



NGF COLLEGE OF ENGINEERING & TECHNOLOGY

DEPARTMENT OF COMPUTER SCIENCE

LESSON PLAN (July-Dec 2025)

Name of Teacher. Mr. Ashish Designation. A. P Subject Name: Mathematics
foundation to computer science

Branch: BCA DS

Semester:1st

Subject Code: BCG-101-V1

Date of Start:1/9/2025

Total Load: 30 hrs

Date of Completion:30/11/2025

Module/Unit-1: SET, RELATION AND FUNCTION

S.No	Name of Topic	Hours
1	Set, Set Operations, Properties of Set operations, Subset, Venn Diagrams	2
2	Cartesian Products. Relations on a Set, Properties of Relations, Representing Relations using matrices and digraphs,	2
3	Types of Relations, Equivalence Relation, Equivalence relation and partition on set, Closures of Relations, Warshall's algorithm.	2
4	Functions, properties of functions (domain, range), composition of functions, surjective (onto), injective (one-to-one) and bijective functions, inverse of functions. Some useful functions for Computer Science: Exponential and Logarithmic functions, Polynomial functions, Ceiling and Floor functions.	3
	Total	9

Module/Unit 2- COUNTING AND RECURRENCE RELATION:

S.No	Name of Topic	Hours
1	Basics of counting, Pigeonhole principle, permutation, combination, Binomial coefficients, Binomial theorem.	3
2	Recurrence relations, modelling recurrence relations with examples, like Fibonacci numbers, the tower of Hanoi problem.	2
3	Solving linear recurrence relation with constant coefficients using characteristic equation roots method.	2
	Total	7

Module/Unit-3: ELEMENTARY GRAPH THEORY:

S.No	Name of Topic	Hours
1	Basic terminologies of graphs, connected and disconnected graphs	2
2	Subgraph, paths and cycles, complete graphs, digraphs, weighted graphs, Euler and Hamiltonian graphs.	2

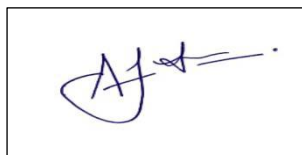
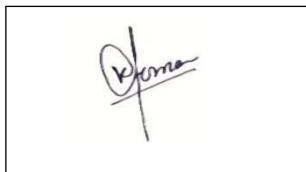
3	Trees, properties of trees, concept of spanning tree. Planar graphs. Definitions and basic results on the topics mentioned.	2
6	Evaluation of definite integrals by substitution, using properties of definite integral.	2
	Total	8

Module/Unit-4: MATRIX ALGEBRA

S.No	Name of Topic	Hours
1	Types of matrices, algebra of matrices—addition, subtraction, and multiplication of matrices	2
2	Determinant of a matrix, symmetric and skew-symmetric matrices, orthogonal matrix, rank of a matrix, inverse of a matrix	2
3	Applications of matrices to solve system of linear equations, Eigen values and Eigen vectors, Caley-Hamilton theorem.	2
	Total	6

TEXT BOOKS / REFERENCE BOOKS:

1. Garg, Reena, “Engineering Mathematics”, Khanna Book Publishing Company, 2024.
2. Garg, Reena, “Advanced Engineering Mathematics”, Khanna Book Publishing Company, 2023.
3. Deo Narsingh, “Graph Theory with Application to Engineering and Computer Science”, Prentice Hall, India, 1979.
4. Vasishtha A. R. and Vasishtha A. K., “Matrices”, Krishna Prakashan, 2022


Prof. (Dr.) Kuldeep Tomar

Signature of Teacher

Approved by HOD/Dean

Approved by IQAC Director/Dean Academics



NGF COLLEGE OF ENGINEERING & TECHNOLOGY

DEPARTMENT OF COMPUTER SCIENCE

LESSON PLAN (JULY-DEC 2025)

Name of Teacher: Anuradha **Designation:** Assistant Professor **Subject Name:** Problem solving technique

Branch: BCA DS

Semester: 1st

Subject Code:- BCG-103-V1

Date of Start: 1 September 25

Total Load: 27 hours

Date of Completion: 30-11-25

Module/Unit 1-

S.No	Name of Topic	Hours
1	Generalization and Special Cases, Types of Computational Problems	50 min
2	Classification of Problems, Analysis of Problems,	50 min
3	Solution Approaches, Algorithm Development, Analysis of Algorithm,	50 min
4	Efficiency, Correctness, Role of Data Structures in Problem Solving	50 min
5	Problem-Solving Steps (Understand the Problem, Plan, Execute, And Review),	50 min
6	Breaking the Problem into Subproblems, Input/Output Specification,	50 min
7	Input Validation, Pre and Post Conditions	50 min
	Total	5 hours 8 min

Module/Unit-2:

S.No	Name of Topic	Hours
1	Sequence (Input/Output/Assignment), Selection (If, If-Else)	50 min
2	Repetition (For, While, Do-While) Statements, Control Structure Stacking and Nesting.	50 min
3	Entry Controlled, Exit Controlled, Counter Controlled,	50 min
4	Definite, Indefinite and Sentinel-Controlled Repetitions.	50 min
5	Pseudocode and Flowcharts. Definition And Characteristics of Algorithms, Standard Algorithm Format	50 min

6	Displaying Different Patterns and Shapes Using Symbols and Numbers, Generating Arithmetic and Geometric Progression	50 min
7	Fibonacci and Other Sequences, Approximate Values For π , Sin(x), Cos(x), Etc.	50 min
8	Using Taylor Series. Different Kinds of Data in The Real World and How They are Represented in The Computer Memory. Representation of Integers: Signed Magnitude Form, 1's Complement And 2's Complement.	50 min
9	Representation of Integers: Signed Magnitude Form, 1's Complement And 2's Complement.	50 min
10	Representation of Real Numbers: IEEE 754 Floating Point Representation. Representation of Characters: ASCII, UNICODE.	50 min
11	Introduction To Programming Languages, Different Generations of Programming Languages. Typed Vs Typeless Programming Languages,	50 min
12	History of C Language, An Empty C Program. C Language Counterparts For Input (scanf()), Output (printf()) Statements, Assignment,	50 min
13	Arithmetic, Relational and Logical Operators. If, If-Else Statements, For, While, Do-While Statements. Data Types	50 min
14	Translating Pseudocode/Algorithm to C Program. Incremental Compilation and Testing of The C Program.	50 min
15	Simple Problems Involving Input, Output, Assignment Statement, Selection and Repetition. Good Coding Practices.	50 min
	Total	12 hours 5 min

Module/Unit 3

S.No	Name of Topic	Hours
1	Extracting Digits of a Number (Left to Right and Right to Left), Palindrome, Prime Number, Prime Factors,	50 min
2	micable Number, Perfect Number, Armstrong Number,	50 min
3	Factorial, Converting Number from One Base to Another. Statistics (Maximum, Minimum, Sum and Average) on a Sequence of Numbers which are Read using Sentinel-	50 min
4	Controlled Repetition using only a few Variables.	50 min
5	else-if Ladder, switch Case, Increment/Decrement Operators,	50 min
6	break and continue Statements.	50 min
	Total	5 hours

Module/Unit 4

S.No	Name of Topic	Hours
1	Top-Down and Bottom-Up Approaches to Problem Solving. Recursion. Problems on Arrays:	50 min
2	Reading and Writing of Array Elements, Maximum, Minimum, Sum, Average, Median and Mode	50 min
3	Sequential and Binary Search, Any one Sorting Algorithm. Matrix Operations.	50 min
4	Function Definition and Declaration (Prototype), Role of Return Statement,	50 min
5	One Dimensional and Two-Dimensional Arrays,	50 min
6	String Functions, other Operators, Operator Precedence and Associativity, Debugging.	50 min
	Total	5 hours

Text Books /

Reference Books

1. Venkatesh, Nagaraju Y, “Practical C Programming for Problem Solving”, Khanna Book Publishing Company, 2024.
2. “AICTE’s Programming for Problem Solving” (with Lab Manual), Khanna Book Publishing Company, 2024.
3. Harvey Deitel and Paul Deitel, “C How to Program”, 9th edition, Pearson India, 2015.
4. R G Dromey, “How to Solve It by Computer”.

Anuradha




Prof. (Dr.) Kuldeep Tomar

Signature of Teacher

Approved by HOD/Dean

Approved by IQAC Director/Dean Academics



NGF COLLEGE OF ENGINEERING & TECHNOLOGY

DEPARTMENT OF COMPUTER ENGINEERING

LESSON PLAN (July-Dec 2025)

Name of Teacher: Pooja

Designation: A.P

Subject Name: C.A

Branch: BCA DS

Semester: 1st

Subject Code: BCG-105-V1

Date of Start: 01 Sep 2025
Sep 2025

Total Load: 21.hrs 40 min **Date of Completion:** 30

Module/Unit-1:

S.No	Name of Topic	Hours
1	Definition for Digital signals, Digital logic, Digital computers	50 min
2	Von Neumann Architecture, Boolean Laws and Theorems, K-Map introduction	50 min
3	Truth Tables to K-Map, 2, 3 and 4 variable K Map, K-Map Simplifications, Don't Care Conditions, SOP and POS.	50 min
4	Decimal, Binary, Octal, Hexadecimal, Number System Conversions,	50 min
5	Binary Arithmetic, Addition and subtraction of BCD, Octal Arithmetic, Hexadecimal Arithmetic, Binary Codes, Decimal Codes	50 min
6	Error detecting and correcting codes, ASCII, EBCDIC, Excess-3 Code, The Gray Code.	50 min
	Total	5hr

Module/Unit 2-.....

S.No	Name of Topic	Hours
1	Combinational Circuits: Half Adder and Full Adder,	50 min
2	Subtractor, Decoders, Encoder	50 min
3	Multiplexer, Demultiplexer	50 min
4	Sequential Circuits: Flip-Flops- SR Flip- Flop,	50 min
5	D Flip-Flop, J-K Flip-Flop, T Flip-Flop.	50 min
6	Register: 4 bit register with parallel load Shift Registers- Bidirectional shift register with parallel load,	50 min
7	Shift Registers- Bidirectional shift register with parallel load, Binary Counters-4 bit synchronous and Asynchronous binary counter	50 min
	Total	5 hr 50 min

Module/Unit 3-.....

S.No	Name of Topic	Hours
1	Instruction Codes, Computer Registers, Computer Instructions, Timing and Control, Instruction Cycle,	50 min
2	Memory-Reference Instructions, Input- Output Interrupt, Complete Computer Description, Design of Basic Computer,	50 min
3	Design of Accumulator logic. Central Processing Unit: Introduction, General Register Organization,	50 min
4	Stack Organization, Instruction Formats,	50 min
5	Addressing Modes, Data Transfer and Manipulation, Program Control,	50 min
6	Reduced Instruction Set Computer(RISC), RISC Vs CISC.	50 min
	Total	5 hr

Module/Unit 4-.....

S.No	Name of Topic	Hours
1	Pipeline and Vector Processing: Parallel Processing, Pipelining, Arithmetic Pipeline, Instruction Pipeline, RISC Pipeline.	50 min
2	Input-Output Organization: Peripheral Devices, Input Output Interface,	50 min
3	Asynchronous data transfer, Modes of Transfer, Priority Interrupt, Direct	50 min
4	Asynchronous data transfer, Modes of Transfer, Priority Interrupt,	50 min
5	Direct 12 memory Access, Input-Output Processor(IOP). Memory Organization: Memory Hierarchy,	50 min
6	Main Memory, Auxiliary memory, Associate Memory	50 min
7	Cache Memory, Virtual Memory, Memory Management Hardware.	50 min
	Total	5 hours 50 min

Text Books/Reference Books

1. Donald P Leach, Albert Paul Malvino, Goutam Saha- “Digital
2. Principles & Applications” , Tata McGraw Hill Education Private Limited, 2011 Edition.



Signature of Teacher



Approved by HOD/Dean



Approved by IQAC Director/Dean Academics





NGF COLLEGE OF ENGINEERING & TECHNOLOGY

DEPARTMENT OF COMPUTER SCIENCE

LESSON PLAN (JULY-DEC 2025)

Name of Teacher: Ritu Dagar **Designation:** Assistant Professor

Subject Name: IKS

Branch: BCA DS

Semester: 1st Sem

Subject Code: VAC-104-V1

Date of Start: 1 Sept, 2025 **Total Load:** 22 Lectures (18 Hours, 20 Min)

Date of Completion: 30 Nov, 2025

Module/Unit-1: Introduction and foundational concepts of IKS

S.No	Name of Topic	Hours
1	Overview of various streams of knowledge in India	50 minutes
2	Classification of ancient Indian texts;	50 minutes
3	Various philosophical systems of India and fundamental principles inlaid in them	50 minutes
4	Revision	50 minutes
	Total	3 Hours, 20 Minutes

Module/Unit- 2: Psychology from Indian perspective, Yoga and Indian Linguistics

S.No	Name of Topic	Hours
1	Introduction to Ashtanga Yoga	50 minutes
2	Rasa Siddhanta of Natyasastra (theory of emotions)	50 minutes
3	Panini's contribution to linguistics	50 minutes
4	Contributions of the Vakyasastra and Pramanasastra to linguistics	50 minutes
	Total	3 Hours, 20 Minutes

Module/Unit- 3: Indian Mathematics and Astronomy

S.No	Name of Topic	Hours
1	An overview of Indian mathematics	50 minutes
2	Development of arithmetic geometry and Trigonometry	50 minutes
3	Introduction to spherical geometry and calculus in India	50 minutes
4	Vedic system of arithmetic computation, Vedic sutra for arithmetic computation	50 minutes
5	An introduction to Indian Astronomy, Pre and Post Siddhantic period	50 minutes
	Total	4 Hours, 10 Minutes

Module/Unit-4: Medicinal traditions in India

S.No	Name of Topic	Hours
1	An Introduction to Ayurveda	50 minutes
2	Distinct features, of Ayurveda, as compared to Alopahy	50 minutes
3	Excerpts from Sutrasthana	50 minutes
	Total	2 Hours, 30 minutes

Module/Unit-5: Indian Architecture and Planning

S.No	Name of Topic	Hours
1	Traditional measurement system used in Vastusastra	50 minutes
2	Prescriptions for residential Vastu	50 minutes
3	City planning as per Vastusastra	50 minutes
	Total	2 Hours, 30 minutes

Module/Unit-6: Economics, Management and Governance

S.No	Name of Topic	Hours
1	An overview of Indian economic thought - Arthasastra and Nitisastra	50 minutes
2	Leadership and Motivation, Planning and Organizing	50 minutes
3	Financial Management etc.	50 minutes
	Total	2 Hours, 30 minutes

TEXT BOOKS / REFERENCE BOOKS:

1. Introduction to Indian Knowledge System, B. Mahadevan, V. R. Bhat, NagendraPavana R. N., PHI. 2022
2. Yoga System of Patanjali, J. H. Woods, Bharatiya Kala Prakashan 2009
3. Indian Philosophy Vol I and II, S. Radhakrishnan, Oxford University Press. 2009



Signature of Teacher



Approved by HOD/Dean



Approved by IQAC Director/Dean Academics



NGF COLLEGE OF ENGINEERING & TECHNOLOGY
DEPARTMENT OF COMPUTER SCIENCE
LESSON PLAN (July- Dec 2025)

Name of Teacher: Ms. Chaman Lata
Professor

Designation: Assistant

Subject Name: General English

Branch: BCA DS

Semester: 1st

Subject Code: AEC-105-V1

Date of Start: 8 Sept. 2025 **Total Load:** 25 hours **Date of Completion:** 30 Nov 2025

Module/Unit-1: Vocabulary building

S.No	Name of Topic	Hours
1	Primary words , Prefixes & Suffixes	50 Min
2	Derivative Words and methods	50 Min
3	Word formation V-N, V-Adj, V-N& Adj	50 Min
4	Synonyms, antonyms, standard abbreviation	50 Min
	Total	3

Module/Unit 2-Basic writing skills

S.No	Name of Topic	Hours
1	Sentence structures	50 Min
2	Clause & phrases	50 Min
3	Clause & phrases	50 Min
4	Punctuation	50 Min
5	Coherence and methods	50 Min
6	Organizing principles of paragraph	50 Min
7	Techniques of precise writing	50 Min
	Total	6

Module/Unit 3-Identifying common errors

S.No	Name of Topic	Hours
1	S-V agreement	50 Min
2	S-V agreement	50 Min
3	N-P agreement	50 Min

4	Articles	50 Min
5	Prepositions	50 Min
6	Prepositions	50 Min
7	Redundancy	50 Min
8	Modifiers	50 Min
	Total	7

Module/Unit 4 Nature & style of sensible writing

S.No	Name of Topic	Hours
1	Sentence structures	50 Min
2	Clause & phrases	50 Min
3	Clause & phrases	50 Min
4	Punctuation	50 Min
5	Coherence and methods	50 Min
6	Organizing principles of paragraph	50 Min
7	Techniques of precise writing	50 Min
	Total	7

Module/Unit 4 Nature & style of sensible writing

S.No	Name of Topic	Hours
1	Describing & Defining	50 Min
2	Classifying & Providing examples & evidences Providing examples & evidences	50 Min
	Total	2

chaman lata

Signature of Teacher

Approved by HOD/Dean

Approved by IQAC Director/Dean Academics





NGF COLLEGE OF ENGINEERING & TECHNOLOGY

DEPARTMENT OF COMPUTER SCIENCE

LESSON PLAN (july-dec 2025)

Name of Teacher: Ms. Aarti

Designation: Assistant Professor

Subject Name: Environment policy and sustainability

Branch: BCA DS

Semester: 1ST

Subject Code: VAC-101-V

Date of Start: 26 August 2025

Total Load: 20 hr 10min.

Date of Completion: 21 Nov. 2025

Module/Unit-1: understanding environmental natural resource and sustainability

S.No	Name of Topic	Hours
1	Introduction of environmental science and sustainability	50min
2	Historical environmental movements concept of sustainability	100min
3	Classification of natural resource, issue related to their overutilization, strategies for their conservation	50min
4	Water conservation, energy security' food security issue ' the conservation and equitable use of resource	100min
5	Integrational equity and the importance of public awareness and education	100
	Total	6hour 40 min

Module/Unit 2- Eco system , biodiversity, and sustainable practices

S.No	Name of Topic	Hours
1	Meaning of various natural ecosystem learning about their structure, functions and ecological characteristics	50min
2	Importance of biodiversity, methods of its use for its conservation	50 min
3	Ecosystem resilience , homeostasis, carrying capacity of its	50min
4	Meaning of conservation natural resource	50 min
5	Significance of India as mega diverse nation	100min

	Total	3hour 20 min

Module/Unit 3-environmental pollution and waste management and sustainable development

S.No	Name of Topic	Hours
1	Meaning of environmental pollution, the role of businesses in mitigating disaster impact	50min
2	Air,water ,noise ,soil and marine pollution Solid waste management, man mad disaster	100min
3	Impact of business communities , cause of pollution- such as global climate Change ozone depletion greenhouse effects.	100 min
	Total	3 hour 20 min hour

Module/Unit-4 social issue , legislation and practical applications

S.No	Name of Topic	Hours
1	Dyanamic interaction between society and environment ,focus and sustainable development and environment ethics	50min
2	Role of business in achieving sustainable development goals and and promoting responsible consumption	100min
3	Legalisation and judiciary role in environmental protection	50min
4	The water act1974,the environmental act 1986, the air act 1981,the environmental justice and environmental refugees	50 min
5	The resettlement and rehabilitation of effected pollution , ecological economic, human population growth and the demographic change in India	50min
	Total	5hr

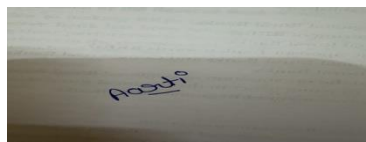
Text books :

- **Environmental Science And Sustainability BCA First Semester:** A textbook published by Thakur Publicationdesigned for the BCA syllabus.

- **Environment and Ecology BCA First Semester**: Another option from [Thakur Publication](#), this book covers fundamental environmental concepts and is also aimed at the BCA program.
- **"Environmental Studies" by Poonia, M.P.**: A widely used textbook from Khanna Book Publishing Co.

Reference books :

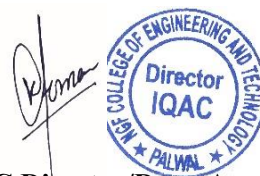
- Roy, M. G., "Sustainable Development: Environment, Energy and Water Resources". Ane Books.
- Pritwani, K., "Sustainability of business in the context of environmental management". CRC Press.
- Wright, R.T. & Boorse, D.F., "Environmental Science: Toward A Sustainable



Signature of Teacher



Approved by HOD/Dean



Approved by IQAC Director/Dean Academics



NGF COLLEGE OF ENGINEERING & TECHNOLOGY

DEPARTMENT OF COMPUTER SCIENCE

LESSON PLAN (July-Dec 2025)

Name of Teacher: Mr. Nakul Parashar
Trainer

Designation: French Language

Subject Name: Ability Enhancement Elective – 1, French - I

Branch: BCA (DS)

Semester: Ist

Subject Code: AEC-309-V

Date of Start: 1- 09-2025

Total Load: 25 hr

Date of Completion: 30-11-2025

Module/Unit-1: Objectifs Communication

S.No	Name of Topic	Hours
1	S'initier à la culture française:.	1
2	Décrire une personne:	1
3	Dire la nationalité:	2
4	Parler des saisons:	1
5	Demander et donner des goûts et des préférences:	1
	Total	6

Module/Unit 2- Grammaire/ Vocabulaire

S.No	Name of Topic	Hours
1	Les verbes en (er):	1
2	Les pronoms sujets:	1
3	Les articles définis:	1
4	Le corps humain:	2
5	Les verbes en (ir):	1
6	Les articles indéfinis:	1
7	La négation:	1
	Total	8

Module/Unit 3- Les verbes / Vocabulaire

S.No	Name of Topic	Hours
1	Les verbes en -ger	1
2	Le féminin et le pluriel	1
3	Les expressions avec faire	1
4	Les nombres (1-100)	2
5	Les prépositions	1

6	L'interrogation	1
7	Les verbes en -re et irréguliers	1
8	Les repas français	1
9	Les adjectifs possessifs	1
10	Décrire une ville	1
	Total	11



Signature of Teacher



Approved by HOD/Dean



Approved by IQAC Director/Dean Academics



NGF COLLEGE OF ENGINEERING & TECHNOLOGY

DEPARTMENT OF COMPUTER SCIENCE ENGINEERING

LESSON PLAN (JUNE-DEC 2025)

Name of Teacher: Anuradha Designation: Assistant Professor

Subject Name :Problem solving Technique

Branch: BCA(DS) Semester: 1ST Subject Code: BCG-107-VI

Date of start : 1-09-25

Date of completion:30-11-25

Total load :40 hours

LIST OF PROGRAMS

1	Converting degrees Celsius to Fahrenheit and vice versa?	100min
2	Display three input numbers in sorted (non-decreasing) order?	100min
3	Given a positive integer value n (≥ 0) display number, square and cube of numbers from 1 to n in a tabular format?	100min
4	Given an input positive integer number, display odd numbers from in the range $[1, n]$?	100min
5	Display first mathematical tables, each table up to 10 rows? Generalise this to display	100min
6	Display the following patterns of n rows ($n > 0$), for the below examples $n = 5$?	100min
7	Given the first term (a), difference/multiplier (d) and number of terms ($n > 0$), display the first n terms of the arithmetic/geometric progression?	100min

8	Display the first n ($n > 0$) terms of the fibonacci sequence?	100min
9	Display the first n ($n > 0$) terms of the Tribonacci sequence?	100min
10	Given two positive integer numbers n1 and n2 check if the numbers are consecutive numbers of the fibonacci sequence?	100min
11	Compute approximate value of π considering first n ($n > 0$) terms of the Taylor series for π ?	100min
12	.Compute approximate value of e^x considering first n ($n > 0$) terms of the Taylor series for e^x ?	100min
13	Compute approximate value of $\sin(x)/\cos(x)$ considering first n ($n > 0$) terms of the Taylor series for $\sin(x)/\cos(x)$?	100min
	Extract digits of an integer number (left to right and right to left)?	100min
14	Given a sequence of digits form the number composed of the digits. Use sentinel controlled repetition to read the digits followed by -1. For example, for the input 2 7 3 2 9 -1 the output number is 27329?	100min
15	Check if a given positive integer number is a palindrome or not?	100min
16	Compute character grade from the marks ($0 \leq \text{marks} \leq 100$) of a subject. Grading Scheme: 80-100 : A, 60 - 79: B, 50 - 59: C, 40-49: D, 0-39: F? Solve this using both else-if ladder and switch case?	100min
17	Check if a given positive integer number is a prime number or not?	100min
18	Compute prime factors of a positive integer number?	100min
19	Compute the sum of a sequence of numbers entered using sentinel controlled repetition?	
20	Use of if while and switch ,break and continue	100min

Anuradha

Signature of Teacher

Approved by HOD/Dean



Approved by IQAC Director/Dean Academics



NGF COLLEGE OF ENGINEERING & TECHNOLOGY
DEPARTMENT OF COMPUTER SCIENCE ENGINEERING
LESSON PLAN (JUNE-DEC 2025)

Name of Teacher:Pooja **Designation:** Assistant Professor **Subject Name** Computer Architecture lab

Branch: BCA-Ds

Semester: 1st

Subject Code: BCG-109-V1

Date of Start: 01 sep 2025

Total Load:26 hours 40 min

Date of Completion: 30 Nov 2025

S.No	Name of Experiments	Hours
1	Verify logic behavior of AND, OR, NAND, NOR, EX-OR, EX-NOR, Inverter and Buffer gates, Familiarize the computer system layout: marking positions of SMPS, motherboard, FDD, HDD, CD, DVD and add-on cards.	100 min
2	To study and verify NAND as a Universal Gate, Identify the Computer Name and Hardware Specification (RAM capacity, Processor type, HDD, 32 bit/64 bit).	100 min
3	To verify De-Morgan's theorem for 2 variables. Identify and troubleshoot the problems of RAM, SMPS and motherboard.	100 min
4	Design and test an S-R flip-flop using NAND/NOR gate. Configure BIOS settings – disable and enable USB and LAN.	100 min
5	Convert BCD to Excess-3 code using NAND gate. Add additional RAM to the system (expand RAM size).	100 min
6	Convert Binary to Grey Code. Study motherboard layout of a system.	100 min
7	Verify Truth Tables of J-K Flip-Flop using NAND/NOR gate. Demonstrate the assembly of a PC.	100 min
8	Realize Decoder and Encoder circuits using Basic Gates. Demonstrate various ports: CPU, VGA, PS/2 (keyboard, mouse), USB, LAN, Speaker, Audio.	100 min
9	Design and implement a 4:1 Multiplexer using gates. Install and configure Windows Operating System.	100 min
10	Implement a 4-Bit Parallel Adder using 7483 IC. Study the installation and troubleshooting of a printer.	100 min
11	Design and verify operation of Half Adder and Full Adder.	100 min
12	Design and verify operation of Half Subtractor.	100 min

13	Design and implement a 4-bit Shift Register using Flip-Flops.	100 min
14	Implement Boolean function using logic gates in both SOP and POS forms.	100 min
15	Design and implement a 4-bit Synchronous Counter.	100 min
16	Design and verify operation of a 4-bit Asynchronous Counter.	100 min
	Total	26 hours 40 min



Signature of Teacher



Approved by HOD/Dean



Approved by IQAC Director/Dean Academics



NGF COLLEGE OF ENGINEERING & TECHNOLOGY
DEPARTMENT OF COMPUTER SCIENCE
LESSON PLAN (JULY-DEC 2025)

Name of Teacher: Keshav Maheshwari **Designation:** Lecturer

Subject Name:

Data Structure

Branch: BCA(DS)

Semester:3rd

Subject Code: BCA-23-201

Date of Start: 21July

Total Load:30 hrs 50mns

Date of Completion: 21Nov

UNIT – I: Introduction to Data Structure and Strings

S.No	Name of Topic	Hours
1	Elementary data organization, Data Structure definition	50
2	Data type vs. data structure	50
3	Categories of data structures	50
4	Data structure operations, Applications of data structures	50
5	Algorithms complexity and time-space tradeoff	50
6	Strings Introduction and Storing strings	50
7	String operations, Pattern matching algorithms	50
8	Linear search and binary search	50
	Total	6 Hrs 40 Mins

UNIT – II: Arrays and Linked List

S.No	Name of Topic	Hours
1	Introduction and Linear arrays	50
2	Representation of Linear memory in array and address calculation	50
3	Array Traversal, Deletion and Insertion	50
4	Multidimensional array, Parallel array and Sparse array	50
5	Searching Algorithms	50
6	Sorting Algorithms	50
7	Linked List Introduction and Arrays vs linked list	50
8	Representation of linked list in memory	50
9	Linked list traversal, deletion and insertion	50

S.No	Name of Topic	Hours
10	Searching a Linked list and Header linked list	50
11	Circular linked list and Two-way linked list	50
12	Threaded list, Garbage Collection and Applications of Linked list	50
Total		10 Hrs 00 Mins

UNIT – III: Stack and Queues

S.No	Name of Topic	Hours
1	Introduction of Stack	50
2	Array and linked list representation of Stack	50
3	Operations on Stack and Applications of Stack	50
4	Polish notation, reverse polish notation	50
5	Recursion and Evaluation on Arithmetic operations	50
6	Introduction of Queue	50
7	Array and linked list representation of Queue	50
8	Operations on Queue and Dequeues	50
9	Priority Queues and Application of Queues	50
Total		7 Hrs 30 Mins

UNIT – IV: Tree and Graph

S.No	Name of Topic	Hours
1	Introduction to tree	50
2	Representation binary tree in memory	50
3	Traversing binary tree using recursion and stack	50
4	Introduction to Graph	50
5	Matrix, List and linked representation of graph	50
6	Traversal of the graph	50
7	Warshall's and Dijkstra algorithms for the shortest path	50
8	Minimum spanning tree: Prim's and Kruskal's algorithms	50
Total		6 Hrs 40 Mins

Text Books / Reference books

- 1 Seymour Lipschutz, “Data Structure”, Tata-McGraw-Hill
- 2 Aaron M. Tanenbaum, Data Structures using C/C++, PHI
Horowitz, Sahni & Anderson-Freed, “Fundamentals of Data Structures in C”,
Orient Longman.
- 3 Trembley, J.P. And Sorenson P.G., “An Introduction to Data Structures With
Applications”, Mcgrraw- Hill International Student Edition, New York.
- 4 Mark Allen Weiss Data Structures and Algorithm Analysis In C, Addison-
Wesley, (An Imprint Of Pearson Education), Mexico City. Prentice- Hall Of
India Pvt. Ltd., New Delhi.



Signature of Teacher



Approved by HOD/Dean



Approved by IQAC Director/Dean Academics



NGF COLLEGE OF ENGINEERING & TECHNOLOGY

DEPARTMENT OF COMPUTER SCIENCE

LESSON PLAN (July-Dec 2025)

Name of Teacher: Mr. Gourav

Designation: Asstt. Professor Subject Name: OOPs

Branch: BCA DS

Semester: 3rd

Subject Code: BCG-23-203

**Date of
Start: 21/7/2025**

Total Load: 21 hrs

**Date of
Completion: 21/11/2025**

Unit I: Object Oriented Programming Concepts

S.No	Name of Topic	Hours
1	Procedural Language and Object-Oriented approach, Characteristics of OOP,	1
2	user-defined types, polymorphism, and encapsulation.	1
3	Getting started with C++: syntax, data types,	1
4	variables, string, function, namespace and exception,	1
5	operators, flow control, recursion, array and pointer, and structure.	1
	Total	5

Unit II: Abstracting Mechanism and Memory Management

S.No	Name of Topic	Hours
1	Classes, private and public, Constructor and Destructor,	1

2	member function, static members, references;	1
3	Memory Management: new, delete, object copying,	1
4	copy constructor, assignment operator, this input/output.	1
	Total	4

Unit III: Inheritance and Polymorphism

S.No	Name of Topic	Hours
1	Derived Class and Base Class, Different types of Inheritance,	1
2	Overriding member function, Abstract Class,	1
3	Public and Private Inheritance, Ambiguity in Multiple inheritances,	1
4	Virtual function, Friend function,	1
5	Static function, Operator Overloading.	1
6	Template and Standard Template Library: Template classes,	1
7	declaration, template functions,	1
8	namespace, string, iterators, hashes, streams, and other types.	1
	Total	8

Unit IV Exception and File Handling

S.No	Name of Topic	Hours
1	Exception and derived class, function exception declaration,	1
2	unexpected exception, and exception when handling an exception,	1
3	unexpected exception, and exception when handling an exception,	1
4	Streams and File handling: I/O streams, fos.open, fos.close, I/O stream libraries.	1
	Total	4

TEXT BOOKS and REFERENCE BOOKS:

1. A. M. Tenenbaum, Langsam, Moshe J. Augentem , “*Data Structures using C*,” PHI Pub.
2. A.V. Aho, J.E. Hopcroft and T.D. Ullman, “*Data Structures and Algorithms*” Original edition, Addison- Wesley, 1999, Low Priced Edition.
3. Ellis Horowitz & Sartaj Sahni, “*Fundamentals of Data structures*” Pub, 1983,AW

Gourav

Signature of Teacher



Approved by HOD/Dean



Approved by IQAC Director/Dean Academics





NGF COLLEGE OF ENGINEERING & TECHNOLOGY

DEPARTMENT OF COMPUTER SCIENCE

LESSON PLAN (JULY-DEC 2025)

Name of Teacher: Nitika **Designation:** Assistant prof. **Subject Name:** IWT
Branch: BCA(DS) **Semester:** III **Subject Code:** BCA-23-205
Date of Start: 21-07-2025 **Total Load:** 48hrs **Date of Completion:** 21-11-2025

Unit-1: Introduction to Internet and World Wide Web

S.No	Name of Topic	Hours
1	Evolution and History of World Wide Web	50min
2	Basic features	50min
3	Web Browsers	50min
4	Web Servers	50min
5	Hypertext Transfer Protocol	50min
6	Overview of TCP/IP and its services	50min
7	URLs	50min
8	Searching and WebCasting Techniques	50min
9	Search Engines	50min
10	Search Tools.	50min
11	Revision	50min
	Total	9

Unit 2- HTML

S.No	Name of Topic	Hours
1	Introduction to HTML	50min
2	Hypertext and HTML	50min
3	HTML Document Features	50min
4	HTML command Tags	50min
5	HTML command Tags	50min
6	Creating Links	50min
7	Creating Links	50min
8	Headers	50min
9	Textstyles	50min
10	Text Structuring	50min
11	Text colors and Background	50min
12	Formatting text	50min
13	Page layouts,	50min
14	Revision	50min

	Total	11hr
--	--------------	------

Unit-3: Dynamic HTML

S.No	Name of Topic	Hours
1	Ordered and Unordered lists	50min
2	Inserting Graphics	50min
3	Table Creation	50min
4	Table Creation and Layouts	50min
5	Frame Creation	50min
6	Frame Creation and Layouts	50min
7	Working with Forms	50min
8	Working with Forms and Menus	50min
9	Working with Radio Buttons	50min
10	Check Boxes	50min
11	Text Boxes	50min
12	Dynamic HTML	50min
13	Features of DHTML	50min
14	CSS	50min
15	CSS	50min
16	CSSP	50min
17	JSSS	50min
18	Architecture of Web Browser	50min
19	The ID attributes	50min
20	DHTML events	50min
21	Revision	50min
	Total	18 hr

Unit-4: Web Publishing

S.No	Name of Topic	Hours
1	Hosting your Site	50min
2	Internet Service Provider	50min
3	Web terminologies	50min
4	Phases of Planning and designing your Web Site	50min
5	Steps for developing your Site	50min
6	Choosing the contents	50min
7	Home Page	50min
8	Domain Names	50min
9	Front page views	50min

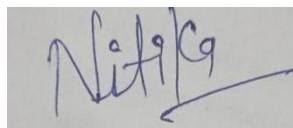
10	Hosting website on server and on cloud	50min
11	Security issues related to website	50min
12	Revision	50min
	Total	10 hr

TEXT BOOKS:

1. Douglas E. Comer : Computer Networks and Internets.
2. Raj Kamal, “Internet and Web Technologies”, Tata McGraw-Hill
3. Thomas A. Powell, “Web Design: The Complete Reference” , 4/e, Tata McGraw-Hill

REFERENCE BOOKS:

1. Wendy Willard, “HTML Beginners Guide”, Tata McGraw-Hill.
2. Deitel and Goldberg, “Internet and World Wide Web, How to Program”, PHI.



Signature of Teacher



Approved by HOD/Dean



Approved by IQAC Director/Dean Academics





NGF COLLEGE OF ENGINEERING & TECHNOLOGY

DEPARTMENT OF COMPUTER SCIENCE

LESSON PLAN (July-Dec 2025)

Name of Teacher. Mr. Ashish

Designation. Asstt. Professor

Subject Name: Algebra & Calculus

Branch: BCA DS

Semester:3rd

Subject Code: BCA-23-207

Date of Start: 21/7/2025

Total Load: 28 hrs

Date of Completion: 21/11/2025

Module/Unit-1: MATRICESs

S.No	Name of Topic	Hours
1	Definition, Types of Matrices, Addition, Subtraction, Scalar Multiplication and Multiplication of Matrices	1
2	Adjoint, Inverse, solving system of linear equation Cramer's Rule	2
3	Symmetric, Skew-Symmetric, Orthogonal and Unitary matrices	1
4	Rank of a Matrix, Consistency, Characteristic equation – Eigen values and Eigen vectors.	2
	Total	6

Module/Unit 2- DIFFERENTIAL CALCULUS

S.No	Name of Topic	Hours
1	Derivative of a function, Derivatives of Sum, Differences, Product & Quotient of functions.	2
2	Derivatives of polynomial, trigonometric, exponential, logarithmic.	2
3	Inverse trigonometric and implicit functions.	1
4	Logarithmic Differentiation, Chain Rule and differentiation by substitution.	2
	Total	7

Module/Unit-3: INTEGRAL CALCULUS

S.No	Name of Topic	Hours
1	Indefinite Integrals, Methods of Integration by Substitution	2
2	By Parts	1
3	Partial Fractions, Integration of Algebraic and Transcendental Functions	1
4	Reduction Formulae for simple and Trigonometric Functions	1
5	Definite Integral as Limit of Sum, Fundamental Theorem of Integral Calculus	2

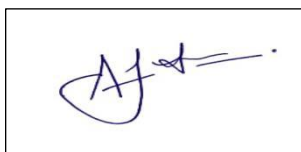
6	Evaluation of definite integrals by substitution, using properties of definite integral.	1
	Total	8

Module/Unit-4: SEQUENCES AND SERIES

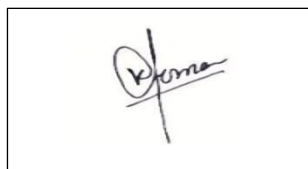
S.No	Name of Topic	Hours
1	Convergence of sequences and series, the convergence of geometric series and p-series (without proof)	2
2	Test of convergence (comparison, ratio and root tests without proof)	1
3	Alternating series and Leibnitz test, absolute and conditional convergence.	1
4	Taylor series (without proof, assuming the possibility of power series expansion in appropriate domains)	1
5	Binomial series and series representation of exponential, trigonometric, logarithmic functions (without proofs of convergence)	2
	Total	7

TEXT BOOKS and REFERENCE BOOKS:

1. H. Anton, I. Biven, S. Davis, "Calculus", Wiley, 10th edition, 2015.
2. Erwin Kreyszig, Advanced Engineering Mathematics, 10th Edition, John Wiley & Sons, 2016.
3. Veerarajan T., Engineering Mathematics for first year, Tata McGraw-Hill, New Delhi, 2008.
4. B.S. Grewal, Higher Engineering Mathematics, Khanna Publishers, 36 Edition, 2010



Signature of Teacher



Approved by HOD/Dean



Approved by IQAC Director/Dean Academics



NGF COLLEGE OF ENGINEERING & TECHNOLOGY

DEPARTMENT OF COMPUTER SCIENCE

LESSON PLAN (Jan-July 2025)

Name of Teacher: Ms. Priyanka Designation: Assistant Professor Subject Name: ECC

Branch: BCA-DS Semester: III Subject Code: AEC-103-N3

Date of Start: 14/07/2025 Total Load: 26 Date of Completion: 21/11/2025

Unit-1: Writing skills and Basics of Grammar

S.No	Name of Topic	Hours
1	Subject-verb agreement	1
2	tense-verb usage	1
3	sentence correction	1
4	Composition of a Paragraph; Characteristics of a Good Paragraph	1
5	Use of Idioms and Proverbs	1
6	Literary Tropes and Use of Figures of Speech.	1
	Total	6

Unit 2-Technical Writing and Reports

S.No	Name of Topic	Hours
1	SPSE structure; IMRD structure	1
2	Report Writing: Types of Reports and Structure of a Long Report.	1
3	Hedging, Nominalization	1
4	Memos; Agenda and MoM; Case Study Method	1
5	Presentations.	1
6	Business Letters-quotation and placing order.	1
	Total	6

Unit 3- Drafting proposals

S.No	Name of Topic	Hours
1	From essays to proposals	1
2	types of essay Writing : structure of an essay	1

3	Argumentative essays; Expository essays; Narrative essays; and Descriptive essays;	1
4	Structure of an Essay Reading, Writing and Comprehension	1
5	Drafting proposals;	1
6	Synopsis Writing	1
7	Definitions; comparisons and contrasts	1
8	Hedging; Nominalization	1
9	proposal presentations	2
	TOTAL	10

Unit 4-Exercises in Proposal Presentations

S.No	Name of Topic	Hours
1	Drafting Proposals.	2
2	Presenting Proposals.	2
	Total	4

TEXT BOOKS/REFERENCE BOOKS:

1. A Handbook of Literary Terms – M. H. Abrams

2. ETC – Bharti Kukreja & Dr. Anupma Jain

3. Academic Writing: A Handbook for International Students – Stephen Bailey

English for Academic Purposes – R. R. Jordan

4. Writing Successful Business Proposals – Richard C. Freed, Shervin Freed, Joe Romano

Proposal Writing: Effective Grantsmanship – Soraya M. Coley & Cynthia A. Scheinberg

5. Business Communication Today – Courtland L. Bovee & John V. Thill

The Craft of Research – Wayne C. Booth, Gregory G. Colomb, Joseph M. Williams



Signature of Teacher



Approved by HOD/Dean




Approved by IQAC Director/Dean Academics

**LESSON PLAN (July-Dec2025)****Name of Teacher:** Poonam chaudhary**Designation:** Asst.. Professor**Subject Name:** Environment Science**Branch:**BCA (DS)**Semester:**3rd**Subject Code:** VAC-102-N1**Date of Start:** 21-July-2025**Total Load:** 25 hrs**Date of Completion:** 21-Nov-2025**Module/Unit-1: Environment Pollution and Health**

S.No	Name of Topic	Hours
1	Understanding pollution: Production processes and generation of wastes; Assimilative capacity of the environment; Definition of pollution; Point sources and non-point sources of pollution.	1
2	Air pollution: Sources of air pollution; Primary and secondary pollutants; Criteria pollutants carbon monoxide, lead, nitrogen oxides, ground-level ozone, particulate matter, and sulphur dioxide; Other important air pollutants- Volatile Organic compounds (VOCs), Peroxyacetyl Nitrate (PAN), Polycyclic aromatic hydrocarbons (PAHs) and Persistent organic pollutants (POPs); Indoor air pollution; Adverse health impacts of air pollutants; National Ambient Air Quality Standards	2
3	Water pollution: Sources of water pollution; River, lake, and marine pollution, groundwater pollution; water quality. Water quality parameters and standards; adverse health impacts of water pollution on human and aquatic life.	1
4	Soil pollution and solid waste: Soil pollutants and their sources; Solid and hazardous waste; Impact on human health.	1
5	Noise pollution: Definition of noise; Unit of measurement of noise pollution; Sources of noise pollution; Noise standards; adverse impacts of noise on human health.	1
6	Thermal and Radioactive pollution: Sources and impact on human health and ecosystems	1
	Total	7

Module/Unit 2 Climate Change: Impacts, Adaptation and Mitigation

S.No	Name of Topic	Hours
1	Understanding climate change: Natural variations in climate; Structure of atmosphere; Anthropogenic climate change from greenhouse gas emissions– past, present and future	1
2	Projections of global climate change with special reference to temperature, rainfall, climate variability and extreme events; Importance of 1.5 °C and 2.0 °C limits to global warming; Climate change projections for the Indian sub-continent.	1
3	Impacts, vulnerability and adaptation to climate change: Observed impacts of climate change on ocean and land systems; Sea level rise, changes in marine and coastal ecosystems; Impacts on forests and natural ecosystems; Impacts on animal species, agriculture, health, urban infrastructure; the concept of vulnerability and its assessment; Adaptation vs. resilience	2
4	Climate-resilient development; Indigenous knowledge for adaptation to climate change. Mitigation of climate change: Synergies between adaptation and mitigation measures; Green House Gas (GHG) reduction vs. sink enhancement;	1
5	Concept of carbon intensity, energy intensity, and carbon neutrality; Energy efficiency measures; Renewable energy sources; Carbon capture and storage, National climate action plan and Intended Nationally Determined Contributions (INDCs); Climate justice	1
Total		6

Module/Unit 3: Environmental Management

S.No	Name of Topic	Hours
1	Introduction to environmental laws and regulation: Constitutional provisions- Article 48A, Article 51A (g) and other derived environmental rights. Environmental legislations in India: The Wild Life (Protection) Act, 1972; The Water (Prevention and Control of Pollution) Act, 1974; The Forest (Conservation) Act, 1980;	2
2	The Air (Prevention and Control of Pollution) Act, 1981; The Environment (Protection) Act, 1986; The Biological Diversity Act, 2002; The Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006;	1

3	Noise Pollution (Regulation and Control) Rules, 2000; Industry-specific environmental standards; Waste management rules. Environmental management system: ISO 14001	1
4	Concept of Circular Economy, Life cycle analysis; Cost-benefit analysis, Environmental audit and impact assessment; Environmental risk assessment,	1
5	Pollution control and management; Waste Management-Concept of 3R (Reduce, Recycle and Reuse) and sustainability; Ecolabeling /Eco mark scheme.	1
Total		6

Module/Unit 4 Environmental Treaties and Legislation

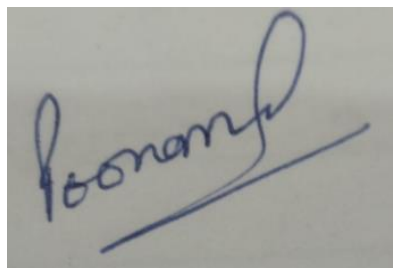
S.No	Name of Topic	Hours
1	An overview of the following national and international cooperation, agreements, conventions, protocols - adoption, signature, ratification and entry into force; binding and nonbinding measures; Conference of the Parties (COP)	1
2	Vienna Convention for the Protection of the Ozone Layer; Montreal Protocol on Substances that Deplete the Ozone Layer and the Kigali Amendment; Status phase-out of production and consumption of Ozone Depleting Substances by India	1
3	Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal; Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade; Stockholm Convention on Persistent Organic Pollutants; Minamata Convention on Mercury	1
4	United Nations Framework Convention on Climate Change (UNFCCC); Kyoto Protocol; Paris Agreement; India's status as a party to major conventions.	1
5	National Green Tribunal; Some landmark Supreme Court judgements.	1
6	Major International organisations and initiatives: United Nations Environment Programme (UNEP), International Union for Conservation of Nature (IUCN), World Commission on Environment and Development (WCED), United Nations Educational, Scientific and Cultural Organization (UNESCO), Intergovernmental Panel on Climate Change (IPCC), and Man and the Biosphere (MAB) programme.	1
Total		6

TEXT BOOKS:

1. Environment Management –tiefenbacher
2. Kaushik a and CP
- 3.Jackson A.R and Jackson J.M

REFERENCE BOOKS:

- 1.ANUBHA KAUSHIK & CP KAUSHIK (NEW AGE INTERNATIONAL PUBLISHERS)
- 2 Miller, G. T., & Spoolman, S. (2015) Environmental Science. Cengage Learning.



Signature of Teacher



Approved by HOD/Dean



Approved by IQAC Director/Dean Academics



NGF COLLEGE OF ENGINEERING & TECHNOLOGY

DEPARTMENT OF COMPUTER SCIENCE

LESSON PLAN (JULY-DEC 2025)

Name of Teacher: Keshav Maheshwari

Designation: A.P.

Subject Name: Data structure Lab

Branch: BCA(DS)

Semester:3rd

Subject Code: BCA-23-209

Date of Start: 21July 2025

Total Load: 16 hrs 40 min

Date of Completion: 21Nov 2025

List of Experiments

1. Write a program to find an element in list using linear search	100 min
2. Write a program to find an element in list using binary search.	100 min
3. Write a program to concatenate two strings of different lengths	100 min
4. Write a program to transpose a given matrix	100 min
5. Write a program to implement various Sorting Algorithms.	100 min
6. Write a program for Implementation of stacks using array.	100 min
7. Write a program to perform all operations of queues.	100 min
8. Write a program to perform infix to postfix using stack 100 min	
9. Write a program to implement Link List.	100 min
10. Write a program to implement (preorder, in order,postorder) traversal in a tree.. 100 min	

Toatal Hours = 16 hrs 40 min

Text Books / Reference books

1. Kevin Murphy, *Machine Learning: A Probabilistic Perspective*, MIT Press, 2012.
2. Trevor Hastie, Robert Tibshirani, Jerome Friedman, *The Elements of Statistical Learning*, Springer, 2009 (freely available online).
3. Ethem Alpaydin, *Introduction to Machine Learning* (Adaptive Computation and Machine Learning Series), 3rd Edition, MIT Press, 2014.
4. Tom M. Mitchell, *Machine Learning*, 1st Edition, McGraw Hill Education.



Signature of Teacher



Approved by HOD/Dean



Approved by IQAC Director/Dean Academics



NGF COLLEGE OF ENGINEERING TECHNOLOGY

DEPARTMENT OF COMPUTER SCIENCE

LESSON PLAN (JULY-DEC 2025)

Name of Teacher: Mr. Gourav

Designation: Assistant professor

Subject Name: OOPS(LAB)

Branch: BCA(DS)

Semester: 3rd

Subject Code: BCA-23-211

Date of Start: 21 July

Total Load: 33 Hours 33 min

Date of Completion: 21 Nov

LIST OF PROGRAMS

Name	Mins
1 WAP to check a Number is prime or not	100
2 . Write a program to find an element in list using binary search	100
3 . WAP to implement Student grade using Classes	100
4 . WAP to compute total salary of employees using containership	100
5 . Write a program to calculate grade of students using array of objects	100
6 . Write a program to calculate area of different shapes using function overloading (circle, square, cylinder, triangle, cone)	100
7 . Write a program to find compound interest using default argument (call by value)	100
8 . Write a program to do swapping of two numbers using (a) call by reference (b) call by address	100

Name	Mins
9 . Write a program to have 2 times addition using argument passing	100
10 . Write a program to addition of two Matrix using argument passing	100
11 . Write a program to add two complex number using constructor function	100
12 . WAP to implement friend function to add two complex numbers	100
13 . Write a program to add two complex number by using overloading binary operator	100
14 . Write a program to implement overloading unary operator using point class	100
15 . Write a program to compare two length object by using operator	100
16 . Write a program to implement incremental operator on time class object using overloading function	100
17 . Write a program to exchange the values of two variables using function templates	100
18 . Write a program to implement an inheritance hierarchy of class quadrilateral, parallelogram, triangle and square (Quadrilateral as super class)	100
19 . Write a program that creates an object of class and output of each as area (except quadrilateral)	100
20 . Write a program to implement stack using class template that offers services: (a) push an element (b) pop an element	100

Text Books / Reference books

Text/ Reference Books:

- 1 Bjarne Stroustrup, The C++ programming language, Pearsons education
- 2 Robert Lafore, Object oriented programming using C++, PHI
- 3 Paul Deitel & Harvey Deitel, C++ How to program , Pearsons education
4. Yashawant Kanetkar, Let Us C++, BFB

Gourav

Signature of Teacher


Approved by HOD/Dean

Approved by HOD/Dean


Approved by IQAC Director/Dean Academics

Approved by IQAC Director/Dean Academics



NGF COLLEGE OF ENGINEERING & TECHNOLOGY

DEPARTMENT OF COMPUTER SCIENCE

LESSON PLAN (JUL-DEC 2025)

Name of Teacher: Nitika

Designation: A.P

Subject Name: IWT LAB

Branch: BCA(DS)

Semester: 3RD

Subject Code: BCA-23- 313

Date of Start: 21/07/2025

Total Load: 16.6 hrs

Date of Completion: 14/11/2025

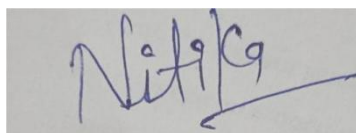
Module : List of Experiments

S.No	Name of Topic	Hours
1	<u>Write a program using basic tags:-</u> a) <u>Bold</u> b) <u>Italic</u> c) <u>underline</u> d) <u>paragraph</u>	100 Min
2	Create a table for railway time table	100 Min
3	Create a student table with attributes (name,age,roll no,class, semester)using cell spacing(4) and cell padding (3,4,5)	100 Min
4	Write a program to insert an image in the web page,use atleast 2 attributes of image using H1 H2 tags.also write description of image.	100 Min
5	WAP to use frames in a web page implementing different elements	100 Min
6	WAP to create a University Website	100 Min
7	WAP to add two numbers using JavaScript	100 Min

8	WAP to find a factorial of number using recursion in JS.	100 Min
9	WAP to add two numbers make use of the functions called sum and pass the parameter	100 Min
10	WAP to create a University Website	100 Min
	Total	16.6 hrs

Text/ Reference Books:

4. Douglas E. Comer : Computer Networks and Internets.
5. Raj Kamal, “Internet and Web Technologies”, Tata McGraw-Hill
6. Thomas A. Powell, “Web Design: The Complete Reference” , 4/e, Tata McGraw-Hill



Signature of Teacher



Approved by HOD/Dean



Approved by IQAC Director/Dean Academics





NGF COLLEGE OF ENGINEERING & TECHNOLOGY
DEPARTMENT OF COMPUTER SCIENCE
LESSON PLAN (JUL-DEC 2025)

Name of Teacher: Amar Kr. Gupta **Designation:** A.P **Subject Name:** Java
Programming

Branch: BCA(DS) **Semester:** 5TH **Subject Code:** BCA-23- 301

Date of Start: 21/07/2025 **Total Load:** 24.8 hrs **Date of Completion:** 14/11/2025

Module/Unit-1: Java Language Basics

S.No	Name of Topic	Hours
1	Introduction to Java, Basic Features	50 Min
2	Java Virtual Machine Architecture and Concepts	50 Min
3	Primitive Data Type and Variables	50 Min
4	Java Operators, Expressions	50 Min
5	Statements and Arrays	50 Min
	Total	4.1 hrs

Module/Unit 2- Classes, Inheritance and Polymorphism

S.No	Name of Topic	Hours
1	Classes, objects	50 Min
2	array of objects	50 Min
3	objects as function arguments	50 Min
4	scope resolution operator, static data members,	50 Min
5	inheritances	50 Min
6	types of inheritance	50 Min
7	containership	50 Min
8	constructors and their types	50 Min
9	polymorphism	50 Min
10	abstract class	50 Min
11	interface and packages	50 Min
	Total	9.1 hrs

Module/Unit 3- Exceptions and Multithreading

S.No	Name of Topic	Hours
1	Exception handling: exception handling in JAVA 'tries and catch,	50 Min

2	throw and catch, throws and catch blocks	50 Min
3	multiple throw and catch blocks	50 Min
4	throwing objects, exception classes, user defined exception.	50 Min
5	Multithreading: Concept of process and thread	50 Min
6	life cycle of a thread	50 Min
7	user defined thread creation through class and through interface	50 Min
8	deciding priority in threads	50 Min
9	synchronization in threads: producer-consumer problem	50 Min
	Total	7.5 hrs

Module/Unit 4- I/O in JAVA

S.No	Name of Topic	Hours
1	I/O Basics	50 Min
2	Type of Streams and Stream Classes	50 Min
3	The Predefined Streams	50 Min
4	reading from and Writing to Console	50 Min
5	Reading and Writing Files, Object Serialization	50 Min
	Total	4.1 hrs

Text/ Reference Books:

1. H M Deitel and P J Deitel, “C++ How to Program”. by Pearson Education.
2. Robert Lafore, “Object Oriented Programming in Turbo C++”, The WAITE Group Press, 1994.
3. E Balagurusamy, “Programming in Java”, McGraw Hill.



Signature of Teacher



Approved by HOD/Dean

Approved by IQAC Director/Dean Academics



NGF COLLEGE OF ENGINEERING & TECHNOLOGY

DEPARTMENT OF COMPUTER SCIENCE

LESSON PLAN (July-Dec 2025)

Name of Teacher: Neha jayant **Designation:** Assistant Professor **Subject Name:** DAAV

Branch: BCA DS

Semester: 5th

Subject Code:BCA-DS-23-303

Date of Start:21 July 2025 **Total Load:** 20 hrs

Date of Completion:14 Nov 2025

Module/Unit-1:

S.No	Name of Topic	Hours
1	Big Data: Introduction, characteristics	50 min
2	types, sources	50 min
3	examples, technologies	50 min
4	integrating diverse data; introduction to Hadoop	50 min
5	Hadoop, open source technologies	50 min
6	Introduction to NoSQL	50 min
7	aggregate data models	50 min
	Total	5 hours 8 min

Module/Unit 2-

S.No	Name of Topic	Hours
1	Data Science: Getting Value out of Big Data	50 min
2	Building a Big Data Strategy, revision	50 min
3	Five Components of Data Science,	50 min
4	Five P's of Data Science. Steps in the Data Science Process.	50 min
5	Big Data Modeling and Management: Data Ingestion, Data Storage, Data Quality, Data Operations,	50 min
6	Data Scalability and Security, Real Big Data Management Applications	50 min
	Total	5 hours

Module/Unit 3

S.No	Name of Topic	Hours
1	Real time data acquisition, Review of transducer	50 min
2	Introduction about Instrumentation system, Types of Instrumentation system	50 min
3	Data acquisition system and its uses in intelligent Instrumentation system.	50 min
4	Detail study of each block involved in making of DAS	50 min
5	Signal conditioners as DA, IA, s	50 min
6	signal converters (ADC), Sample and hold	50 min
7	Designing application for Pressure,	50 min
8	Temperature measurement system using DAS, Data logger	50 min
	Total	6 hours 6 min

Module/Unit 4

S.No	Name of Topic	Hours
1	Introduction, various techniques like Classification	50 min
2	regression, clustering	50 min
3	association analysis, and graph analysis	50 min
4	MapReduce workflows	50 min
5	anatomy of MapReduce job run, classic Map	50 min
	Total	4 hours 33 min

TEXT/REFERENCE BOOKS:

1. Tom White, "Hadoop: The Definitive Guide" Third Edit on, O'reilly Media, 2012.
2. SeemaAcharya, SubhasiniChellappan, "Big Data Analytics" Wiley 2015.
3. Michael Berthold, David J. Hand, "Intelligent Data Analysis", Springer, 2007.



Signature of Teacher

Approved by HOD/Dean

Approved by IQAC Director/Dean Academics



NGF COLLEGE OF ENGINEERING & TECHNOLOGY
DEPARTMENT OF COMPUTER SCIENCE
LESSON PLAN (JULY-DEC 2025)

Name of Teacher: Keshav Maheshwari **Designation:** Assistant Professor **Subject**
Name: Machine learning
Branch: BCA(DS) **Semester:** 5th **Subject Code:** BCA-DS-23-305
Date of Start: 21 July 202 **Total Load:** 48 hrs 50 mns **Date of Completion:** 21 Nov
2025

Unit – 1: Introduction of Machine Learning (ML)

S.No	Name of Topic	Hours
1	Machine Learning basic concepts	50
2	Perspectives and Issues in Machine Learning	50
3	Types of Machine Learning: Supervised – Unsupervised – Reinforcement	50
4	Data Representations: Numerical representation, Graph representation	50
5	Applications of Machine Learning	50

TOTAL: 4 Hrs 10 Mins

Unit – 2: Supervised Learning

(Regression/Classification)

S.No	Name of Topic	Hours
1	Linear Models: Linear Regression	50
2	Logistic Regression	50

S.No	Name of Topic	Hours
3	Nearest-Neighbours	50
4	Decision Trees	50
5	Support Vector Machines	50

TOTAL: 4 Hrs 10 Mins

Unit – 3: Unsupervised Learning

S.No	Name of Topic	Hours
1	K-means / Kernel K-means	50
2	Dimensionality Reduction	50
3	Principal Component Analysis (PCA)	50
4	Matrix Factorization and Matrix Completion	50
5	Separating Hyperplanes: RPL Algorithm, Optimal separating hyperplane	50

TOTAL: 4 Hrs 10 Mins

Unit – 4: Techniques and Applications

S.No	Name of Topic	Hours
1	Scalable Machine Learning	50

S.No	Name of Topic	Hours
2	Naïve Bayes	50
3	Recent trends in various learning techniques & classification methods	50
4	Introduction to Bayesian Learning and Inference	50

TOTAL: 3 Hrs 20 Mins

Text Books / Reference books

5. Kevin Murphy, *Machine Learning: A Probabilistic Perspective*, MIT Press, 2012.
6. Trevor Hastie, Robert Tibshirani, Jerome Friedman, *The Elements of Statistical Learning*, Springer, 2009 (freely available online).
7. Ethem Alpaydin, *Introduction to Machine Learning* (Adaptive Computation and Machine Learning Series), 3rd Edition, MIT Press, 2014.
8. Tom M. Mitchell, *Machine Learning*, 1st Edition, McGraw Hill Education.





Signature of Teacher

Approved by HOD/Dean

Approved by IQAC Director/Dean Academics



NGF COLLEGE OF ENGINEERING & TECHNOLOGY
DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING
LESSON PLAN (JULY-DEC 2025)

Name of Teacher: NITIKA **Designation:** Assistant professor **Subject Name:** SE
Branch: BCA DS **Semester:** 5TH **Subject Code:** BCA-23-303
Date of Start: 25/07/2025 **Total Load:** 38.hrs **Date of Completion:** 13/11/2025

Module/Unit-1:

S.No	Name of Topic	Hours
1	Software Crisis	50 MIN
2	Software Processes & Characteristics	50 MIN
3	Software life cycle models	50 MIN
4	Waterfall	50 MIN
5	Prototype	50 MIN
6	Evolutionary	50 MIN
7	Spiral Models	50 MIN
	Total	7 HOURS

Module/Unit 2

S.No	Name of Topic	Hours
1	Software Requirements Analysis & Specifications	50 MIN
2	Requirement engineering,	50 MIN
3	Requirement elicitation techniques like FAST,QFD	50 MIN
4	Requirements analysis using DFD	50 MIN
5	Data dictionaries	50 MIN
6	ER Diagrams	50 MIN
7	Requirements documentation	50 MIN
8	Nature of SRS,	50 MIN
9	Characteristics & organization of SRS	50 MIN
	TOTAL	7.5 HOURS

Module/Unit 3

S.No	Name of Topic	Hours
1	The Management spectrum,	50 MIN
2	The People,	50 MIN
3	The Problem,	50 MIN
4	The Process,	50 MIN
5	The Project.	50 MIN
6	Project Planning:	50 MIN
7	Size Estimation like lines of Code & Function Count,	50 MIN
8	Cost Estimation Models,	50 MIN
9	COCOMO	50 MIN
10	Risk Management.	50 MIN
	TOTAL	8.5 HOURS

Module/Unit 4

1	Cohesion & Coupling	50 MIN
2	Classification of Cohesiveness & Coupling	50 MIN
3	Function Oriented Design	50 MIN
4	Object Oriented Design	50 MIN
5	Software Metrics	50 MIN
6	Software measurements: What & Why	50 MIN
7	Token Count	50 MIN
8	Halstead Software Science Measures	50 MIN
9	Design Metrics	50 MIN
10	Data Structure Metrics	50 MIN
	TOTAL	8.3 HOURS

Module/Unit 5

1	Testing Process	50 MIN
2	Design of Test Cases	50 MIN
3	Types of Testing	50 MIN
4	Functional Testing	50 MIN

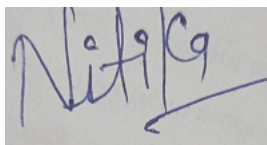
5	Structural Testing	50 MIN
6	Test Activities: Unit Testing , Integration Testing	50 MIN
7	System Testing	50 MIN
8	Debugging Activities.	50 MIN
	TOTAL	6.67 HOURS

Reference Book

1 Pressman, “Software Engineering”, TMH.

2 K.K Aggarwal & Yogesh Singh, “Software Engineering”, New Age International Publishers.

3 Jalote, Pankaj, “An Integrated Approach to Software Engineering”, Narosa Publications.



Signature of Teacher



Approved by HOD/Dean



Approved by IQAC Director/Dean Academics



NGF COLLEGE OF ENGINEERING & TECHNOLOGY

DEPARTMENT OF COMPUTER SCIENCE

LESSON PLAN (JUL-DEC 2025)

Name of Teacher: Amar Kr. Gupta

Designation: Assistant Prof.

Subject Name: Speech and Audio Processing

Branch: BCA(DS)

Semester: 5TH

Subject Code: BCA-23- 309

Date of Start: 21/07/2025

Total Load: 19 hrs

Date of Completion: 14/11/2025

Module/Unit-1: Introduction and Speech Signal Processing

S.No	Name of Topic	Hours
1	Speech production and modelling - Human Auditory System; General structure of speech coders; Classification of speech coding techniques – parametric,	50 Min
2	Waveform and hybrid, Requirements of speech codecs – quality, coding delays	50 Min
3	Robustness. Speech Signal Processing-: Pitch-period estimation, all-pole and all-zero filters, convolution	50 Min
4	Power spectral density, periodogram, autoregressive model,	50 Min
5	Autocorrelation estimation	50 Min
	Total	4.1 hrs

Module/Unit 2- Linear Prediction of Speech and Speech Quantization

S.No	Name of Topic	Hours
1	Basic concepts of linear prediction; Linear Prediction Analysis of non-stationary signals prediction gain, examples;	50 Min
2	Levinson-Durbin algorithm; Long-term and short-term linear prediction models;	50 Min
3	Moving average prediction. Scalar quantization–uniform quantizer,	50 Min

4	Optimum quantizer, logarithmic quantizer, adaptive quantizer, differential quantizers;	50 Min
5	Vector quantization: distortion measures, codebook design	50 Min
	Total	4.1 hrs

Module/Unit 3- Scalar Quantization of LPC and Linear Prediction Coding

S.No	Name of Topic	Hours
1	Spectral distortion measures, Quantization based on reflection coefficient and log area ratio,	50 Min
2	bit allocation; Line spectral frequency:	50 Min
3	LPC to LSF conversions, quantization based on LSF	50 Min
4	Linear Prediction Coding- LPC model of speech production;	50 Min
5	Structures of LPC encoders and decoders; Voicing detection	50 Min
6	Limitations of the LPC model.	50 Min
	Total	5 hrs

Module/Unit 4- Code Excited Linear Prediction

S.No	Name of Topic	Hours
1	Code Excited Linear Prediction- CELP speech production model; Analysis-by-synthesis;	50 Min
2	Generic CELP encoders and decoders;	50 Min
3	Excitation codebook search – state-save method, zero- input zero state method;	50 Min
4	CELP based on adaptive codebook, Adaptive Codebook search	50 Min
5	Low Delay CELP and algebraic CELP.	50 Min
6	Speech Coding Standards: An overview of ITU-T G.726	50 Min
7	G.728 and G.729 standards	50 Min

	Total	5.8 hrs
--	--------------	---------

Text/ Reference Books:

1. A.M.Kondoz, “Digital Speech”, Second Edition (Wiley Students“ Edition), 2004.
2. W.C. Chu, “Speech Coding Algorithms: Foundation and Evolution of Standardized Coders”, Wiley Inter science, 2003.



Signature of Teacher



Approved by HOD/Dean




Approved by IQAC Director/Dean Academics



NGF COLLEGE OF ENGINEERING & TECHNOLOGY

DEPARTMENT OF COMPUTER SCIENCE

LESSON PLAN (JUL-DEC 2025)

Name of Teacher: Amar Kr. Gupta **Designation:** A.P **Subject Name:** JAVA LAB

Branch: BCA(DS)

Semester: 5TH

Subject Code: BCA-23- 311

Date of Start: 21/07/2025

Total Load: 21.6 hrs

Date of Completion: 14/11/2025

Module : List of Experiments

S.No	Name of Topic	Hours
1	Write a Java program that prints all real solutions to the quadratic equation $ax^2 + bx + c = 0$. Read in a, b, c and use the quadratic formula. If the discriminant $b^2 - 4ac$ is negative, display a message stating that there are no real solutions.	100 Min
2	Write a Java program that prompts the user for an integer and then prints out all prime numbers up to that integer.	100 Min
3	3. Write a Java program to multiply two given matrices.	100 Min
4	Write a Java Program that reads a line of integers, and then displays each integer, and the sum of all the integers(Use StringTokenizer class of java.util)	100 Min
5	Write a Java program that checks whether a given string is a palindrome or not. Ex: MADAM is a palindrome.	100 Min
6	Write a Java program for sorting a given list of names in ascending order.	100 Min
7	Write a Java program to make frequency count of words in a given text.	100 Min
8	Write a Java program that reads a file name from the user, then displays information about whether the file exists, whether the file is readable, whether the file is writable, the type of file and the length of the file in bytes.	100 Min
9	Write a Java program that reads a file and displays the file on the screen, with a line number before each line.	100 Min

10	Write a Java program that displays the number of characters, lines and words in a text file.	100 Min
11	Write a Java program that works as a simple calculator. Use a grid layout to arrange buttons for the digits and for the +, -, *, % operations. Add a text field to display the result.	100 Min
12	Write a Java program for sorting a given list of names in ascending order.	100 Min
13	Write a Java program to make frequency count of words in a given text.	100 Min
	Total	21.6 hrs

Text/ Reference Books:

1. H M Deitel and P J Deitel, “C++ How to Program”. by Pearson Education.
2. Robert Lafore, “Object Oriented Programming in Turbo C++”, The WAITE Group Press, 1994.
3. E Balagurusamy, “Programming in Java”, McGraw Hill.



Signature of Teacher



Approved by HOD/Dean




Approved by IQAC Director/Dean Academics



NGF COLLEGE OF ENGINEERING & TECHNOLOGY
DEPARTMENT OF COMPUTER SCIENCE
LESSON PLAN (JULY-DEC 2025)

Name of Teacher: Keshav Maheshwari **Designation:** Assistant Prof. **Subject**
Name: Machine learning I Lab
Branch: BCA(DS) **Semester:** 5th **Subject Code:** BCA-DS-23-313
Date of Start: 21 July 2025 **Total Load:** 20 hrs **Date of Completion:** 21 Nov 2025

List OF Experiment
1. Write a program to implement k-Nearest Neighbour algorithm to classify the iris 100min data set.
2. Print both correct and wrong predictions. 100min
3. Write a program to implement feature scaling & feature standardization of 100min preprocessing & compare its result with KNN algorithm.
4. Write a program to demonstrate the working of the decision tree based ID3 100min algorithm
5. Use an appropriate data set for building the decision tree and apply this knowledge 100min to classify a new sample.
6. Estimate the accuracy of decision classifier on cancer dataset using 5-fold cross 100min validation.
7. Write a program to implement Support vector machine algorithm on sample dataset. 100min

8. Write a program to implement Simple Linear Regression on a sample dataset. 100min
9. Write a program to implement Multi-Variate Linear Regression on a sample dataset. 100min
10. Write a program to implement the naïve Bayesian classifier for a sample training 100min
data set stored as a .CSV file. Compute the accuracy of the classifier, considering few test data sets
11. Write a program to construct a Bayesian network considering medical data like 100min
heart patient or diabetes dataset.
12. Using a dataset with known class labels compare the labeling error of the K-means 100min
algorithm. Measure the error by assigning a class label to each example. Assume that the number of clusters is known. Write a program to implement k-Nearest Neighbour algorithm to classify the iris data set.

Toatal Hours = 20 hrs

Text Books / Reference books

1. Kevin Murphy, *Machine Learning: A Probabilistic Perspective*, MIT Press, 2012.
2. Trevor Hastie, Robert Tibshirani, Jerome Friedman, *The Elements of Statistical Learning*, Springer, 2009 (freely available online).
3. Ethem Alpaydin, *Introduction to Machine Learning* (Adaptive Computation and Machine Learning Series), 3rd Edition, MIT Press, 2014.
4. Tom M. Mitchell, *Machine Learning*, 1st Edition, McGraw Hill Education.









Signature of Teacher

Approved by HOD/Dean

Approved by IQAC Director/Dean Academics



NGF COLLEGE OF ENGINEERING TECHNOLOGY
DEPARTMENT OF COMPUTER SCIENCE
LESSON PLAN (JULY-DEC 2025)

Name of Teacher: Harshita **Designation:** Assistant prof. **SubjectName:** Internship
or

Branch: BCA(DS) **Semester:** 5TH **Minor Project**
Subject Code: BCA-23-315
Date of Start: 21 July 2025 **Total Load:** 40 Hours **Date of Completion:** 21 Nov 2025

LIST OF PROGRAMS

	Name	Mins
	Topics / Activities	100
1	Introduction to Project Lab: Overview of objectives, assessment pattern, project categories (software/hardware/research-based), and guidelines for project selection.	100
2	Project Ideation & Problem Identification: Brainstorming and group formation. Guidance on selecting innovative and feasible project ideas.	100
3	Literature Review & Feasibility Study: Discuss how to conduct literature surveys using research databases. Assess technical, financial, and operational feasibility.	100
4	Project Proposal Presentation (Stage-I): Each team presents their idea, objectives, and feasibility to the faculty for approval.	100
5	System Design & Architecture: Conceptual and detailed design – DFDs, UML diagrams, block diagrams, or flowcharts.	100

	Name	Mins
6	Technology and Tools Finalization: Selection of appropriate software, libraries, frameworks, or hardware components. Installation and environment setup.	100
7	Module Division and Work Allocation: Breakdown of project into modules; assigning tasks among team members; defining milestones.	100
8	Implementation Phase – I: Begin coding or hardware assembly of core modules. Faculty supervision and code review.	100
9	Implementation Phase – II: Continued development of project components. Debugging and integration.	100
10	Testing and Validation – I: Unit testing of developed modules; discussion on testing techniques and documentation.	100
12	Testing and Validation – II: System integration testing, validation against requirements, and bug fixing.	100
13	Project Review (Stage–II Presentation): Progress evaluation through demonstration and presentation before internal review committee.	100
14	Report Writing and Documentation: Guidance on technical report preparation — abstract, methodology, results, conclusion, references, and formatting standards (IEEE/APA).	100
15	Final Presentation and Demonstration (Stage–III): Each team demonstrates the final project outcome with presentation slides and live demo.	100
16	Viva-Voce and Submission: Oral examination, code verification, final report submission (soft + hard copy).	100

Signature of Teacher

Approved by HOD/Dean



Approved by IQAC Director/Dean Academics

