National Curriculum and Credit Framework (NCCF)

Syllabus

for

Major, Minor and Skill Enhancement Courses

of

Bachelor of Computer Application

w.e.f. Academic Session 2023-24

KaziNazrul University

Asansol, Paschim Bardhaman

West Bengal 713340

Semester- I

MAJOR COURSE

Course Name: Introduction to Programming using C

Course Code: BCAMJ101

Course Type: **Major (Theoretical & Practical)**	Course Details:**MJC-1**			L-T-P: **3–0–4**	
Credit: **5**	Full Marks: **100**	CA Marks		ESE Marks	
		Practical	Theoretical	Practical	Theoretical
		30	**15**	**20**	**35**

Course Content:

Theory

UNIT I. Introduction to computers, Evolution, Generation of Computers, Computers Hierarchy, Different components of computer (CPU, ALU, different types of memory etc.), Number System – Binary, Hexa, Octal, BCD System, Introduction to operating environment.

UNIT II. Introduction to Programming, Program Concept, Characteristics of Programming, Stages in Program Development, Algorithms, Notations, Flowcharts, Types of Programming Methodologies, Introduction to C Programming - Basic Program Structure in C, Variables and Assignments, Input and Output, Selection and Repetition Statements.

UNIT III. Top-Down Design, Predefined Functions, Programmer-defined Function, Local Variable, Recursion - Developing Recursive Definition of Simple Problems and their implementation.

UNIT IV. Introduction to Arrays, Declaration and Referring Arrays, Arrays in Memory, Initializing Arrays.Arrays in Functions, Multi-Dimensional Arrays, Searching in Array.

UNIT V. Pointers - Simple use of Pointers (Declaring and Dereferencing Pointers to simple variables), Pointers to Pointers, Call-By-Value and Call-By-Reference Parameters.

UNIT VI. Structures - Member Accessing, Pointers to Structures, Structures and Functions, Arrays of Structures, Unions.

UNIT VII. Strings - Declaration and Initialization, Reading and Writing Strings, Arrays of Strings, String and Function, Strings and Structure, Standard String Library Functions.

UNIT VIII. File Handling – File opening modes, use of files for data input and output. merging and copy files.

Practical

UNIT I. Given the problem statement, students are required to formulate problem, develop flowchart/algorithm, write code, execute and test it. Students should be given assignments on following:

a) To learn elementary techniques involving arithmetic operators and mathematical expressions, appropriate use of selection (if, switch, conditional operators) and control structures.

b) Learn how to use functions and parameter passing in functions, writing recursive programs.

UNIT II. Students should be given assignments on following:

a) Write Programs to learn the use of strings and string handling operations.

b) Problems which can effectively demonstrate use of Arrays. Structures and Union.

c) Write programs using pointers and functions.

d) Write programs to use files for data input and output.

Internal (CA) Evaluation: Practical Note Book (15 marks), Two experiments (10 marks) – one from each unit, Viva-voce (5 marks)

ESE Evaluation: Two experiments (10 marks) – one from each unit, Viva-voce (10 marks)

References/ Suggested Readings:

1. Problem Solving and Program Design in C, J. R. Hanly and E. B. Koffman, Pearson.
2. C Programming, Karnighan&Ritchie, PHI
3. Programming through C, Richard Johnsonbaugh and Martin Kalin, Pearson Education
4. Programming in C, B.S. Gottfried, Sahaum Series.
5. Programming in ANSI C, E. Balaguruswami, TMH

MINOR COURSE

Course Name: Financial Accounting

Course Code: BCAMN101

Course Type: **Minor (Theoretical)**	Course Details:**MNC-1**			L-T-P: **4–1–0**	
Credit: **5**	Full Marks: **100**	CA Marks		ESE Marks	
		Practical	Theoretical	Practical	Theoretical
			30		**70**

Course Content:

Theory

UNIT I: Basic idea of Book Keeping and Accounting: Definition, Nature, Importance, Limitations, Difference between Book Keeping and Accounting. Accounting Principles: Generally Accepted Accounting Principles (GAAP) - Important Accounting Concepts: Proprietary, Entity, Fund, Money Measurement, Accounting Period, Going Concern, Duality, Realization and Accrual; Important Accounting Conventions: Disclosure, Materiality, Consistency, Comparability, Objectivity and Conservatism; Accounting Concept vs. Accounting Convention, Matching Concept, Relation of Accounting Theory with Accounting Practice.

UNIT II: Accounting Process: Journal: Definition, Features, Classification, Journal Entry; ledger: Definition, Classification, Ledger posting; Difference between Journal and Ledger;

UNIT III: Trial Balance: Definition, Importance, Errors, and Preparation of trial balance.

UNIT IV: Cash Book: Definition, Features, Types of Cash Book and Preparation of cash book under Single column method,Double column method,Triple column method and petty Cash Book

UNIT V: Depreciation-Concepts-Features-Causes-Diferent Methods of Depreciation on assets-Practical Problems on Straight line methods, Diminishing balance methods depreciation and Sinking Fund method

UNIT VI: Bad Debt and Provision for bad debt- Concepts-Features-Diference between bad debt and doubtful debt-accounting treatment of bad debt and doubtful debt

UNIT VII: Preparation of Financial Accounts of a profit-making trading Concern with additional information

UNIT VIII: Sectional and Self Balancing Ledgers: Concept of Sectional Balancing, preparation of control accounts. Self-Balancing Ledger: advantages; Recording process; preparation of Adjustment accounts.

References/ Suggested Readings:

1. Accounting Theory, Hendriksen, E.S., Khosla Publishing House, Delhi.
2. Accounting Theory, Lal, J. Himalaya Publishing House, Mumbai.
3. Accounting Theory, Porwal, L.S., Tata McGraw - Hill Publishing Co. Ltd., New Delhi.
4. Accounting Theory and Management Accounting, Sinha, G., Vidyoday Library Pvt. Ltd.
5. Financial Accounting, Goyal, Bhushan Kumar and H.N. Tiwari, Taxmann.
6. Financial Accounting, Kumar, Alok, Singhal Publication.
7. Financial Accounting – Concepts and Applications, Lt Bhupinder, Cengage.
8. Financial Accounting: concept and Applications, Monga, J R, Mayur paper Backs, New Delhi.

SKILL ENHANCEMENT COURSE

Course Name: Office Automation Software Lab

Course Code: BCASE101

Course Type:SEC **(Practical)**	Course Details:**SEC-1**			L-T-P: **0–0–6**	
Credit: 3	Full Marks: **50**	CA Marks		ESE Marks	
		Practical	Theoretical	Practical	Theoretical
		30		**20**	

Course Content:

Practical

UNIT I. Windows Basics: Introduction of windows OS, navigating the Windows 10 user interface, Creating accounts in Windows, Opening apps and programs, working with files, using the Start button and Start menu, Accessing and using the Action Center, Working with apps and programs on the taskbar, Customizing settings in Windows 10, including backgrounds, screensavers, and more, Using the Settings app and the Control Panel.

UNIT II. MS Word and Google Docs: Overview, creating, saving, opening, importing, exporting, and insertingfiles, formatting pages, paragraphs and sections, indents and outdents, creating lists andnumbering. Headings, styles, fonts and font size, editing, positioning, viewing texts,searching and replacing text, inserting page breaks, page numbers, bookmarks, symbols, anddates. Using tabs and tables, header, footer, and printing,

UNIT III. MS Excel and Google Sheets: Worksheet overview, entering information, worksheet creation, openingand saving workbook, formatting numbers and texts, protecting cells, producing charts, andprinting operations. Application of Excel for obtaining statistical parameters, Mean, Median,Mode, average, co-relation, Regression, Data capturing using Google Forms.

UNITIV. MS PowerPoint or Google Slides: Slide creation with PowerPoint, Presenting shows for corporate and commercial using PowerPoint.

UNIT V. Graphics and Image Editing Software: Overview of graphic design and image editing applications (e.g., Adobe Photoshop, GIMP), Understanding basic image editing techniques (e.g., cropping, resizing, retouching), Creating and manipulating graphics for various purposes.

UNIT VI. Web Browsing and Internet Applications: Navigating web browsers and utilizing essential features, Understanding internet protocols and security considerations, Exploring common internet applications (e.g., email clients, cloud storage, online collaboration tools).

UNIT VII. File Compression and Archiving Software: Introduction to file compression formats (e.g., ZIP, RAR), Compressing and decompressing files and folders, Managing archived files and folders.

Internal (CA) Evaluation: Practical Note Book (15 marks), One experiment (10 marks), Viva-voce (5 marks).

ESE Evaluation: One experiment (10 marks), Viva-voce (10 marks).

References/ Suggested Readings:

1. Introduction to Computers with MS-Office, Leon, TMH
2. Learn Microsoft Office 2019, Linda Foulkes, HP.

Semester- II

MAJOR COURSE

Course Name: Data Structures and Algorithms

Course Code: BCAMJ201

<table>
<tr><td rowspan="2">Course Type: Major (Theoretical & Practical)</td><td colspan="3" rowspan="2">Course Details:MJC-2</td><td colspan="2">L-T-P: 3–0–4</td></tr>
<tr></tr>
<tr><td rowspan="3">Credit: 5</td><td rowspan="3">Full Marks: 100</td><td colspan="2">CA Marks</td><td colspan="2">ESE Marks</td></tr>
<tr><td>Practical</td><td>Theoretical</td><td>Practical</td><td>Theoretical</td></tr>
<tr><td>30</td><td>15</td><td>20</td><td>35</td></tr>
</table>

Course Content:

Theory

UNIT I. Basic concepts- Data, Data Structures, ADT, Algorithm Specification-Introduction, Recursive algorithms, Data Abstraction, Performance analysis, Linear and Non Linear data structures.

UNIT II. Singly Linked Lists - Operations, Concatenating, Circularly linked lists - Operations for Circularly linked lists, Doubly Linked Lists - Operations. Polynomial and sparse matrix representation using linked list.

UNIT III. Stack- Definition and Operations, Array and Linked Implementations, Applications - Valid Expression Checking (Parenthesis matching), Reversal of string, Infix to Postfix Conversion, Postfix Expression Evaluation, Recursion Implementation.

UNIT IV. Queue - Definition and Operations, Array and Linked Implementations, Applications, Circular Queues - Insertion and Deletion Operations, Priority Queue-Definition and Implementation, Dequeue (Double Ended Queue) - Introduction.

UNIT V. Searching Methods – Linear and Binary.

UNIT VI. Sorting Methods – Bubble, Insertion, Selection, Shell, Using Divide-Conquer Approach (Quick and Merge sort), Comparison of Sorting Methods.

UNIT VII. Trees, Representation of Trees, Binary tree, Properties of Binary Trees, Binary Tree Representations- Array and Linked Representations, Binary Tree Traversals, Threaded Binary Trees, Binary Search tree - Creation, Insertion, Deletion and Search, AVL tree-Definition, Examples, Insertion and Rotations, B tree, B+ tree, Heap- Definition, Min heap, Max heap, Insertion and Deletion. Priority Queue using Heap.

UNIT VIII. Graphs, Graph ADT, Graph Representations, Graph Traversals and Searching,

Practical

Students are required to write and practically execute programs to solve problem using various data structures. The teacher can suitably device problems which help students experiment using the suitable data structures and operations. Some of the problems are indicated below.

1. Write program that uses functions to perform the following:
   a) Creation of list of elements where the size of the list, elements to be inserted and deleted are dynamically given as input.
   b) Implement the operations, insertion, deletion at a given position in the list and search for an element in the list
   c) To display the elements in forward / reverse order
2. Write recursive programs for Factorial, Fibonacci numbers, Towers of Hanoi etc.
3. Write a program to implement stack (using array and linked list). Write a program that demonstrates the application of stack operations (Eg: infix expression to postfix conversion, postfix evaluation).
4. Write programs to implement queue using array and linked list.
5. Write program that implements linear (using array and linked list) and binary search.
6. Write programs of a) Bubble sort b) Insertion Sort c) Selection Sort d) Quicksort etc.
7. Write a program to create a Binary Search Tree and insertion and deletion of node from the tree. Write recursive and non-recursive routines to traverse a binary tree in preorder, inorder and postorder.

Internal (CA) Evaluation: Practical Note Book (15 marks), Two experiments (10 marks), Viva-voce (5 marks)

ESE Evaluation: Two experiments (10 marks), Viva-voce (10 marks)

References/ Suggested Readings:

1. Fundamentals of Data structures in C, 2nd Edition, E. Horowitz, S. Sahni and Susan Anderson-Freed, Universities Press.
2. Data structures and Algorithm Analysis in C, 2nd edition, M. A. Weiss, Pearson.
3. Data structures,Lipschutz: Schaum's outline series, Tata McGraw-Hill
4. Data Structure through C in Depth, S.K. Srivastava and DeepaliSrivastava, B.P.B Publication.

MINOR COURSE

Course Name: Cost Accounting

Course Code: BCAMN201

Course Type: **Minor (Theoretical)**	Course Details:**MNC-2**			L-T-P: **4–1–0**	
Credit: **5**	Full Marks: **100**	CA Marks		ESE Marks	
		Practical	Theoretical	Practical	Theoretical
			30		**70**

Course Content:

Theory

UNIT I. Introduction Meaning, scope, objectives and advantages of cost accounting; Cost centre and Cost Unit, Difference between financial and cost accounting, Limitation of Cost accounting, Classifications of cost.

UNIT II: Elements of cost and cost sheet.

UNIT III. Materials: Material/inventory control techniques. Accounting and control of purchases, storage and issue of materials. Inventory systems, EOQ, Various levels of stocks, Methods of pricing of materials issues — FIFO, LIFO, Simple Average method, Weighted average method and base stock method.

UNIT IV: Labour: Accounting and Control of labour cost. Time-keeping and time-booking. Concept of idle time, over time, labour turnover and fringe benefits. Methods of wage payment, Time Rate, Piece Rate, and Incentive schemes- Halsey, Rowan, Requisites of Good Wages Incentive Plan;

UNIT-V: Overheads: Classification, allocation, apportionment and absorption of overheads, Under- and over- absorption; Causes and treatment of Under- and over- absorption, Machine Hour Rate.

UNIT VI. Budgetary Control: Definition, features, importance, Classification Zero based Budgeting and Responsibility Accounting, Preparation of Cash Budget and Flexible Budget.

UNIT VII. Marginal Costing-concept of marginal cost and marginal costing; Assumptions, Cost-volume-profit analysis; Break-even analysis-using mathematical and graphical approaches, Profit-volume ratio, angle of incidence, margin of safety.

UNIT VIII: Standard Costing: Standard Costing and Variance Analysis: Meaning of standard cost and standard costing; advantages, limitations and applications; Variance Analysis – Material Variances and Labour Variances.

References/ Suggested Readings:

1. Cost Accounting-principles and practice, Arora, M.N., Vikas Publishing House, New Delhi.
2. Fundamentals of Cost Accounting, Jhamb, H. V., Ane Books Pvt Ltd, New Delhi.
3. Cost Accounting, Lal, Jawahar., and Srivastava, Seema, McGraw Hill Publishing Co., New Delhi.
4. Fundamentals of Cost Accounting, Singh, Surender, KitabMahal, Allahabad/New Delhi.
5. Management and Cost Accounting, Drury, Colin,Thomson Learning.
6. Cost Accounting: A Managerial Emphasis, Horngren, Charles T., George Foster and Srikant M. Dattar. Prentice Hall of India Ltd., New Delhi.
7. Cost Accounting: Principles and Methods, Jain, S.P., and Narang, K.L., Kalyani Publishers, Jalandhar.

SKILL ENHANCEMENT COURSE

Course Name: Web Designing with HTML, CSS

Course Code: BCASE201

Course Type: SEC **(Practical)**	Course Details:**SEC-2**			L-T-P: **0–0–6**	
Credit: 3	Full Marks: **50**	CA Marks		ESE Marks	
		Practical	Theoretical	Practical	Theoretical
		30		**20**	

Course Content:

Practical

Students are directed to do a minor project based on the contents of the course below (UNIT I to UNIT X) for internal and ESE evaluation.

UNIT I. Introduction to Web Design: Understanding the role and importance of web design, Exploring the components of a web page, Overview of web design principles and best practices.

UNIT II. Introduction to HTM: Understanding the structure and syntax of HTML, Working with HTML tags, attributes, and elements, Creating a basic web page using HTML.

UNIT III. HTML Document Structure: Defining the document type and character encoding, Organizing content with headings, paragraphs, lists, and tables, Incorporating images, links, and multimedia elements.

UNIT IV. HTML Forms and Input Validation: Creating forms for user input, Utilizing different form elements (e.g., text fields, checkboxes, radio buttons), Implementing form validation using HTML attributes.

UNIT V. Introduction to CSS: Understanding the purpose and benefits of CSS, Working with CSS selectors, properties, and values, Applying CSS styles to HTML elements.

UNIT VI. Styling Text and Typography: Formatting text using CSS properties (e.g., font-family, font-size, color), Applying text effects (e.g., bold, italic, underline), Customizing typography using Google Fonts and other resources.

UNIT VII. Box Model and Layouts: Understanding the box model concept, Controlling element dimensions, padding, margins, and borders, Creating different layout structures (e.g., fixed, fluid, responsive).

UNIT VIII. CSS Flexbox and Grid: Introduction to CSS Flexbox for flexible page layouts, Utilizing CSS Grid for advanced grid-based layouts, Creating responsive designs with media queries.

UNIT IX. Styling Links, Navigation, and Menus: Customizing link styles and states, Creating navigation menus using HTML lists and CSS, Implementing dropdown menus and responsive navigation patterns.

UNIT X. CSS Transitions and Animations: Creating smooth transitions between CSS states, Adding animations to elements using key frames and CSS properties, Incorporating CSS animation libraries and frameworks.

Internal (CA) Evaluation: Minor Project Report (15 marks), Demonstration of the minor project (10 marks), Viva-voce (5 marks).

ESE Evaluation: Presentation of the minor project (10 marks), Viva-voce (10 marks).

References/ Suggested Readings:

1. HTML & CSS: design and build websites, John Duckett, John Wiley & Sons, Inc.
2. Beginning Responsive Web Design with HTML5 and CSS3, Jonathan Fielding, Apress.