Scheme and Syllabus of

1st & 2nd Semester
Bachelor of Computer Applications (BCA)

Batch 2025 onwards

Department of Computer Applications
Amritsar Group of Colleges, Amritsar

BCA-1st Sem

Course Code	Course Type	Course Title	Load Allocation			Marks Distribution		Total Marks	Credits
			L	T	P	Internal	External		
BCA24101	Multidisciplinary	Mathematics	4	0	0	40	60	100	4
BCA24102	Core Theory	Introduction to computer & information technology	3	0	0	40	60	100	3
BCA25101	Core Theory	Programming in C	4	0	0	40	60	100	4
BCA25102	Core Practical/Laboratory	Introduction to computer & information technology Laboratory	0	0	2	60	40	100	1
BCA24104	Skill Enhancement	Workshop on Desktop Publishing	0	0	2	60	40	100	1
BCA24105	Core Practical/Laboratory	Programming in C Laboratory	0	0	4	60	40	100	2
AEC25101	Ability Enhancement Compulsory Course (AECC)-I	Effective Communication	2	0	0	40	60	100	2
VAC24101	Value Added Course (VAC)	Universal Human Values	3	0	0	40	60	100	3
TOTAL			**16**	**0**	**8**	**380**	**420**	**800**	**20**

	BCA-2nd Sem								
Course Code	**Course Type**	**Course Title**	**Load Allocation**			**Marks Distribution**		**Total Marks**	**Credits**
			L	**T**	**P**	**Internal**	**External**		
BCA24201	Core Theory	Fundamental of Statistics	3	0	0	40	60	100	3
BCA24202	Core Theory	Computer System Architecture	3	0	0	40	60	100	3
BCA24203	Skill Enhancement Course	Object Oriented Programming using C++	3	0	0	40	60	100	3
BCA24204	Skill Enhancement Laboratory	Object Oriented Programming using C++ Laboratory	0	0	4	60	40	100	2
BCA25201	Core Practical/Laboratory	Fundamental of Statistics Laboratory	0	0	2	60	40	100	1
BCA25202	Core Practical/Laboratory	Computer System Architecture Laboratory	0	0	2	60	40	100	1
BCA25203	Core Theory	Feature Engineering	2	0	0	40	60	100	2
VAC24201	Value Added Course (VAC)	Environmental Studies & sustainability	3	0	0	40	60	100	3
EMC-25101	Skill Enhancement Course Laboratory	Entrepreneurship Setup and Launch	0	0	4	60	40	100	2
TOTAL			**14**	**0**	**12**	**440**	**460**	**900**	**20**

1st Semester	Mathematics			
	BCA24101			
Internal Marks:	40	**L**	**T**	**P**
External Marks:	60	**4**	**0**	**0**
Total Marks:	100	**Credits**		**4**

Course Outcomes: After studying the course, students will be able to:	
CO1	Understand different types of Sets and their applications in daily life
CO2	Understand the concept of relations and functions
CO3	Understand the concept of Propositional Logic and calculus
CO4	Understand how to represent real life data using Matrices
CO5	Understand the concept of finding the number of terms and their sum
CO6	To calculate how likely events could happen and so the risks could be determined and resolved professionally

Part	Content	CO
I	**Set:** Introduction, Objectives, Representation of Sets, Types of Sets (Null Set, Singleton Set, Finite Set, Infinite Set, Equal Set, Equivalent Set, Disjoint Set, Subset, Proper Subset, Power Set, Universal Set, Complement of a Set), Operation on Sets, Venn diagrams, Applications of Sets.	**CO1**
	Relations and Functions: Introduction, Ordered Pairs, Cartesian Product, Basic definition of Relation, Types and operations on Relations, Equivalence relations, introduction of functions, different types of functions and their Compositions	**CO2**
II	**Logic Statement:** Connectives, Basic Logic Operations (Conjunction, Disjunction, Negation) Logical Equivalence/Equivalent Statements, Tautologies and Contradictions.	**CO3**
III	**Matrices:** Introduction, Types of Matrix (Row Matrix, Column Matrix, Rectangular Matrix, Square Matrix, Diagonal Matrix, Scalar Matrix, Unit Matrix, Null Matrix, Comparable Matrix, Equal Matrix), Scalar Multiplication, Negative of Matrix, Addition of Matrix, Difference of two Matrix, Multiplication of Matrices, Transpose of a Matrix, inverse of matrix, solution of system of linear equations using matrices.	**CO4**
	Progressions: Progressions Introduction, Arithmetic Progression, Sum of Finite number of quantities in A.P, Arithmetic Means. Geometric Progression, Sum of and finite and infinite G.P. series, Geometric Mean	**CO5**
IV	**Probability:** Random Experiment, Sample space, Elementary events, Compound events, Mutually exclusive, Exhaustive events, Definition of Probability, Equally Likely Events Complementary Events ,Independent Events, Conditional Probability.	**CO6**

References:

- Discrete Mathematics and its applicationsby Kenneth by H. Rosen, Mc Graw Hill, 6th Edition
- Elementary Mathematics, Dr. RD Sharma
- Comprehensive Mathematics, Parmanand Gupta

1st Semester		Introduction to Computer & Information Technology			
		BCA24102			
Internal max. marks	40		L	T	P
External max. marks	60		3	0	0
Total Marks	100		Credits		3

Course outcomes: After studying the course, students will be able to:	
CO1	Identify of input and output devices of Computers
CO2	Utilize the functioning of various components of computer system.
CO3	Explain the different levels of languages, Operating system and features of Word processing
CO4	Prepare documents using Spreadsheet and Presentation Graphics Software's.
CO5	Illustrate the various e-payment systems.
CO6	Highlight the various computing techniques

Part	Detailed Contents	CO
I	**Human Computer Interface** Concepts of Hardware and Software; Data and Information. **Functional Units of Computer System:** CPU, registers, system bus, main memory unit, cache memory, Inside a computer, SMPS, Motherboard, Ports and Interfaces, expansion cards, ribbon cables, memory chips, processors.	CO1
	Devices: Input and output devices (with connections and practical demo), keyboard, mouse, joystick, scanner, OCR, OMR, bar code reader, web camera, monitor, printer, plotter. **Memory:** Primary, secondary, auxiliary memory, RAM, ROM, cache memory, hard disks, optical disks. **Data Representation:** Bit, Byte, Binary, Decimal, Hexadecimal, and Octal Systems, Conversions and Binary Arithmetic (Addition/ Subtraction/ Multiplication) Applications of IT.	CO2
II	**Concept of Computing, Types of Languages:** Machine, assembly and High-level Language; Operating system as user interface, utility programs. **Word processing:** Editing features, formatting features, saving, printing, table handling, page settings, spell-checking, macros, mail- merge, equation editors.	CO3
III	**Spreadsheet:** Workbook, worksheets, data types, operators, cell formats, freeze panes, editing features, formatting features, creating formulas, using formulas, cell references, replication, sorting, filtering, functions, Charts & Graphs. **Presentation Graphics Software:** Templates, views, formatting slide, slides with graphs, animation, using special features, presenting slide shows.	CO4
IV	**Electronic Payment System**: Secure Electronic Transaction, Types of Payment System: Digital Cash, Electronic Cheque, Smart Card, Credit/Debit Card E-Money, Bit Coins and Crypto currency, Electronic Fund Transfer (EFT), Unified Payment Interface (UPI), Immediate Payment System (IMPS), Digital Signature and Certification Authority. [CO5]	CO5
	Introduction to Bluetooth, Cloud Computing, Big Data, Data Mining, Mobile Computing and Embedded Systems and Internet of Things (IoT) [CO6]	CO6

References:

1. "Introduction to Computers", Peter Norton
2. Computers Today, D. H. Sanders, McGraw Hill.
3. "Computers", Larry long & Nancy long, Twelfth edition, Prentice Hall.
4. Problem Solving Cases in Microsoft Excel, Joseph Brady & Ellen F Monk, Thomson Learning

1st Semester		Programming in C			
		BCA25101			
Internal max. marks	40		**L**	**T**	**P**
External max. marks	60		**4**	**0**	**0**
Total Marks	100		**Credits**		**4**

Course outcomes: After studying the course, students will be able to:	
CO1	Design algorithms and choose the right data type and statements for programs.
CO2	Learn the implementation of simple 'C' program, operators and Console I/O function.
CO3	Learning concepts of control statements by writing programs control the sequence of the program and give logical outputs.
CO4	Understand the declaration and implementation of arrays and functions.
CO5	Learn the structures declaration, initialization and implementation.
CO6	Understand the file operations, file pointers and importance of pre-processor directives

Part	Detailed Contents	CO
I	**Logic Development:** Data Representation, Flowcharts, Problem Analysis, Decision Trees/Tables, Pseudo code and algorithms. Fundamentals: Character set, Identifiers and Key Words, Data types, Constants, Variables, Expressions, Statements, Symbolic Constants.	**CO1**
	Operations and Expressions: Arithmetic operators, Unary operators, Relational Operators, Logical Operators, Assignment and Conditional Operators, Library functions. **Data Input and Output:** formatted & unformatted input output.	**CO2**
II	**Control Statements:** While, Do–while and For statements, Nested loops, If–else, Switch, Break – Continue statements**.** **Strings:** String declaration, string functions and string manipulation Program Structure Storage Class: Automatic, external and static variables.	**CO3**
III	**Functions:** Brief overview, defining, accessing functions, passing arguments to function, specifying argument data types, function prototypes, recursion. Arrays: Defining, processing arrays, passing arrays to a function, multi– dimensional arrays**.**	**CO4**
IV	**Structures & Unions**: Defining and processing a structure, user defined data types, structures and pointers, passing structures to functions, unions. **Standard library functions:** stdio.h, stdlib.h, conio.h, ctype.h, math.h, string.h, process.h., Usage of command line arguments. [CO5]	**CO5**
	Pointers: Understanding Pointers, Accessing the Address of a Variable, Declaration and Initialization of Pointer Variables, Accessing a Variable through its Pointer, Pointers and Arrays. [CO6] **File Handling:** File Operations, Processing a Data File**,** File access modes, File pointers, File Positioning functions (fseek, ftell, rewind etc.) [CO6]	**CO6**

References:

1. Object Oriented Programming, Lafore R, Third Edition, Galgotia Publications

2. Let us C, Yashvant P Kanetkar, Seventh Edition, BPB Publications, New Delhi.

3. Programming in C, Byron S. Gottfried, Second Edition, McGraw Hills.

4. Problem Solving and Programming in C, R.S. Salaria, Second Edition

5. Programming in C, Atul Kahate.

1st Semester		Workshop on Desktop Publishing			
		BCA24104			
Internal max. marks	60		**L**	**T**	**P**
External max. marks	40		0	0	2
Total Marks	100		**Credits**		1

Additional material required in ESE: Softcopy & Hardcopy of the exercises are to be maintained during the practical labs and to be submitted during the End Semester Examinations.

Course Outcomes: After studying this course, students will be able to:	
CO1	Outline the characteristics of desktop publishing tools.
CO2	Identify the right components for designing.
CO3	Apply knowledge in designing various documents.
CO4	Prepare different types of graphic related documents.
CO5	Express the messages through graphical content
CO6	Publish different types of content using various techniques.

Instructions: Instructor can increase/decrease the experiments as per the requirement.

Sno.	Assignments
1.	Design and print a *Title Page* of a Magazine/Book by identifying publishing tools. [CO1]
2.	Prepare multiple designs for a *Flex* by using different Tools. [CO2]
3.	Prepare NSS *Certificates* for appreciation using logos of University, College & NSS unit. [CO3]
4.	Prepare 5 different Designing of *Business Cards*. [CO3]
5.	Prepare *Envelops* displaying full address of the company by inserting graphical symbol/ logos of company. [CO4]
6.	Design and Print *Invoices* for three companies. [CO3]
7.	Prepare and print *News Letter Layouts* for any five activities of your college/ university. [CO3]
8.	Prepare *Invitation Cards* for cultural meet held in your college. [CO5]
9.	Design and print *Brochures* to advertise a "Blood Donation Camp" in your college. [CO5]
10.	Design *Logos* of your college, University & Govt. of Punjab also display these logos on black background as water mark. [CO5]
11.	Design, Print and Publish 5 motivations Playcards. [CO6]
12.	Design & Print assignment book of minimum 20 Pages an any Topic. [CO6]
13.	Design & print any five most important activities of your college in a collage. [CO6]
14.	Design & Print Question Paper of any Subject. **[CO6]**

15.	Assemble all the latest news cutting of your activities on a 10 X 8 size flex. [CO6]

References:
1. DTP Course, by Shirish Chavan published by Rapidex.
2. DTP Course Kit by Vikas Gupta published by Comdex.
3. CorelDraw 9 by David Karlins published by Techmedia.
4. Adobe Illustrator CC by Brian Wood published by Adobe Press.
5. Page Maker in Easy Steps - Scott Basham.

1st Semester	Problem Solving using C Laboratory			
	BCA24105			
Internal max. marks	60	**L**	**T**	**P**
External max. marks	40	**0**	**0**	**4**
Total Marks	100	**Credits**		**2**

Course Outcomes: After studying this course, students will be able to:	
CO1	Understand basic Structure of the c programming, declaration and usage of variable.
CO2	Experiment with different input values.
CO3	Distinguish between various control statements and data types.
CO4	Learning concepts of pointers by Write C programs using pointers to access arrays, strings and functions.
CO5	Learn structures and unions through which derived data types can be formed
CO6	Understand and use file handling in the C programming language

Instructions: Develop all programs in C programming language.

Sno.	Assignments
1.	WRITE A PROGRAM to display your name. Write another program to print message with inputted name. [CO1]
2.	WRITE A PROGRAM to add two numbers. [CO1]
3.	WRITE A PROGRAM to find the square of a given number. [CO1]
4.	WRITE A PROGRAM to calculate the average of three real numbers. [CO1]
5.	Write a program to Find ASCII Value of a Character. [CO1]
6.	WRITE A PROGRAM to Find the Size of int, float, double and char. [CO1]
7.	WRITE A PROGRAM to Compute Quotient and Remainder. [CO2]
8.	WRITE A PROGRAM to accept the values of two variables. [CO2]
9.	WRITE A PROGRAM to find the simple interest, inputs are amount, period in years and rate of interest. [CO2]
10.	Basic salary of an employee is input through the keyboard. The DA is 25% of the basic salary while the HRA is 15% of the basic salary. Provident Fund is deducted at the rate of 10% of the gross salary(BS+DA+HRA). WRITE A PROGRAM to calculate the net salary [CO2]
11.	WRITE A PROGRAM to find area of a circle using PI as constant. [CO2]
12.	WRITE A PROGRAM to find volume of a cube using side as input from user. [CO3]
13.	WRITE A PROGRAM using various unformatted Input Functions [CO3]
14.	WRITE A PROGRAM to find area of rectangle and print the result using unformatted

	output Functions [CO3]
15.	WRITE A PROGRAM to find the larger of two numbers. [CO3]
16.	WRITE A PROGRAM to find greater of three numbers using Nested If. [CO3]
17.	WRITE A PROGRAM to find whether the given number is even or odd. [CO3]
18.	WRITE A PROGRAM to Generate Multiplication Table Using for loop [CO3]
19.	WRITE A PROGRAM to Generate Multiplication Table Using while loop [CO3]
20.	WRITE A PROGRAM to Make a Simple Calculator Using switch...case [CO3]
21.	WRITE A PROGRAM to find whether the given number is a prime number. [CO3]
22.	WRITE A PROGRAM using function to find the largest of three numbers [CO3]
23.	WRITE A PROGRAM using function to print first 20 numbers and its squares. [CO3]
24.	WRITE A PROGRAM to find the factorial of a given number. [CO4]
25.	WRITE A PROGRAM to print the sum of two matrices [CO4]
26.	WRITE A PROGRAM to Find the Length of a String [CO4]
27.	WRITE A PROGRAM to Copy String using strcpy().[CO4]
28.	WRITE A PROGRAM to compare a string [CO4]
29.	WRITE A PROGRAM to reverse a string [CO4]
30.	WRITE A PROGRAM to reverse a string [CO4]
31.	WRITE A PROGRAM to multiply two numbers using pointers. [CO4]
32.	WRITE A PROGRAM to display address of variable using pointers [CO5]
33.	WRITE A PROGRAM to show the memory occupied by Structure and Union [CO5]
34.	WRITE A PROGRAM to create Student I-Card using a Structure.[CO6]
35.	WRITE A PROGRAM to read data from a file from a file.[CO6]
36.	WRITE A PROGRAM to save Employee details in a file using File Handling. [CO6]

1st Semester		Introduction to computer & information technology Laboratory			
		BCA25102			
Internal max. marks	60		L	T	P
External max. marks	40		0	0	2
Total Marks	100		Credits		1

Course Outcomes: After studying this course, students will be able to:	
CO1	Highlight the features of word processing,
CO2	Prepare documents and apply formatting using word.
CO3	MS-Excel as a tool for organizing data.
CO4	Use of PowerPoint as a graphic tool.
CO5	Apply Various operations using PowerPoint.
CO6	Understand the concept of Internet and its Applications.

Instructions:

Word Orientation: [CO1]

The instructor needs to give an overview of word processor.

Details of the four tasks and features that would be covered Using word – Accessing, overview of toolbars, saving files, Using help and resources, rulers, format

painter.

1.	**Using word to create document**.
	Features to be covered: - Formatting Fonts in word, Drop Cap in word, Applying Text effects, Using Character Spacing, Borders and Colors, Inserting Header and
	Footer, Using Date and Time option in Word. [CO1]
2.	**Create Various documents using MS-Word**
	Create Various documents like resume, assignment, Newsletter with the help of MS- Word **Creating an Assignment**
	Features to be covered: - Formatting Styles, inserting table, Bullets and Numbering, Changing Text Direction, Cell alignment, Footnote, Hyperlink,
	Symbols, Spell Check, Track Changes. [CO2]
3.	**Creating a Newsletter**
	Features to be covered: - Table of Content, Newspaper columns, Images from files and clipart, Drawing toolbar and Word Art, Formatting Images, Textboxes and Paragraphs [CO2]
4.	**Creating a Feedback form**
	Features to be covered: - Forms, Text Fields, Inserting objects, Mail Merge in Word. [CO2]

Excel Orientation:	
The instructor needs to tell the importance of Excel as a Spreadsheet tool, give the details of the four tasks and features that would be covered Excel – Accessing, overview of toolbars, saving excel files,	
1.	**Creating a Scheduler** Features to be covered: - Gridlines, Format Cells, Summation, auto fill, Formatting Text
2.	**Calculations** Features to be covered: - Cell Referencing, Formulae in excel – averages. Deviation, Charts, Renaming and Inserting worksheets, Hyper linking, Count function, LOOKUP/VLOOKUP
3.	**Performance Analysis** Features to be covered: - Split cells, freeze panes, group and outline, Sorting, Boolean and logical operators, Conditional formatting
4.	**Game (like Cricket, badminton) Score Card** Features to be covered: - Pivot Tables, Interactive Buttons, Importing Data, Data Protection, Data Validation [CO3]
Presentation Orientation:	
To give information for presentation work using MS-PowerPoint	
1.	Students will be working on basic power point utilities and tools which help them create basic power point presentation. Topic covered includes: - PPT Orientation, Slide Layouts, Inserting Text, Word Art, Formatting Text, Bullets and Numbering, Auto Shapes, Lines and Arrows
2.	This session helps students in making their presentations interactive. Topics covered includes: Hyperlinks, Inserting –Images, Clip Art, Audio, Video, Objects, Tables and Charts
3.	Concentrating on the in and out of Microsoft power point. Helps them learn best practices in designing and preparing power point presentation. Topics covered includes: - Master Layouts (slide, template, and notes), Types of views (basic, presentation, slide slotter, notes etc), Inserting – Background, textures, Design Templates, Hidden slides. Auto content wizard, Slide Transition, Custom Animation, Auto Rehearsing [CO4]
Implementation of MS-PowerPoint.	
To Create presentation with the help of power point by accessing its tools and functions	
1.	Power point test would be conducted. Students will be given model power point presentation which needs to be replicated [CO5]
Internet and its Applications	

	The instructor needs to tell the how to configure Web Browser and to use search engines by defining search criteria using Search Engines [CO6]	
1.	To learn to setup an e-mail account and send and receive e-mails
2.	To learn to subscribe/post on a blog and to use torrents for accelerated downloads
3.	Hands on experience in online banking and making an online payment for any domestic bill

References:

1. IT Tools, R.K. Jain, Khanna Publishing House.

2. Introduction to Information Technology, ITL Education Solutions limited, Pearson Education.

3. Introduction to information technology, Turban, Rainer and Potter, John Wiley and Sons.

4. Problem Solving Cases in Microsoft Excel, Joseph Brady & Ellen F Monk, Thomson Learning.

1st Semester	Effective Communication			
	AEC25101			
Internal Marks: 40		L	T	P
External Marks: 60		2	0	0
Total Marks: 100		Credits		2

Course Outcomes: After studying the course, students will be able to:	
CO1	Understand the Need and Purpose of Communication.
CO2	Interpret Non-Verbal Cues in various contexts.
CO3	Apply fundamental grammar rules in writing and speaking
CO4	Demonstrate effective listening skills to enhance communication
CO5	Strengthen their reading and critical thinking skills
CO6	Deliver and structure a clear and concise presentation

Part	Content	CO
I	**Communication** Meaning, Process, Kinds, Barriers of Communication and How to overcome Barriers	CO1
	Non-Verbal Communication Meaning, Components and Barriers of Non-Verbal Communication	CO2
II	**Grammar** Parts of Speech, Tenses, Voice	CO3
III	**Developing Effective Listening Skills** Listening v/s Hearing, Poor Listening v/s Effective Listening, Advantages of Effective Listening, Types and Barriers of Listening	CO4
IV	**Skills of Effective Reading** Kinds, Techniques and Importance of Reading, Comprehension Skills	CO5
	Presentation Skills Meaning of presentation, Skills required for delivering an effective presentation, Use of Audio-Visual Aids	CO6

References
• Technical Communication (Paperback, Meenakshi Raman, Sangeeta Sharma
• Communication Skills by Sanjay Kumar, Pushp Lata, Second Edition, Oxford University Press
• Essentials of English Grammar & Composition by N.K Aggarwal
• Black Book of English Vocabulary May 2024 by Nikhil Gupta

1st Semester	Universal Human Values			
	VAC24101			
Internal Marks:	40	L	T	P
External Marks:	60	3	0	0
Total Marks:	100	Credits		3

Course Outcomes: After studying the course, students will be able to:	
CO1	Understand the Need and Process of Value Education.
CO2	Identify and Analyse Basic Human Aspirations.
CO3	Analyse the Needs and Activities of Self and Body.
CO4	Harmony in the Self and Body
CO5	Identify and Understand the Comprehensive Human Goal.
CO6	Understand Existence as Co-existence at all levels

Part	Content	CO
I	Introduction to Value Education, Self-Exploration as the Process of Value Education	CO1
	Basic Human Aspirations and the Program to fulfil Basic Human Aspirations	CO2
II	Understanding the Human Being as Co-existence of SELF (I) and BODY	CO3
III	Understanding Harmony in the SELF and the BODY	CO4
	Harmony in the Family, Extending relationship from Family to Society.	CO5
IV	Harmony in Nature and the Holistic perception of Harmony in Existence	CO6

References:

- A Foundation Course in Human Values and Professional Ethics by R R Gaur, R Sangal & G P Bagaria
- Ethics and Human Values by S. Abdul Sattar.
- Human Values by Dr. Kshitiz Jain.

2nd Semester	Fundamental of Statistics			
BCA24201				
Internal Marks: 40		L	T	P
External Marks: 60		3	0	0
Total Marks: 100		Credits		3

Course Outcomes: After studying the course, students will be able to:	
CO1	Comprehend the fundamental concepts of statistics, its importance, scope and distrust.
CO2	Understand the basic concepts of collection and classification of data.
CO3	Classify data presentation methods, explain their purposes, and apply them to create and interpret graphs.
CO4	Define and calculate mean, median, and mode, and apply them to analyse datasets.
CO5	Enable the students with the basics of Dispersion and Range to calculate and interpret data variability.
CO6	Recall the concepts of Standard deviation, variation and explain their significance, and apply them to assess data spread.

Unit	Detailed Contents	CO
I	Introduction to Statistics – Origin of Statistics, Features of Statistics, Scope of Statistics, Functions of Statics, Uses and importance of Statistics, Limitation of Statistics, Distrust of Statistics.	CO1
	Collection of Data: Introduction to Collection of Data, Primary and Secondary Data, Methods of Collecting Primary Data, Methods of Secondary Data, Statistical Errors, Rounding off Data (Approximation).	CO2
II	Classification of Data Frequency Distribution: Introduction Classification of Data, Objectives of Classification, Methods of Classification, Ways to Classify Numerical Data or Raw Data.	
	Tabular Presentation of Data: Introduction to Tabular Presentation of Data, Objectives of Tabulation, Components of a Statistical Table, General Rules for the construction of a Table, Types of Tables. Introduction to Graphical and Diagrammatic: Diagrammatic Presentation of Data, Advantage and Disadvantage of Diagrammatic Presentation, Types of Diagrams, Introduction to Graphic Presentation of Data, Advantage and Disadvantage of Graphic Presentation, Types of Graphs.	CO3
III	Measures of Central tendency: Introduction to Central Tendency, Purpose and Functions of Average, Characteristics of a Good Average, Types of Averages, Meaning of Arithmetic Mean, Calculation of Arithmetic Mean, Merit and Demerits of Arithmetic Mean, Meaning of Median, Calculation of Median, Merit and Demerits of Median,	CO4

	Meaning of Mode, Calculation of Mode, Merit and Demerits of Mode, Harmonic Mean-Properties, Merit and Demerits.	
IV	Measures of Dispersion: Meaning of Dispersion, Objectives of Dispersion, Properties of a good Measure of Dispersion, Methods of Measuring Dispersion, Range - Introduction, Calculation of Range, Merit and Demerits of Range	**CO5**
	Standard Deviation -Meaning, Calculation of Standard Deviation, Merit and Demerits of Standard Deviation. [CO5] Mean Deviation, Calculation of Mean Deviation, Merit and Demerits of Mean Deviation, Coefficient of Variation, Calculation of Coefficient Variance, Merit and Demerits of Coefficient of Variation.	**CO6**

References:

Text Books:
1. Statistics and Data Analysis, A.Abebe, J. Daniels, J.W.Mckean, December 2000.
2. Statistics, Tmt. S. EzhilarasiThiru, 2005, Government of Tamilnadu.
3. Introduction to Statistics, David M. Lane.
4. Weiss, N.A., Introductory Statistics. Addison Wesley, 1999.
5. Clarke, G.M. & Cooke, D., A Basic course in Statistics. Arnold, 1998.
Reference Books:
1. Banfield J. (1999), Rweb: Web-based Statistical Analysis, Journal of Statistical Software.
2. Bhattacharya, G.K. and Johnson, R.A. (19977), Statistical Concepts and Methods, New York, John Wiley & Sons.
E-Books/ Online learning material
1. http://onlinestatbook.com/Online_Statistics_Education.pdf
2. https://textbookcorp.tn.gov.in/Books/12/Std12-Stat-EM.pdf
3. https://3lihandam69.files.wordpress.com/2015/10/introductorystatistics.pdf

2nd Semester	Computer System Architecture			
	BCA24202			
Internal max. marks	40	L	T	P
External max. marks	60	3	0	0
Total Marks	100	Credits		3

Course outcomes: After studying the course, students will be able to:	
CO1	Introduction of basics of digital circuits and logic gates.
CO2	Define a Karnaugh Map (K-Map) as a graphical tool used for the simplification of Boolean expressions.
CO3	Explain the design of simple combinational circuits such as half adders, full adders, multiplexers, and decoders.
CO4	Recognize the characteristic equations and state transitions of various flip-flops.
CO5	Demonstrate the interaction between internal and peripheral components during the execution of a task.
CO6	Apply the concepts of register transfer, micro-operations, and the common bus system in computer systems.

Part	Detailed Contents	CO
I	**Logic gates:** AND, OR, NOT, NAND, NOR, XOR, XNOR, NAND & NOR as universal gates, Logic gates applications.	CO1
	Boolean algebra: Introduction, Theorems, Simplification of boolean expression using boolean algebra, SOP & POS forms, Realization of boolean expression using gates, K - maps, Simplification of boolean expression using K - maps.	CO2
II	**Combinational logic circuits:** Half adder & half subtractor, Full adder & full subtractor, Parallel binary adder, Binary adder / subtractor, Multiplexers & demultiplexers, Implementation of boolean equations using multiplexer and demultiplexer, Encoders & decoders.	CO3
III	**Sequential logic circuits:** Latch, Flip flops - R - S flip - flop, J - K flip - flop, Race around condition, Removing race around condition, Master - slave J - K flip - flop, D flip - flop, T flip - flop, Applications of flip - flops.	CO4
IV	**Introduction to computer organization:** Introduction to computer and CPU (Computer organization, Computer design and Computer architecture), Stored program concept - Von neumann architecture, Harvard architecture, RISC and CISC architecture.	CO5
	Register transfer and micro - operations: Introduction to registers, Instruction format, Types of instructions - Memory reference instructions, Register reference instructions and Input - output instructions. **Common bus system:** Introduction to common bus system, Types of buses (Data bus, Control bus, Address bus), 16 - bit common bus system - Data movement among registers using bus.	CO6

References:
1. Computer Organization and Architecture, Stallings, Eighth Edition, PHI.
2. Computer Organization and Architecture, J.P. Hayes, Third Edition, TMH.
3. Digital and Electronic Circuits, T. C. Bartee, McGraw Hill.
4. Digital Fundamentals, Floyd, Ninth Edition, PHI.
5. Digital Integrated Electronics, Taub & Schilling, Eighth Edition, Mc-Graw Hill.

2ⁿᵈ Semester		Object Oriented Programming using C++			
		BCA24203			
Internal max. marks	40		L	T	P
External max. marks	60		3	0	0
Total Marks	100		Credits		3

Course outcomes: After studying the course, students will be able to:	
CO1	Remember the basic features and components of Object-Oriented Programming and C++ program structure.
CO2	Illustrate how access specifiers control visibility and explain how objects access member variables and functions.
CO3	Use constructors and destructors to create programs demonstrating object creation, initialization, and cleanup.
CO4	Discuss the concept of reusability and relationships among classes through inheritance.
CO5	Explain the rules and differences between unary and binary operator overloading.
CO6	Implement programs using runtime polymorphism, abstract classes, and perform file I/O operations using file streams.

Part	Detailed Contents	CO
I	**Principles of object oriented programming** Introduction to OOP and its basic features, Basic components of a C++, Program and program structure, Compiling and Executing C++ Program. Difference between Procedure Oriented Language(C) and Object Oriented Language.	CO1
II	**Classes & Objects and Concept of Constructors** Defining classes, Defining member functions, Declaration of objects to class, Access to member variables from objects, Different forms of member functions, Access specifiers (Private, public, protected), Array of objects.	CO2
	Introduction to constructors, Parameterized constructors, Copy Constructor, Multiple constructors in class, Dynamic initialization of objects, Destructors	CO3
III	**Inheritance and Operator overloading** Introduction to Inheritance, Types of inheritance: - Single inheritance, Multiple inheritance, Multilevel inheritance, Hierarchical inheritance, Hybrid inheritance.	CO4
	Defining operator overloading, Overloading of Unary and Binary operators, Rules for overloading operators	CO5
IV	**Polymorphism and File Handling** Early Binding, Late Binding, Virtual Functions, pure virtual functions, Abstract Classes. File classes, Opening and Closing a file, File modes, Manipulation of file pointers, Functions for I/O operations.	CO6

References:
1. Object Oriented Programming with C++, E. Balagurusami, Fourth Edition, Tata Mc-Graw Hill.
2. Object Oriented Programming in Turbo C++, Robert Lafore, Fourth Edition Galgotia Publications.
3. The C++ Programming Language, Bjarna Stroustrup, Third Edition, Addison-Wesley Publishing Company.
4. Object Oriented Programming Using C++, Salaria, R. S, Fourth Edition, Khanna Book Publishing.

2nd Semester	Object Oriented Programming using C++ Laboratory			
BCA24204				
Internal max. marks	60		L	T	P
External max. marks	40		0	0	4
Total Marks	100		Credits		2

Additional material required in ESE: Softcopy & Hardcopy of the exercises are to be maintained during the practical labs and to be submitted during the End Semester Examinations.

Course Outcomes: After studying this course, students will be able to:	
CO1	Apply programming logic to write C++ programs for swapping values, finding largest numbers, factorials, and calculating total marks.
CO2	Describe how objects interact with member functions and how function overloading works.
CO3	Classify the role of inheritance in data sharing between base and derived classes.
CO4	Demonstrate unary (++) and binary (+) operator overloading in C++ programs.
CO5	Execute programs using virtual functions and abstract classes to demonstrate polymorphism.
CO6	Explain reading and writing processes through ifstream, ofstream, and fstream.

Instructions: Develop all program in C++

Assignments:

1.	Write a program to enter mark of 6 different subjects and find out the total mark (Using cin and cout statement). [CO1]
2.	Write a function using reference variables as arguments to swap the values of pair of integers. [CO1]
3.	Write a function to find largest of three numbers. [CO1]
4.	Write a program to find the factorial of a number.[CO1]
5.	Define a class to represent a bank account which includes the following members as Data members: a) Name of the depositor b) Account Number c) Withdrawal amount d) Balance amount in the account Member Functions: a) To assign initial values b)To deposit an amount c) To withdraw an amount after checking the balance d) To display name and balance. [CO2]
6.	Write the above program for handling n number of account holders using array of objects. [CO2]
7.	Write a C++ program to compute area of right angle triangle, equilateral triangle, isosceles triangle using function overloading concept. [CO2]
8.	Consider a publishing company that markets both book and audio cassette version to its works. Create a class Publication that stores the title (a string) and price (type float) of a publication. Derive the following two classes from the above Publication class: Book which adds a page count (int) and Tape which adds a playing time in minutes(float). Each class should have get_data() function to get its data from the user at the keyboard. Write the main() function to test the Book and Tape classes by creating instances of them asking the user to fill in data with get_data() and then displaying it using put_data().[CO3]
9.	Consider an example of declaring the examination result. Design three classes student, exam and result. The student has data members such as rollno, name. Create the lass exam by inheriting the

	student class. The exam class adds data members representing the marks scored in 5 subjects. Derive the result from exam-class and it has own data members like total, avg. [CO3]
10.	Write a program for overloading of Unary ++ operator. [CO4]
11.	Write a program for overloading of Binary + operator. [CO4]
12.	Write a program of Virtual Functions. [CO5]
13.	Write a program of Abstract Classes. [CO5]
14.	Write a program to read and write from file. [CO6]

References:
1. Object Oriented Programming with C++, E. Balagurusami, Fourth Edition, Tata Mc-Graw Hill.
2. Object Oriented Programming in Turbo C++, Robert Lafore, Fourth Edition Galgotia Publications.
3. The C++ Programming Language, Bjarna Stroustrup, Third Edition, Addison-Wesley Publishing Company.
4. Object Oriented Programming Using C++, Salaria, R. S, Fourth Edition, Khanna Book Publishing.

2nd Semester		Fundamentals of Statistics Laboratory			
		BCA25201			
Internal max. marks	60		L	T	P
External max. marks	40		0	0	2
Total Marks	100		Credits		1

Course Outcomes: After studying this course, students will be able to:	
CO1	Define data sorting as a method used to arrange data for identifying groups or trends.
CO2	Memorize the basic steps for creating frequency tables and graphs for data representation.
CO3	Explain the application of various statistical operations using statistical tools such as Excel.
CO4	Classify how various statistical measures are computed using statistical tools such as Excel.
CO5	Apply statistical tools to analyze real-life data.
CO6	Implement appropriate methods to prepare data in various formats and styles.

Instructions: Sample exercises are given below and Instructor can increase or decrease the experiments as per the requirement.

Assignments:

1	Calculate the addition, subtraction, multiplication. [CO1]
2	Display the Maximum and Minimum market data. [CO1]
3	Display the Count Function. [CO2]
4	Display year wise strength of the students of a college in Tabular form & Graphical form. [CO2]
5	Calculate the average marks of the students of your College. [CO3]
6	Print measure of Central Tendency using grouped and ungrouped data. [CO3]
7	Construct & print frequency distribution using data with the following Techniques: a) Histogram b) Frequency Polygon c) Frequency Curve c) Ogive curves. [CO4]
8	Find out & display the Median and Mode from the following series by using suitable method: **Class 156-158 158-160 160-162 162-164 164-166** **Frequency 4 8 28 51 89** [CO4]
9	Calculate an appropriate measure of dispersion using grouped and ungrouped data. [CO4]
10	Make an array and calculate range of the data. [CO5]
11	Represent the placement record of the students of your college. [CO5]
12	Calculate & display Letter Grade using spreadsheet. [CO6]
13	Represent the following data by suitable graphs; determine therefrom the number of children having IQ (i) Below 105 (ii) Above 124. **IQ 75-84 85-94 95-104 105-114 115-124 125-134** **No. of Children** 8 20 45 54 28 16 [CO6]

2nd Semester		Computer System Architecture Laboratory			
BCA25202					
Internal max. marks	60		L	T	P
External max. marks	40		0	0	2
Total Marks	100		Credits		1

Course Outcomes: After studying this course, students will be able to:	
CO1	Define the basic concepts of various logic gates and their verification.
CO2	Recall the implementation of all logic gates using universal gates.
CO3	Explain the design of adder and subtractor combinational circuits.
CO4	Discuss the design and functioning of encoder and decoder combinational circuits.
CO5	Implement multiplexer and demultiplexer combinational circuits to solve given digital logic problems.
CO6	Execute various types of sequential circuits to perform specified digital operations.

Sno.	Assignments
1.	To verify the Truth Table of Basic Logic Gates.[CO1]
2.	To verify the Truth Table of Combinational Logic Gates [CO1]
3.	To verify the Truth Table of Universal Logic Gates [CO1]
4.	To verify the Truth Table of Half Adder Combinational Circuit [CO2]
5.	To verify the Truth Table of Full Adder Combinational Circuit [CO2]
6.	To verify the Truth Table of Half Subtractor Combinational Circuit [CO2]
7.	To verify the Truth Table of Full Subtractor Combinational Circuit [CO2]
8.	To verify the Truth Table of Decoder Combinational Circuit [CO3]
9.	To verify the Truth Table of Encoder Combinational Circuit [CO3]
10.	To verify the Truth Table of Multiplexer Combinational Circuit [CO3]
11.	To verify the Truth Table of De Multiplexer Combinational Circuit [CO3]
12.	To verify the Truth Table of S-R Flip-Flop [CO4]
13.	To verify the Truth Table of J-K Flip-Flop [CO4]
14.	To verify the Truth Table of Master Slave J-K Flip-Flop [CO4]
15.	To verify the Truth Table of D Flip-Flop [CO5]
16.	To verify the Truth Table of T Flip-Flop [CO5]
17.	To verify the working of Asynchronous Up Counter [CO6]
18.	To verify the working of Asynchronous Down Counter [CO6]
19.	To verify the working of Asynchronous MOD-N Counter [CO6]
20.	To verify the working of Synchronous Up Counter [CO6]
21.	To verify the working of Synchronous Down Counter [CO6]
22.	To verify the working of Synchronous MOD-N Counter [CO6]
23.	To verify the working of Asynchronous Bidirectional Counter [CO6]
24.	To verify the working of Synchronous Bidirectional Counter [CO6]

References:

1. Computer Organization and Architecture, Stallings, Eighth Edition, PHI.

2. Modern Digital Electronics, R. P. Jain, Fourth Edition, TMH.

3. Digital Logic & Computer Design, D. Morris Mano, Second Edition, PHI.

4. Digital and Electronic Circuits, T. C. Bartee, McGraw Hill.

5. Digital Fundamentals, Floyd, Ninth Edition, PHI.

6. Digital Integrated Electronics, Taub & Schilling, Eighth Edition, Mc-Graw Hill.

2nd Semester	Environmental Studies & sustainability			
VAC24201				
Internal Marks:	40	L	T	P
External Marks:	60	3	0	0
Total Marks:	100	Credits		3

Prerequisite: Students must have the basic understanding of the Environment

Course Outcomes: After studying the course, students will be able to:	
CO1	Recall the multidisciplinary nature and fundamental concepts of environmental studies clearly.
CO2	Remember basic climatic conditions along with common adaptation and mitigation techniques.
CO3	Evaluate the interlink between biotic and abiotic components of ecosystem.
CO4	Explain biodiversity terms and describe their significance in supporting human society.
CO5	Apply case studies to examine pollution problems and suggest effective remedies.
CO6	Use environmental science concepts to support and enhance sustainable development practices.

Part	Content	CO
I	**Introduction to Environmental Studies:** Multidisciplinary nature of Environmental Studies, Scope and Importance, Role of an individual and IT in protection, Need for public awareness.	CO1
	Climate Change: Climate change, it's causes and consequences, Adaptation and mitigation techniques for climate change, case studies on the survival of dolphins, IPCC and its laws, Economic conditions of the world related to climate change	CO2
II	**Ecosystem:** Structure and function of ecosystem, Energy flow, Food Chain and Food Web, Ecological Pyramids	CO3
III	**Biodiversity:** Levels of biodiversity, India as a mega-biodiversity nation, Hotspots of biodiversity, Threats to biodiversity, Conservation of biodiversity, Values of biodiversity.	CO4
	Environmental Pollution: Types, Causes, effects and controls (Air, Water, Soil, Noise and Nuclear Hazards) Human Health Risks, Solid Waste Management, Pollution case studies, study of various types of wastes produced and their dumping spots and the consequences	CO5
IV	**Environmental and Social Issues:** Climate change, Global Warming, Ozone layer Depletion, Acid Rain and impacts on Human communities and agriculture, Case Study of Taj Mahal, Wildlife Protection Act, Forest Conservation Act.	CO6
	Human Population and Environment: Human Population Growth; Impacts on the Environment, Human health and Welfare; Disaster Management: Floods, Earthquakes, Cyclone and Landslides.	
	Environmental Communication and Public Awareness, Case Studies (e.g., CNG Vehicles in India)	

Field Work
- Visit to a local polluted site- Urban/ Rural/ Industrial/ Agricultural   - Study of common Plants, Insects, Birds   - Study of simple ecosystem pond

References:
- Environmental Studies by S.M.Saxena   - Environmental Sciences by Jaswinder Kaur   - Introductory environmental studies by Dr. S.K. Bhasin, Dr. Varinder Kaur   - Climate Change Adaptation and Mitigation by James M.Vose

2nd Semester	Feature Engineering			
BCA25203				
Internal Marks:	40	L	T	P
External Marks:	60	2	0	0
Total Marks:	100	Credits		2

Prerequisite: Students must have the basic understanding of the Environment

Course Outcomes: After studying the course, students will be able to:	
CO1	Recall the importance of data and features in machine learning.
CO2	Memorize the basic feature preprocessing techniques.
CO3	Explain and apply numerical feature engineering techniques.
CO4	Discuss and apply suitable encoding techniques.
CO5	Apply suitable encoding methods like one-hot and label encoding effectively.
CO6	Interpret appropriate techniques to encode categorical data.

Part	Content	CO
I	**Introduction to Feature Engineering** **Introduction to Data and Features:** Importance of Features in Machine Learning. Data types and features: Numerical, Categorical, Ordinal, Discrete, Continuous, Interval and Ratio.	CO1
	Basic Feature Preprocessing: Handling Missing Data, Data Cleaning, Feature Scaling, Normalization, and Transformation.	CO2
II	**Feature Engineering Techniques:** Techniques for Numerical Data: Binning and Discretization, Polynomial and Interaction Features.	CO3
III	**Categorical Data Techniques:** One Hot Encoding, Label Encoding. Feature extraction vs. feature selection, Steps in feature selection.	CO4
	Feature Selection Methods: Filter, Wrapper, and Hybrid.	CO5
IV	**Feature Reduction:** Introduction and application of Principal Components Analysis.	CO6

Text Books:
1. M.C. Trivedi, Data Science and Data Analytics Using Python Programming, Khanna Publishing House, 2024. 2. Zheng, Alice, & Casari, Amanda. (2018). Feature engineering for machine learning: Principles and techniques for data scientists. O'Reilly Media, Inc. 3. Kalita, J. K., Bhattacharyya, D. K., & Roy, S. (2023). Fundamentals of Data Science: Theory and Practice. Elsevier. ISBN-13: 9780323917780.

References:

1. Duda, R. O., Hart, P. E., Stork, D (2007). Pattern classification (2Ed), John Wiley & Sons, ISBN-13: 978-8126511167.

2. N. Bhaskar, Vasundhara, Machine Learning, Khanna Publishing House, 2024.

3. M.C. Trivedi, Deep Learning and Neural Network_MC Trivedi, Khanna Publishing House, 2024.

4. Ng, Andrew. (2018). Machine learning yearning (Draft, MIT Licensed). GitHub. ISBN- 10: 199957950X, ISBN-13: 978-1999579500.

5. Han, Jiawei, Kamber, Micheline, & Pei, Jian. (2011). Data mining: Concepts and techniques (3rd ed.). Morgan Kaufmann Publishers. ISBN 978-0123814791.

EMC-25101	L	T	P
Entrepreneurship Setup and Launch	0	0	4

Introduction:
This semester lays the foundation for the learner to understand what entrepreneurship is, beyond just starting a business. It introduces key ideas like problem-solving, value creation, and self-awareness. The learner will begin exploring basic business concepts while discovering their own interests and strengths.

Learners Objective:
1. Understand the core concepts of entrepreneurship through relatable, real-life examples.
2. Begin to see themselves as problem-solvers and creators.
3. Learn about business paths and choose one to try based on interest or local fit.
4. Launch a micro-hustle (online or offline) to earn their first income.
5. Build confidence and self-belief by doing.

Outcome: By the end of this semester, learners will start a simple business activity, earn their first income, and build belief in their ability to do business.

Guiding Principles/Approach:

This syllabus is built on principles of **experiential learning, growth mindset development**, and **identity-first learning**. Drawing from learning science and behavior design, the course shifts students from passive learning to *active doing*, where they try out small business activities in real contexts. The design helps students not just learn entrepreneurship but begin to see themselves as entrepreneurs. Emphasis is placed on *small wins, peer collaboration, and locally relevant opportunities* to ensure learning feels achievable and connected to their realities. The curriculum focuses on conceptual understanding without heavy theory, combining *practical action, reflection, and collaboration. By making progress visible and success feel possible, it plants the seeds of self-reliance, initiative, and long-term motivation.*

Semester Syllabus:

Format: 12 weeks, 4 hours/week | 2 credits
Revenue Target: ₹10,000

Week	Learning Goal	Measurable Outcome
1	Understand what entrepreneurship is and who can be an entrepreneur	Students define entrepreneurship in their own words and list 2 entrepreneurs from their local area or community
2	Connect personal identity to entrepreneurship (strengths, interests, struggles)	Students create a "value map" showing how a skill/interest/problem from their life could become a business opportunity

3	Learn about 5 business paths: content creation, drop-shipping, cloud kitchen/food business, gig economy and local services	Students explore 1–2 examples from each domain and share one they're most curious to try and why
4	Choose a path and generate a basic business idea	Students write down a clear offer (what, for whom, why) and one way to reach their customer
5	Take first real action: message, post, pitch, or sell	Students reach out to or serve 1 real potential customer and record what happened
6	Reflect on first attempt and share with peers	Students share their result, a challenge faced, and one idea to improve next time
7	Improve and try again: aim for first ₹100	Students apply a change, try again, and aim to make their first ₹100 or get meaningful response
8	Learn how to identify and understand your target customer	Students talk to 2 potential customers or observe them and list 3 insights about their needs
9	Learn how to serve your target audience better	Students improve one part of their offer (product, delivery, messaging, or interaction) based on customer feedback or need
10	Explore core entrepreneurial values (resilience, honesty, effort)	Students reflect on 1 value they're building and show it in a business task or peer story
11	Focus on earning and staying consistent	Students complete a second earning task and track their consistency (e.g., same product or message for 3 days)
12	Reflect on earnings, grit, and how to keep going	Students record total earnings, one resilience moment, and one support system or habit they'll continue with

Weekly Component:

Component	Duration	Description
Learning Module	~1.5 hrs	- Introduces key concepts in a simple and engaging way - Includes, examples, and 1–2 interactive discussions or quizzes
Action Lab	~2 hrs	- Hands-on task on the weekly concept - Includes step-by-step guidance, templates, and worksheets - Ends with a submission (e.g., video, reflection, or proof of action)
Resources	Self-paced	- Supplementary videos, short readings, real- life stories, and tools to deepen understanding at their own pace

Evaluation Criteria

Evaluation Component	Description	Weightage
Weekly Task Completion	Timely submission of weekly tasks including reflections, activities, quizzes etc.	40%
Target Completion	Performance-based evaluation on hitting **revenue or profit targets** (e.g., generating ₹10,000 revenue)	30%
Final Project	A comprehensive project based on the semester's theme	30%

Week 1: What is Entrepreneurship? Who Can Be an entrepreneur?

INTRODUCTION: Could *You* Be an entrepreneur?

When people hear "entrepreneur," they often think it means having a company, investors, or an MBA. Some even believe it's only for toppers or those with high grades. But entrepreneurship is more about mindset than qualifications: it's about seeing a problem and doing something about it. Like someone who starts selling snacks because their school canteen is always shut, or a friend who fixes broken chargers for others. If you've ever spotted a need and thought, "I can solve this," - you've already taken your first step.

Component 1: Learning Module (~1.5 hours) Unit 1:

What is Entrepreneurship?

1. *Solving problems or creating value in exchange for money.*
2. Entrepreneurship is not just about starting a company: it's about initiative, resourcefulness, and value creation.
3. Different types of entrepreneurs: small shop owners, street vendors, YouTubers, local tailors, mechanics, and more.
4. Entrepreneurs build opportunities instead of waiting for them.

Simple Slide/Visual Aid Tip:

    A circle that says "Problem", an arrow pointing to "Solution", then an arrow to "Earn". That's entrepreneurship.

    <A video that visually shows how entrepreneurship starts with spotting a problem (e.g., long food lines), creating a solution (e.g., pre-order lunch service), and earning from it: illustrating the simple flow: Problem → Solution → Earn>

MCQ 1

Q: What best describes entrepreneurship?

    A. Getting a job in a company
    B. Solving problems for others and earning from it ▮
    C. Studying business in college
    D. Buying expensive things

Feedback:

1. *Correct! Entrepreneurs solve problems or offer value and get paid for it.*
2. *Not quite! Entrepreneurship is about creating something useful, not just getting a job or studying.*

Unit 2: Who Can Be an entrepreneur?

Entrepreneurship starts with spotting a problem, finding a solution, and creating value. Today, anyone with a phone and an internet connection can start a business: money helps, but mindset and initiative matter more at the start.

You just need:

1. A problem to solve
2. A simple skill or product
3. The courage to start small

Examples Carousel (Swipeable cards)

1. **Pooja (India)** – Sells handmade rakhis on Instagram, learned designing on YouTube.
   Problem she saw: Expensive or generic rakhis in the market; no personal touch.
2. **Luis (Mexico)** – Repairs used phones in his garage, now has loyal customers.
   Problem he saw: Many people couldn't afford new phones or didn't trust local repair shops.
3. **Sana (Kolkata)** – Started tiffin delivery from her home kitchen, now earns ₹500/day.
   Problem she saw: Office workers struggled to find affordable, homemade meals.
4. **Sal Khan (USA)** – Started Khan Academy with YouTube lessons to help his cousin.
   Problem he saw: His cousin needed help with math, but good learning resources were hard to access.

MCQ

Q: Which of these can be a form of entrepreneurship?

A. Making reels on skincare tips and selling homemade face packs 🟩
B. Buying new clothes from malls
C. Studying engineering
D. Playing games without sharing or streaming

Feedback:

1. *Correct! Sharing useful tips + selling a product = solving a need!*
2. *Try again! Entrepreneurship is about creating value and helping others.*

Reflection Prompt

1. If you had to earn ₹100 this week, what would you do?

Component 2: Action Lab (~2 hours) Task

Find & Learn from 2 Entrepreneurs Near You

Steps (Checklist):

1. Look around your neighborhood or online: find 2 people who earn through their own work
2. Ask or observe:
   a) What do they do?
   b) How do they earn?

      c) What makes them entrepreneurial?
3. Use the **Entrepreneur Tracker Template** (available in the resources tab)

Final Deliverable

Learner submits:

1. A short definition of entrepreneurship (in their words)
2. 2 entries from the Entrepreneur Tracker (name, what they do, what learner learned)

→ Submitted in the submissions tab.

Supplementary Resources (Optional)

1. [Danny O'Neill - Getting started | Entrepreneurship | Khan Academy](#)
2. [The Better India – Stories of local entrepreneurs](#)

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Week 2: Can I Be an entrepreneur?

INTRO – What Makes an entrepreneur?

You don't need a suit, a degree, or a lot of money to be an entrepreneur.

You need one thing: a mindset. Entrepreneurs notice problems around them: and do something about it. From the boy fixing bikes outside his house to the girl teaching dance on Instagram, they all started small. What matters most is not what you have: it's how you think and act.

Component 1: Learning Module (~1.5 hours)

Unit 1: What Makes an entrepreneur?

Key Concepts:

1. **Entrepreneurs are driven by curiosity:** they ask questions, explore possibilities, and seek better ways to do things.
2. **They take initiative:** they act, experiment, and create using limited resources with creativity and courage
3. **They learn by doing:** embracing mistakes as stepping stones to progress.
4. **They take full ownership:** one day they're the marketer, the delivery person, and the customer support, all in one.
5. **They are resilient:** they persist through challenges, adapt to change, and keep moving forward with purpose.

Real-Life Examples:

1. Nithin & Nikhil Kamath (Zerodha) – Started India's largest stock brokerage without formal degrees or external funding, just deep curiosity about stock markets and a desire to simplify investing.
2. *Qualities: Took initiative early and stayed persistent through challenges.*
3. Prajakta Koli (MostlySane) – Started by making comedy sketches about everyday Indian life: family, school, relationships: and became one of India's top digital creators.
4. *Qualities: Stayed consistent, adapted over time, and built strong audience trust.*
5. Tilak Mehta (Paper n Parcels) – As a teenager, launched a courier startup using Mumbai's dabbawala network for delivery.
6. *Qualities: Thought creatively and acted with confidence at a young age.*

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Unit 2: Start Small: Build Ideas from What You Know

In the last unit, you learned that entrepreneurs don't just have ideas: they act, solve problems, and use what they have.

But the big question now is:

<div align="center">"What can I offer?"</div>

That's where the Value Map comes in. It helps you take your first step toward thinking and acting like an entrepreneur: in your own way.

What is a Value Map?

A Value Map connects three simple things:

A. **What people around you need**
 → *Look around: is there something people often struggle with or something that could be better?*

B. **What you *enjoy* or are *willing to try***
 → *You don't need to be an expert. Start with small things you like doing: talking to people, fixing, organizing, helping, designing, or learning something new.*
 → *Even if you're just curious about something: that's enough to begin.*

C. **What solution you can create**
 → *Use what you enjoy or are learning to try solving a real need around you: even in a small way*

Visuals:
 3 overlapping circles:
1. "People Need"
2. "I Can"
3. "My Offer"

Examples:
1. **People Need → Affordable meals**
 I Can → Cook + have access to home kitchen My Offer → ₹40 tiffin service
2. **People Need → Study tips in Punjabi I Can → Speak clearly + love teaching**
 My Offer → 3-minute video tips on Instagram

MCQ

Q: What's the first step to being an entrepreneur?
A. Waiting for the perfect idea
B. Solving a problem with your skills 🟩
C. Buying a shop
D. Studying for years

Feedback:

1. Correct! Entrepreneurs start by solving small problems using what they already have.

2. Try again! It's not about waiting: it's about starting.

Reflection Prompt

1. If someone gave you ₹500 and asked you to earn from it, what would you do?

Component 2: Action Lab (~2 hours)

Task: Create Your Personal Value Map Steps (checklist in app):

1. Think of 2–3 problems people face around you (hunger, phone repair, boredom, etc.)
2. List your own skills, interests, or resources.
3. Match each problem with something you could offer.
4. Use the **Value Map Template in the resources** to organize your ideas.

Final Deliverable (Submitted in App):

1. Your completed **Value Map** (in 3 columns: Need, Skill, Offer)
2. Highlight **1 idea** you'd like to explore for your future hustle

Supplementary Resources (Optional)

1. "Start with Why" by Simon Sinek
2. 10 Characteristics of Successful Entrepreneurs | Business: Explained

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