Shri Vaishnav Vidyapeeth Vishwavidyalaya, Indore
Shri Vaishnav School of Management

Choice Based Credit System (CBCS) in Light of NEP-2020
BBA+MBA - II SEMESTER (2022-2026)

ML307 ENVIRONMENTAL MANAGEMENT AND SUSTAINABILITY

COURSE CODE	CATEGORY	COURSE NAME	TEACHING & EVALUATION SCHEME								
			THEORY			PRACTICAL		L	T	P	CREDITS
			END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*				
ML307	AECC	Environmental Management and Sustainability	60	20	20	0	0	4	0	0	4

Legends: L - Lecture; T - Tutorial/Teacher Guided Student Activity; P – Practical; C - Credit; AECC- Ability Enhancement Compulsory Course

*Teacher Assessment shall be based on following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks.

Course Objective

1. To create awareness towards various environmental problems.
2. To create awareness among students towards issues of sustainable development.
3. To expose students towards envirocement friendly practices of organizations.
4. To sensitize students to act responsibly towards environment.

Examination Scheme

The internal assessment of the students' performance will be done out of 40 Marks. The semester Examination will be worth 60 Marks. The question paper and semester exam will consist of two sections A and B. Section A will carry 36 Marks and consist of five questions, out of which student will be required to attempt any three questions. Section B will comprise of one or more cases / problems worth 24 marks.

Course Outcomes

1. The course will give students an overview of various environmental concerns and practical challenges in environmental management and sustainability.
2. Emphasis is given to make students practice environment friendly behavior in day-to-day activities.

COURSE CONTENT

UNIT I: Introduction to Environment Pollution and Control

1. Pollution and its types (Air, Water, and Soil): Causes, Effects and Control measures
2. Municipal Solid Waste: Definition, Composition, Effects
3. Electronic Waste: Definition, Composition, Effects
4. Plastic Pollution: Causes, Effects and Control Measures

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UNIT II: Climate Change and Environmental Challenges

1. Global Warming and Green House Effect
2. Depletion of the Ozone Layer
3. Acid Rain
4. Nuclear Hazards

UNIT III: Environmental Management and Sustainable Development

1. Environmental Management and Sustainable Development: An overview
2. Sustainable Development Goals (17 SDGs)
3. Significance of Sustainable Development
4. Environment Friendly Practices At Workplace and Home (Three Rs' of Waste Management, Water Conservation, Energy Conservation)

UNIT IV: Environmental Acts

1. The Water (Prevention and Control of Pollution) Act, 1974: Objectives, Definition of Pollution under this act, Powers and Functions of Boards
2. The Air (Prevention and Control of Pollution) Act, 1981: Objectives, Definition of Pollution under this act, Powers and Functions of Boards
3. The Environment (Protection) Act, 1986: Objectives, Definition of important terms used in this Act, Details about the act.
4. Environmental Impact Assessment: Concept and Benefits

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UNIT V: Role of Individuals, Corporate and Society

1. Environmental Values
2. Positive and Adverse Impact of Technological Developments on Society and Environment
3. Role of an individual/ Corporate/ Society in environmental conservation
4. Case Studies: The Bhopal Gas Tragedy, New Delhi's Air Pollution, Arsenic Pollution in Ground Water (West Bengal), Narmada Valley Project, Cauvery Water Dispute, Fukushima Daiichi Disaster (Japan), Ozone Hole over Antarctica, Ganga Pollution, Deterioration of Taj Mahal, Uttarakhand flash floods

Suggested Readings:

1. Rogers, P.P., Jalal, K.F. , Boyd, J.A.(Latest Edition) . **An Introduction to Sustainable Development.** Earthscan
2. Kalam, A.P.J. (Latest Edition) . ***Target 3 Billion: Innovative Solutions Towards Sustainable Development.*** Penguin Books
3. Kaushik , A. and Kaushik (Latest Edition). ***Perspectives in Environmental Studies.*** New Delhi:
   New Age International Publishers.
4. Dhameja, S.K. (Latest Edition). ***Environmental Studies.*** S.K. Kataria and Sons.New Delhi
5. Bharucha, E. (Latest Edition). ***Environmental Studies for Undergraduate Courses.*** New Delhi: University Grants Commission.
6. Wright, R. T. (Latest Edition). ***Environmental Science: towards a sustainable future*** .New Delhi: PHL Learning Private Ltd.
7. Rajagopalan, R. (Latest Edition). ***Environmental Studies.*** New York: Oxford University Press.

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Shri Vaishnav Institute of Computer Applications

Name of the Program: BCA +MCA/ BCA +MCA (Banking Technology)

Subject Code	Category	Subject Name	Teaching & Evaluation Scheme								
			Theory			Practical		L	T	P	CREDITS
			End Sem University Exam	Two Term Exam	Teacher Assessment	End Sem University Exam	Teacher Assessment				
BCCA202N	BS	Mathematical Foundation of Computer Science II	60	20	20	0	0	3	1	-	4

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Course Educational Objectives (CEOs):
To introduce the students with the numerical techniques for computer science.

Course Outcomes (COs):
After the successful completion of this course students will be able to:

1. *construct the numerical solution of the algebraic and transcendental equations.*
2. *demonstrate the techniques of the finite difference calculus.*
3. *apply the techniques of Interpolation.*
4. *discuss the numerical solution of the system of linear algebraic equations.*

UNIT – I
Root finding: Newton's Methods, Fixed point iteration, ill-behaved root finding problems.

UNIT – II
Calculus of finite differences:
Operators, forward difference operator, backward difference operator, E-operator, relation between them, difference of a polynomial, factorial polynomial, Inverse operator. forward difference table, Backward difference Table.

UNIT – III
Interpolation
Introduction to Interpolation; Interpolation with equally spaced interval, forward and backward interpolation formula, Interpolation with unequally spaced intervals, Newton divided difference interpolation, Langrage's formula for interpolation and inverse interpolation.

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UNIT – IV

Numerical differentiation and integration- Calculation of Derivative of first order by forward and backward interpolation formula. Trapezoidal and Simpson's Rules, one-third rule, three-eight rule, Weddle's rule.

UNIT – V

Solution of system of linear algebraic equations: Gaussian elimination with pivoting, Jacobian and Gauss-Siedel iteration.

References

1. Akai Terrence J: Applied Numerical Methods for engineers, John Wiley & Sons, Inc. 1994
2. Schilling Robert J & Harried Sanddra L: Applied Numerical Methods for engineers, Thomson, 2000.
3. S. D. Conte and C. de Boor, Elementary Numerical Analysis - An Algorithmic Approach, McGraw Hill,2005.
4. B. S. Grewal, Higher Engineering Mathematics, Khanna Publishers, Delhi.
5. Erwin Kreyszig, Advanced Engineering Mathematics, 10th Ed, John Wiley Publisher.

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BCCA204	DCC	Data Structure using C	3	1	0	4	60	20	20	0	0

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Course Educational Objectives (CEOs):

- To understand the students with the applications of Standard data structure in real world problems.
- To provide knowledge of creation of new data structures.
- To familiarize the students with the analysis and design a particular problem.

Course Outcomes (Cos): students will be able to

- Demonstrate familiarity with major algorithms and data structures.
- Analyze performance of algorithms.
- Choose the appropriate data structure and algorithm design method for a specified application.
- Demonstrate understanding of the abstract properties of various data structures such as stacks, queues, lists, trees and graphs
- Demonstrate understanding of various sorting algorithms, including bubble sort, insertion sort, selection sort, heap sort and quick sort.
- Understand and apply fundamental algorithmic problems including Tree traversals, Graph traversals, and shortest paths.
- Demonstrate understanding of various searching algorithms.
- Program multiple file programs in a manner that allows for reusability of code.
- Compare different implementations of data structures and to recognize the advantages and disadvantages of the different implementations.
- Write complex applications using structured programming methods.

UNIT - I

The Concept of Data Structure, Abstract Data Type, Concept of List and Array, Introduction to Stack, Stack as an Abstract Data Type, Primitive Operations on Stack, Stack's Applications - polish notations

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BCCA204	DCC	Data Structure using C	3	1	0	4	60	20	20	0	0

Infix, Postfix, Prefix and Recursion. Introduction to Queues, Primitive operations on Queues, Queue as an Abstract Data Type, Circular Queue, Dequeue, Priority Queue, Applications of Queue.

UNIT - II

Linked List - Introduction to Linked List, Memory Representations of Linked List, comparison; Operations on Linked List, Linked Representation of Stack and Queue, Header Nodes. Types of Linked List : Doubly Linked List, Circular Linked List, Application of Linked List, Self Referential Structures.

UNIT –III

Trees: Definition, Basic Terminology of Trees, Tree Representations as Array and Linked. Binary Trees, Binary Tree Operations. Traversal of Binary Trees – In order, Preorder & Post order, Complete Binary Tree, almost complete binary tree; Application of Binary Tree.

UNIT-IV

Complexity: concept and notations. Searching: Sequential, Binary and their comparison. Sorting - External and Internal Sorting, Insertion Sort, Selection Sort, Quick Sort, Bubble Sort, Heap Sort, Comparison of Sorting Methods. Hashing;

UNIT-V

Graphs - Introduction to Graphs, Basic Terminology, Directed, Undirected and Weighted graph, Representation of Graphs, Graph Traversals - Depth First and Breadth First Search. Applications of Graphs.

Text Books:

1. Kruse R.L. Data Structures and Program Design in C; PHI
2. Aho, “Data Structure & Algorithms”.
3. Tremblyand*SORRENSON,*“Introduction to Data Structure with Applications”.
4. TennenBaum A.M. &others,“Data Structures using C & C++”; PHI
5. Horowitz &Sawhaney,“Fundamentals of Data Structures”, Galgotia Publishers.
6. YashwantKanetkar, “Understanding Pointers in C”, BPB.
7. Lpschuists, “Data Structure”, (Schaum 's Outline Series, McGraw Hill publication)
8. Ellis Horowitz and SartajSawhney, “Fundamentals of Computer Algorithm”

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BCCA205	AEC	Object Oriented Methodology and C++	3	1	0	4	60	20	20	0	0

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Course Educational Objectives (CEOs):

- To familiarize the students with programming and to encourage them to develop their logic.
- To make students well versed with C++ language to solve problems efficiently.
- Using simple and well-drawn illustrations develop their programming skills using modular programming.

Course Outcomes (COs): Student will be able to:

- Develop algorithms for problems.
- To understand the object oriented paradigm.
- Apply the programming concepts to solve the given problems.
- Write the programs using modular programming.
- Understand and write programs using various data structures very efficiently.
- Write the programs using pointers and to manage memory.
- To apply the knowledge of Object Oriented Methodology to write reusable code.
- Implement programs of file handling.

UNIT-I

Object Oriented Paradigm: Need, Features, comparison with other programming paradigm, various programming styles; Basic concepts: C++ basics, C++ character set, C++ Tokens (Identifiers, Keywords, Constants), operators, precedence and associativity, expressions, type conversion and type casting, Structure of a C++ Program (include files, main function), cout, cin, loops and decisions.

Use of I/O Operators (<< and >>), Cascading of I/O Operators, Inline Functions, Reference Variables, Call by Reference, Function Overloading.

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BCCA205	AEC	Object Oriented Methodology and C++	3	1	0	4	60	20	20	0	0

Unit II:
Concept of a class, Data Members and Member Functions, visibility modes, scope resolution operator (::); Objects: accessing members through object, object and classes, object arrays, passing objects as function arguments, Friend Function; Constructor and Destructor functions: Default Constructor, Overloaded Constructors, Copy Constructor, Constructor with default arguments, Dynamic Constructors.

UNIT-III
Operator overloading; Inheritance: Concepts of Base Class and Derived Class; Private, Public and Protected derivation of classes, accessibility of base class members by objects of derived class, access mechanism in classes, ambiguity resolution in inheritance, virtual base classes, constructors in derived classes, member/nested classes.

UNIT-IV
Pointers: Declaration and Initialization of Pointers; Dynamic memory allocation, new, delete operators; Pointers and Arrays: Array of Pointers, Pointer to an Array, Pointer to Objects, Array of Pointers to Objects, this Pointer, Pointers to Derived Classes, Virtual Functions, Early and Late Binding , Runtime Polymorphism, Pure Virtual Functions, Abstract Classes.

UNIT-V
C++ I/O system, Use of defined manipulators, formatted I/O, creating inserters and extractors, file I/O basics, Data File Handling: creating disk files and file manipulations using seekg(), seekp(), tellg() and tellp() functions, ifstream, of stream, file stream classes; Exception Handling: Try, Catch and Throw

Text Books:

1. Robert Lafore, "Object-Oriented Programming in C++", 4e, SAMS.
2. Ricahrd C. Lee, Wiiliam M. Tepfenhart"UML & C++: A Practical Guide To Object Oriented Development", 2e, Pearson.
3. Herbert Schildt, "C++ the complete reference", 4e, 2003.
4. E Balagurusamy, "Object Oriented Programming with C++", 6e, McGraw Hill Education.
5. G.Booch, "Object Oriented Analysis And Design With Applications", 3e, Pearson.
6. K.R. Venugopal, RajkumarBuyya, "Mastering C++", 2e, McGraw Hill Education.

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BCCA206	AEC	Programming Lab in C++	0	0	4	2	0	0	0	30	20

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- To make students well versed with C++ language to solve problems efficiently.
- Using simple and well-drawn illustrations develop their programming skills using modular programming.

Course Outcomes (COs): Student will be able to:

- Develop algorithms for problems.
- Apply the programming concepts to solve the given problems.
- Write the programs using modular programming.
- Understand and write programs using various data structures very efficiently.
- Write the programs using pointers and to manage memory.
- Implement programs of file handling.
- Compile and debug the programs
- Understand different error messages and to rectify them

List of Programs:

1. Write down the features of Object Oriented Programming?
2. Write down the advantages and disadvantages of OOP's?
3. Define copy constructor. Explain its significance. Under which condition is it invoked? Support your answer with an example.
4. Explain the purpose of function overloading. Write a C++ program that uses a function to check whether a given number is divisible by another number or not. Give proper comments whether the denominator number is a prime number or not.
5. Define a friend function. Explain the relation of friend function with respect to Public, Private and Protected data members of the class.

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BCCA206	AEC	Programming Lab in C++	0	0	4	2	0	0	0	30	20

6. Write a program in C++

a. To generate the following number pyramid

1. 0
ii. 1 0 1
b. 2 1 0 1 2
2. 3 2 1 0 1 2 3
ii. 4 3 2 1 0 1 2 3 4

b. Using recursion generate the Fibonacci series.

c. Create two function max and min to find the largest and smallest numbers respectively. Function select having arguments as a pointer to function and numbers. User will input the choice to find out the max or min.

d. Convert a 2 digit octet number into binary number and prints binary equivalent.

7. Write a function in C++ that take one string argument and return a reversed string.

8. Write a C++ program using structure to store information of 10 employee (id_no, empname, empadd, sal) and display information of an employee depending upon the employee no given.

9. Create a class contains name & telephone number as two of it's fields. Write a C++ Program

10. Using an object to do the following

11. (a) to add a record (b) to search of telephone number for a given name

12. (c) to determine the name of telephone number is known

13. (d) Updating the data file, whenever there is a change in telephone number.

14. Imagine a ticket selling booth at a fair. People passing by are requested to purchase a ticket. A ticket is priced as Rs 2.50/-. The booth keeps the track of the number of people that have visited the booth and of the total amount of money collected. Model this ticket selling booth with a class called **ticbooth** including following members: number of people visited, total number of money collected.

15. Member function:
(1)to assign initial values (2) to increment only people total in case ticket is not sold out. (3) to increment people total as well as amount total in case ticket is not sold out (4) to display the two totals (5) to display the number of tickets sold out.

16. Create a class Bank account of 20 customers with the following data members depositor no,

depositor name, account type(S for saving & C for current), balance amount. The class also contains the member functions to do the following :

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BCCA206	AEC	Programming Lab in C++	0	0	4	2	0	0	0	30	20

17. (a) initialize the data member **(b)** deposit money **(c)** Display the customer information

18. (d) withdraw money after checking the balance (min bal for saving account is 500 and for current 1000) **(e)** search the depositor details according to name or number or both.

19. Write a program that invoke a function newdate() to return an object Date type. The function newdate( ) take two parameters:

20. An object olddate of Date type **(b)** Number of days in integer

a. calculate the newdate as olddate + numbers of days and return newdate.

21. Write a program to interchange the private values of two classes by using a friend function swap().

22. Create a **Message** class with a constructor that takes a single **string** with a default value. Create a private member **string**, and in the constructor simply assign the argument **string** to your internal **string**. Create two overloaded member functions called **print( )**: one that takes no arguments and simply prints the message stored in the object, and one that takes a **string** argument, which it prints in addition to the internal message. Does it make sense to use this approach instead of the one used for the constructor?

23. Write C++ code to create a class date. Using this class, calculate the age of a person as on the current date.

24. Create a class contain Bookno, Book Title, Book price. The class also store and display the complete information of book. **Total_cost()** function calculate the cost of for **N** number of copies, where **N** is passed to the function as argument and **purchase()** function to ask the user it input the number of copies to be purchased. It invoke **Total_cost()** and print the total cost to be paid by the user.

25. Define a class string use overloaded = = operator to compare two string.

26. Find the largest value of two objects using > operator.

27. Write a C++ program to print the number between 1 to 100 and 100 to 1 using operator overloading.

28. Define a class String that could work as a user defined string type. Include a constructors that will enable us to create an uninitialized string String s1; and also to initialize an object with a string constant at the time of creation like String s2("Welcome"); Include a function that adds

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BCCA206	AEC	Programming Lab in C++	0	0	4	2	0	0	0	30	20

two strings to make a third string. Note that the statement s2=s1 ;will be perfectly reasonable expression to copy one string to another .

29. Write a complete program to test your class to see that it does the following tasks:

(a) Create uninitialized string objects. (b) Creates objects with string constants

(c) Concatenates two string (d) Display a desired string objects

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BCCA207	DCC	Data Structure Lab in C/C++	0	0	4	2	0	0	0	30	20

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- To choose a suitable data structure for a given problem.
- Write the programs using pointers and to manage memory.
- Implement programs of file handling.

List of Programs:

1. Write a program to create a two dimensional array and perform add, subtract and multiplication operations.
2. Write a program to create a two dimensional array using dynamic memory allocation.
3. Write a program to implement stack.
4. Write a program to convert infix expression into postfix expression.
5. Write a program to check balanced parentheses for a given infix expression.
6. Write a program to evaluate postfix expression.
7. Write a program to implement queue.
8. Write a program to implement circular queue.

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Vishwavidyalaya, Indore	Vishwavidyalaya, Indore		

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Shri Vaishnav Institute of Computer Applications

Name of the Program: BCA +MCA/ BCA +MCA (Banking Technology)

COURSE CODE	CATEGORY	COURSE NAME	L	T	P	CREDITS	TEACHING & EVALUATION SCHEME				
							THEORY			PRACTICAL	
							END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*
BCCA207	DCC	Data Structure Lab in C/C++	0	0	4	2	0	0	0	30	20

9. Write a program to implement link list with insert, delete, search, view, and delete function.
10. Write a program to implement ordered link list.
11. Write a program to add two polynomials.
12. Write a program to create doubly link list.
13. Write a program to implement tree with insert, delete and search function.
14. Write a program for in order, post order and preorder traversal of tree.
15. Write a program for binary search and sequential search using recursion.
16. Write a program for bubble sort and sequential search.
17. Write a program for insertion sort and quick sort.