | **Time: 3 Hrs.(T), 3Hrs.(P)** | | |
| **Part B-Contents of the Course** | | | | | |
| **Instructions for Paper-Setter** | | | | | |
| **Unit** | **Topics** | | | | **Contact Hours** |
| I | **Problem Solving**: Understanding the problem, Analyzing the problem, and Identifying the solution.  **Tools for Problem-Solving**: Flowcharts and its Symbols. Algorithm designing. Examples of Algorithms with flow chart. Decision Table. | | | | 4 |

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| II | **Program**: Concept of a program, Need for writing programs, Characteristics of a good program, Programming style, Documentation, and Program Maintenance.  **Debugging Programs**: Syntax Errors, Run-Time Errors, Logical Errors.  Process of conceptualizing a solution to a problem and moving from algorithm to programming. | 4 |
| III | **General Concepts**: Clarity and Simplicity of Expressions, Use of proper names for Identifiers, Comments, Indentation; and Documentation.  **Programming Constructs**: Sequence, Selection, and Iteration; Simulation (dry run) of the program for better understanding of algorithm; Comparison and Analysis of Algorithms through simulations. | 4 |
| IV | **Methodologies**: Structured programming, Top-down approach, Bottom-up approach, Functional programming, Modular programming, and Object-oriented programming. | 4 |
| V\* | Practicum:  Students are advised to do laboratory/practical practice not limited to but including the following types of problems:   * Draw a flowchart and design an algorithm that calculates simple interest using principle, rate, and time. * Draw a flowchart and write an algorithm to swap the values of two variables. * Draw a flowchart and design an algorithm to check whether the given number is even or odd. * Draw a flowchart and design an algorithm that inputs three numbers and displays the largest number. * Draw a flowchart and design an algorithm to find the smallest from n numbers. * Draw a flowchart and design an algorithm to find the greatest from n numbers. * Draw a flowchart and design an algorithm to find the sum and average of n input numbers. * Draw a flowchart and design an algorithm to find the sum of the digits of the input number. * Identify the requirements for a college system computerization. * Identify the various modules in a banking system. * Identify the complete design of a general grocery store. * Draw the decision table for finding the greatest of three numbers. * Draw to decision table for checking eligibility for admission to college in an undergraduate programme taking your own assumptions. | 25 |
| **Suggested Evaluation Methods** | | |
| **Internal Assessment:**   * **Theory**   + Class Participation: 4   + Seminar/presentation/assignment/quiz/class test etc.: NA   + Mid-Term Exam: 6 * **Practicum**   + Class Participation: NA   + Seminar/Demonstration/Viva-voce/Lab records etc.: 5   + Mid-Term Exam: NA | | **End Term Examination:**  **A three-hour exam for both theory and practicum.**  **End Term Exam Marks:35(20(T)+15(P))** |
| **Part C-Learning Resources** | | |
| **Text /Reference Books:**   * Sinha, P.K. & Sinha, Priti, Computer Fundamentals, BPB. * Dromey, R.G., How to Solve it By Computer, PHI. * Norton, Peter, Introduction to Computer, McGraw-Hill. * Leon, Alexis & Leon, Mathews, Introduction to Computers, Leon Tech World. * Rajaraman, V., Fundamentals of Computers, PHI. | | |

\*Applicable for courses having practical component.

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| **Session: 2023-24** | | | | |
| **Part A - Introduction** | | | | |
| Subject | | COMPUTER SCIENCE/ COMPUTER APPLICATIONS | | |
| Semester | | II | | |
| Name of the Course | | Web Technologies Fundamentals | | |
| Course Code | | B23-CSE-204 (Common with B23-CAC-204) | | |
| Course Type: (CC/MCC/MDC/CC- M/DSEC/VOC/DSE/PC/AEC/ VAC) | | MDC | | |
| Level of the course (As per Annexure-I | | 100-199 | | |
| Pre-requisite for the course (if any) | |  | | |
| Course Learning Outcomes(CLO): | | After completing this course, the learner will be able to:   1. learn the basics of web development. 2. understand different types of web pages and websites. 3. implement HTML and CSS for web page designing. 4. Understand the design of web crawlers and search engines.   5\*. to implement the programs based on various web development concepts. | | |
| Credits | | Theory | Practical | Total |
| 2 | 1 | 3 |
| Contact Hours | | 2 | 2 | 4 |
| **Max. Marks:75(50(T)+25(P))**  **Internal Assessment Marks:20(15(T)+5(P)) End Term Exam Marks: 55(35(T)+20(P))** | | | **Time: 3 Hrs.(T), 3Hrs.(P)** | |
| **Part B- Contents of the Course** | | | | |
| **Instructions for Paper-Setter**  The examiner will set a total of nine questions. Out of which, the first question will be compulsory. The remaining eight questions will be set from four units selecting two questions from each unit. The examination will be of three-hour duration. All questions will carry equal marks. The first question will comprise short answer-type questions covering the entire syllabus.  The candidate will have to attempt five questions, selecting one from each unit. The first question will be compulsory.  The practicum will be evaluated by an external and an internal examiner. The examination will be of three-hour duration. | | | | |
| **Unit** | **Topics** | | | **Contact** |

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|  |  | **Hours** |
| I | Introduction to Internet and World Wide Web (WWW); Evolution and History of World Wide Web, Web Pages and Contents, Web Clients, Web Servers, Web Browsers; Hypertext Transfer Protocol, URLs; Searching, Search Engines and Search Tools. | 6 |
| II | Web Publishing: Hosting website; Internet Service Provider; Planning and designing website; Web Graphics Design, steps for Developing website  Creating a Website and Introduction to Markup Languages (HTML and DHTML), | 6 |
| III | HTML Document Features & Fundamentals, HTML Elements, Creating Links; Headers; Text styles; Text Structuring; Text colour and Background; Formatting text; Page layouts, Images; Ordered and Unordered lists; Inserting Graphics; Table Creation and Layouts; Frame Creation and Layouts; Working with Forms and Menus; Working with Radio Buttons; Check Boxes; Text Boxes, HTML5 | 7 |
| IV | Introduction to CSS (Cascading Style Sheets): Features, Core Syntax, Types, Style Sheets and HTML, Style Rule Cascading and Inheritance, Text Properties, CSS Box Model, Normal Flow Box Layout, Positioning, and other useful Style Properties; Features of CSS3. Introduction to Client–Side Programming | 6 |
| V\* | Practicum:  Students are advised to do laboratory/practical practice not limited to but including the following types of problems:   * Create a web page using an ordered list and an unordered list. * Design a web page to show your institute with hyperlinks. * Design a blog-style personal website. * Create your resume on an HTML page. * Create a web page and divide the web page into four frames. In one frame create three links that will display different HTML forms in the remaining three frames respectively. * Create a web page to show the record of the college in the form of a table. * Write an HTML code to add internal CSS on a webpage * Design a web page to display your college with hyperlinks. * Write a JavaScript function to calculate the sum of two numbers. * Write a CSS file and attach it to any 3 HTML web pages. * Use Div and span in a page and color two words with the same colors. * Using HTML, and CSS create a styled checkbox with animation on state change. | 25 |
| **Suggested Evaluation Methods** | | |
| **Internal Assessment:**   * **Theory**   + Class Participation: 4   + Seminar/presentation/assignment/quiz/class test etc.:4   + Mid-Term Exam: 7 * **Practicum**   + Class Participation: 2   + Seminar/Demonstration/Viva-voce/Lab records etc.:3   + Mid-Term Exam: NA | | **End Term Examination:** A three-hour exam for both theory and practicum.  **End Term Exam Marks: 55(35(T)+20(P))** |
| **Part C-Learning Resources** | | |
| **Recommended Books/e-resources/LMS:**   * Raj Kamal, Internet and Web Technologies, Tata McGraw-Hill. * Ramesh Bangia, Multimedia and Web Technology, Firewall Media. * Thomas A. Powell, Web Design: The Complete Reference, Tata McGraw-Hill * Wendy Willard, HTML Beginners Guide, Tata McGraw-Hill. * Deitel and Goldberg, Internet and World Wide Web, How to Program, PHI * David Flanagan, JavaScript: The Definitive Guide: The Definitive Guide. * Kogent Learning, Web Technologies: HTML, JavaScript, PHP, Java, JSP, XML, AJAX – Black Book, Wiley India Pvt. Ltd. | | |

\*Applicable for courses having practical components.