

Pimpri Chinchwad Education Trust's

Pimpri Chinchwad College of Engineering and Research,

Ravet Pune

**Curriculum Structure and
Syllabus of First Year B.C.A**

With Effective from Academic Year 2025-26



T. Parikh

FY BCA Structure and Syllabus



PCCOE&R 2025-2026 Batch



Preface by Board of Studies

Dear Students and Teachers,

We, the members of Board of Studies of Bachelor of Computer Application, are very happy to present First Year of Bachelor of Computer Application syllabus effective from the AY Year 2025-26. Subsequently this will be carried forward for SY and TY in the AY 2026-27, 2027-28, respectively.

Bachelor of Computer Application is a dynamic discipline that provides the foundation for the design, development, and application of computer systems and other computing devices. This curriculum is designed to provide students with the comprehensive understanding of the fundamental principles, theories, and practices of computer application, while also preparing them for the ever-evolving technological landscape.

The revised syllabus falls in line with the objectives of NEP - 2020, Savitribai Phule Pune University, AICTE New Delhi, UGC, and various accreditation agencies by keeping an eye on the technological developments, innovations, and industry requirements. Wherever possible additional resource links of platforms such as NPTEL, Swayam are appropriately provided at the end of each course. Learners are now getting sufficient time for self-learning either through online courses or additional projects for enhancing their knowledge and skill sets. This will definitely help learners to facilitate their enhanced learning based on their interest.

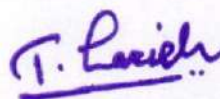
This curriculum is the result of extensive consultation with academic experts, industry professionals, and alumni to ensure relevance and excellence. It is designed not only to meet the current industry standards but also to prepare students for higher studies and research in the field of computer Application.

We hope that this curriculum will inspire students to become competent professionals, responsible citizens, and contributors to the technological advancement of society. We would like to place on record our gratefulness to the faculty, students, industry experts and stakeholders for having helped us in the formulation of this syllabus.



Dr. Smriti Pathak

Chairman - Board of Studies (Bachelor of Computer Application) Pimpri Chinchwad College of Engineering and Research, Ravet Pune



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Ms. Sheetal More	

**Curriculum for First Year - "Bachelor in Computer
Application" (2024 Pattern)**

Program Specific Outcomes (PSO)

- **PSO1 (Design and Development in Software):** -The ability to apply software development life cycle principles to design and develop application software that meets the automation needs of society and industry, along with the ability to understand, analyze, and develop computer programs in areas such as algorithms, system software, multimedia, web design, big data analytics, and networking for the efficient design of computer-based systems of varying complexities.
- **PSO2 (Computing and Research ability):** - The ability to employ modern computer languages, environments, and platforms to create innovative career paths in SMAC (Social, Mobile, Analytics, and Cloud) technologies."
- **PSO3 (Successful Career and Entrepreneurship):** - the ability to employ modern computer languages, environments, and platforms to create innovative career paths, whether as entrepreneurs or through higher studies also demonstrate professionalism and ethical values, serve as efficient team leaders, communicate effectively, and work competently in multidisciplinary environments.

Programme Educational Objectives (PEO)

- **PEO1:** Possess a strong foundation in core computing and programming skills, enabling them to design, develop, and implement software solutions using appropriate technologies and methodologies.
- **PEO2:** They will apply computational principles, critical thinking, and problem-solving techniques to develop innovative solutions for real-life challenges, preparing them for industry-ready professional skills.
- **PEO3:** They will be equipped to adapt to technological advancements, address global challenges, and contribute to society, industry, and the environment by embracing professionalism, communication, teamwork, lifelong learning, and ethics.



General Rules and Guidelines

- **Course Outcomes (CO):** Course Outcomes are narrower statements that describe what students are expected to know, and are able to do at the end of each course. These relate to the skills, knowledge and behavior that students acquire in their progress through the course.
- **Assessment:** Assessment is one or more processes, carried out by the institution, that identify, collect, and prepare data to evaluate the achievement of Program Educational Objectives and Program Outcomes.
- **Evaluation:** Evaluation is one or more processes, done by the Evaluation Team, for interpreting the data and evidence accumulated through assessment practices. Evaluation determines the extent to which Program Educational Objectives or Program Outcomes are being achieved, and results in decisions and actions to improve the program.

Guidelines for Examination Scheme

Theory Examination: The theory examination shall be conducted in two different parts Formative Assessment (FA) and End-Semester Examination (ESE).

Theory				Practical				Term Work	
100 Marks		50 Marks		50 Marks		25 Marks		25 Marks	
FA	ESE	FA	ESE	Practical	OR	Practical	OR	Attendance	Lab Assessment
50	50	25	25	35	15	25	-	4	21



List of Abbreviations Used

Abbr.	Full Form
AEC	AEC Ability Enhancement Course
AICTE	All India Council for Technical Education
CC	Core Courses
DSE	Discipline Specific Elective
MDE	Multi-Disciplinary Elective course
NEP	National Education Policy
NPTEL	National Programme on Technology Enhanced Learning
OE	Open Elective
PEO	Programme Educational
PSO	Program Specific Outcomes
SEC	Skill Enhancement courses
SWAYAM	Study Webs of Active-learning for Young Aspiring Minds
UGC	University Grants Commission
VAC	Value added Courses
CO-C	Co-Curricular Courses



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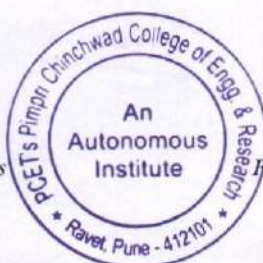


SEMESTER -I

Level 4.5																	
Course Code	Course	Course Type	Credits	Credit Scheme				Teaching Scheme (Hrs / Week)				Evaluation Scheme				Total Marks	
				L	TU	PR	Tw	L	TU	PR	Tw	FA	SA ESE	PR	OR		TW
Semester I																	
CC-101-CA	Mathematical Foundations of Computer Science - I	CC	3	3	0	0	0	3	0	0	0	50	50	0	0	0	100
CC-102-CA	Computer Architecture	CC	5	3	0	2	0	3	0	4	0	50	50	35	15	0	150
SEC-101-CA	Problem Solving Techniques	SEC	5	3	0	2	0	3	0	4	0	50	50	35	15	0	150
MDC-101-CA	Indian Knowledge System	MDC	2	1	0	0	1	1	0	0	1	25	0	0	0	25	50
VAC-101-CA	Environmental Science and Sustainability	VAC	2	2	0	0	0	2	0	0	0	25	25	0	0	0	50
OEC-101-CA	Data Science I / Cyber Security I	OEC	2	2	0	0	0	2	0	0	0	25	25	0	0	0	50
CO-C101-CA	Co-Curricular Courses (CC)	CO-C	1	0	0	0	1	0	0	0	1	0	0	0	0	25	25
AEC-101-CA	Business Communication	AEC	2	1	0	0	1	1	0	0	1	25	0	0	0	25	50
AEC-102-CA	Additional Course - Indian or Foreign Language*	AEC	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0
	Total		22	15	0	4	3	16	1	8	3	250	200	70	30	75	625

Note: ^Indian Knowledge System: Indian Culture and Civilization Indian Vision for Human Society Indian Science Indian Town Planning and Architecture Indian Mathematics and Astronomy Indian Aesthetics Indian Health, Wellness

*Indian Languages: Sanskrit/Hindi/All Regional languages Foreign Languages: (not limited to) German/French etc



T. Laxmi

SEMESTER - II

Level 4.5

Level 4.5																	
Course Code	Course	Course Type	Credits	Credit Scheme				Teaching Scheme (Hrs / Week)				Evaluation Scheme				Total Marks	
				L	TU	PR	Tw	L	TU	PR	Tw	FA	SA ESE	PR	OR		TW
Semester II																	
CC-151-CA	Mathematical Foundations of Computer Science - II	CC	3	3	0	0	0	3	0	0	0	50	50	0	0	0	100
CC-152-CA	Introduction to Microcontroller and applications	CC	5	3	0	2	0	3	0	4	0	50	50	35	15	0	150
CC-153-CA	Fundamentals of Operating Systems and Networking	CC	4	3	0	1	0	3	0	2	0	50	50	25	0	0	125
SEC-151-CA	Object Oriented Programming	SEC	5	3	0	2	0	3	0	4	0	50	50	35	15	0	150
SEC-152-CA	Web Technologies	SEC	2	1	0	1	0	1	0	2	0	0	0	0	0	50	50
OE-151-CA	Data Science II / Cyber Security II	OEC/ GEC	1	0	0	0	1	0	0	0	1	0	0	0	0	25	25
VAC-151-CA	Indian Constitution	VAC	2	1	0	0	1	1	0	0	1	25	0	0	0	25	50
AEC-151-CA	Additional Course - Indian or Foreign Language*	AEC	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0
	Total		22	15	1	6	2	14	0	12	2	225	200	95	30	100	650

NOTE: *Indian Languages: Sanskrit/Hindi/All Regional languages Foreign Languages: (not limited to) German/French etc.



T. Parikh

	Pimpri Chinchwad Education Trust's Pimpri Chinchwad College of Engineering & Research Ravet, Pune <i><u>An Autonomous Institute</u></i>	
AY: 2025–26	<u>Board of Studies – BCA Department</u> <u>BCA BoS</u>	Term I

Program Outcomes (POs)

- PO1:** Capable to apply the knowledge of mathematics, algorithmic principles and computing fundamentals in the modeling and design of computer based systems of varying Complexity
- PO2:** Ability to critically analyze, categorizes, formulate and solve the problems that emerges in the field of computer science.
- PO3:** Able to provide software solutions for complex scientific and business related problems or processes that meet specified needs with appropriate consideration for the public health and safety and the cultural, societal and environmental considerations.
- PO4:** Use contemporary techniques, skills and tools necessary for integrated solutions.
- PO5:** Function effectively with social, cultural and ethical responsibility as an individual or as a team member with positive attitude.
- PO6:** Function effectively as member or leader on multidisciplinary teams to accomplish a common objective.
- PO7:** An ability to communicate effectively with diverse types of audience and also able to prepare and present technical documents to different groups.
- PO8:** Graduates will recognize the need for self-motivation to engage in lifelong learning to be in par with changing technology.
- PO9:** Enhance the research culture and uphold the scientific integrity and objectivity.



Semester I

Pimpri Chinchwad Education Trust's Pimpri Chinchwad College of Engineering and Research, Ravet, Pune					
Department: First Year Computer Application (2025 Pattern)				Semester: I	
Course Code: CC-101-CA			Name of Course: Mathematical Foundations of Computer Science – I		
Teaching Scheme (Hrs/week):			Credits: 3		
Lecture	Practical	TW	Lecture	Practical	TW
3	0	-	3	0	-
Examination Scheme:					
FA	ESE	Total			
50 Marks	50 Marks	100 Marks			
Course Objective: The course aims to					
1. To provide students with a solid foundation in key areas of discrete mathematics.					
2. To essential for computer science, data analysis, and mathematical reasoning.					
Course Outcome: Upon successful completion of this course, students will be able to					
CC-101.1	Develop a basic understanding of fundamental mathematical concepts using sets theory.				
CC-101.2	Use mathematical models and techniques to analyze the relation and Function theory.				
CC-101.3	Apply basic counting techniques on Counting and Recurrence Relation.				
CC-101.4	Evaluate various mathematical approaches using graph theory.				
CC-101.5	Demonstrate problem-solving skills using concepts of matrix operations.				
Course Content					
Unit I	Set				(09 Hours)
Sets – Definition and example of Set Theory, Need for Sets, Representation of Sets, Set Operations, Venn diagram, subset, size of set cardinality of set					
Types of Sets – Bounded and Unbounded Sets, Countable and Uncountable Sets, Finite and Infinite Sets its examples and properties, Countable Infinite and Unaccountably Infinite Sets its examples and properties, Cartesian products, power set its examples and properties.					
Unit II	Relation and Function				(09 Hours)
Relations – Properties of Relations, Representing Relations using matrices and digraphs, Types of Relations, Equivalence Relation Equivalence relation and partition onset, Closures of Relations, War shell's algorithm.					
Functions – Properties of functions (domain, range), composition of functions, subjective (onto), injective (one-to-one) and objective functions, inverse of functions					

Unit III	Counting and Recurrence Relation	(09 Hours)
Basics of counting, Pigeonhole principle, permutation, combination, Binomial coefficients, Binomial theorem. Recurrence relations, modeling recurrence relations with examples, like Fibonacci numbers, the tower of Hanoi problem. Solving linear recurrence relation with constant coefficients using characteristic equation roots method.		
Unit IV	Elementary Graph Theory	(09 Hours)
Graphs- Basic terminologies of Graphs, connected and disconnected graphs, sub graph, paths and cycles, complete graphs, digraphs, weighted graphs, Euler and Hamiltonian graphs. Trees, properties of trees, concept of spanning tree. Planar graphs. Definitions and basic results on the topics mentioned.		
Unit V	Matrix Algebra	(09 Hours)
Matrix - Types of matrices, algebra of matrices–addition, subtraction, and multiplication of matrices, determinant of a matrix, symmetric and skew-symmetric matrices, orthogonal matrix, rank of a matrix, inverse of a matrix, applications of matrices to solve system of linear equations, Eigen values and Eigen vectors, Caley-Hamilton theorem.		
Learning Resources		
Text Books: Garg, Reena, Engineering Mathematics, Khanna Book Publishing Company, 2024.		
Reference Books: - Grimaldi Ralph P. and Ramana B. V., Discrete and Combinatorial Mathematics: An Applied Introduction, Fifth Edition, Pearson Education, 2007. - Kenneth H. Rosen and Krithivasan Kamala, Discrete Mathematics and its Applications, McGraw Hill, India, 2019. - West Douglas B., Introduction to Graph Theory, Second Edition, Pearson Education, 2015		



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T. Parikh



Pimpri Chinchwad Education Trust's Pimpri Chinchwad College of Engineering and Research, Ravet, Pune					
Department: First Year Computer Application (2025 Pattern)				Semester: I	
Course Code: CC-102T-CA			Name of Course: Computer Architecture		
Teaching Scheme (Hrs/week):			Credits: 3		
Lecture	Practical	TW	Lecture	Practical	TW
3	-	-	3	-	-
Examination Scheme :					
FA	ESE	Total			
50 Marks	50 Marks	100 Marks			
Course Objective: The course aims to					
1. The objective of this course is to provide a broad overview of architecture and functioning of computer systems					
2. To learn the basic concepts behind the architecture and organization of computers.					
Course Outcome: Upon successful completion of this course, students will be able to					
CC-102.1	Apply Boolean algebra to simplify complex logic circuits and convert between different number systems (binary, decimal, hexadecimal) to solve real-world computing problems.				
CC-102.2	Construct a counter, register, etc. circuit diagrams using Combinational and Sequential circuit.				
CC-102.3	Identify hardware components and memory systems in a computer architecture.				
CC-102.4	Organize I / O techniques to design efficient data transfer systems between memory, peripherals, and processors.				
CC-102.5	Analyze different microprocessors on the basis of architecture of microprocessors.				
Course Content					
Unit I	Computers Arithmetic and Logic gates				(09 Hours)
Number System: Decimal, Binary, Octal, Hexadecimal Number system and their interconversion, BCD code, Gray code, Excess-3 code, ASCII, EBCDIC, Unicode, Concept of parity code. Signed and Unsigned numbers, Arithmetic Operations: 1's and 2's complement of binary numbers, Binary arithmetic (Addition, subtraction and subtraction using 1's complement and 2's complement) Introduction to digital signal, positive and negative logic concept, Logic gates: statement, symbol, expression and truth table of basic and derived logic gates (AND,OR,NOT,XOR,XNOR,NOR,NAND) Logical Operations: Boolean algebra and identities, De-Morgan's theorem and Inter conversion of logic gates.					

Unit II	Digital Circuits	(09 Hours)
Combinational Circuits: Half adder, Full adder, Half subtractor, Parallel adder, Nibble adder, Multiplexer (up to 4 to 1 MUX), and De multiplexer (up to 1 to 4 DEMUX), Encoder (Decimal to BCD encoder and 3 bit priority encoder), Decoder (3 to 8 line decoder using gates only) Combinational Circuits: Concept of sequential circuits; Latch, Flip-flops RS, clocked RS, JK, T, D, Counter –(types: synchronous, asynchronous), upto 3 bit up, down and up-down Counter (asynchronous only), modulo –N counter, shift register (IC 7495), Ring counter, Johnson counter.		
Unit III	Principal of Computer Design	(09 Hours)
Software, Hardware layers in computer system Block diagram of CPU, functions of CPU, general register organization, stack organization (operation of stack, types of stack, register stack and memory stack), block diagram of ALU. Memory System Overview, Memory Design, Cache Memory, Internal Memory, External Memory, Virtual Memory. Memory array organization, Memory hierarchy.		
Unit IV	I/O Organization	(09 Hours)
Introduction, Input output devices and characteristics, Input-Output processing, Bus interface, Data transfer techniques, (asynchronous and synchronous data transfer). Concept of interrupts, IVT and size of IVT, types of I/O transfer (CPU initiated, interrupt initiated and DMA), DMA controller		
Unit V	Architecture of Microprocessor	(09 Hours)
Block diagram of microprocessor, Numerical coprocessor concept and block diagram and functional diagram of numerical co-processor. Concept of parallelism, parallel computer structures, concept of pipeline, instruction pipeline, Arithmetic pipeline. Concept of RISC and CISC.		
Learning Resources		
Text Books: 1. Modern Digital Electronics Author: R. P. Jain Publisher: Tata McGraw - Hill Education, New Delhi Edition: 4 Year: 2010 ISBN: 9780070669116 2. Digital design Author(s): Simy Joy, Payal Anand, Priya Nair Rajeev ISBN 9789353062019 Imprint: Pearson Education		
Reference Books: 1. W. Stallings, Computer Organization and Architecture: Designing for performance, Pearson Education/ Prentice Hall of India, 2003, ISBN 978-93-325-1870-4, 7 th Edition. 2. Miles Murdocca and Vincent Heuring, Computer Architecture and Organization- an integrated approach, Wiley India Pvt. Ltd, ISBN:978-81-265-1198-3, 2nd Edition 3. Title: <i>Computer System Architecture</i> Author: M. Morris Mano Publisher: Prentice-Hall Edition: (3rd Edition) 4. 'Pipelined and Parallel Computer Architecture by Sajjan G Shiva, Prentice Hall. 1996, First Edition		
E-resources: https://video.search.yahoo.com/search/video?fr=mcafee&p=Neso+Academy+Computer+architecture&type=E210US1641G0#id=1&vid=92add09dc96fd6fee449b31338fd588f&action=click [[Basics of Computer Architecture]		

Pimpri Chinchwad Education Trust's Pimpri Chinchwad College of Engineering and Research, Ravet, Pune					
Department: First Year Computer Application (2025 Pattern)					Semester: I
Course Code: CC 102P-CA			Name of Course: Computer Architecture		
Teaching Scheme (Hrs/week):			Credits: 2		
Practical	Lecture	TW	Practical	Lecture	TW
4	-	-	2	-	-
Examination Scheme :					
Practical	OR	Total			
35 Marks	15 Marks	50 Marks			
Course Objective: The course aims to					
1. The objective of this course is to provide a broad overview of architecture and functioning of computer systems. 2. To learn the basic concepts behind the architecture and organization of computers.					
Course Outcome: Upon successful completion of this course, students will be able to					
CC-102P.1	Apply basic principles of digital electronics and binary number systems to design, construct, and test simple digital circuits.				
CC-102P.2	Design and test combinational and sequential circuits using flip-flops				
CC-102P.3	Implement knowledge of logic gate operations to design and implement a circuit that converts different number systems.				
CC-102P.4	Construct the subtraction, addition etc circuits using basic logical gates.				
CC-102P.5	Create logic circuits in both Sum of Products (SOP) and Product of Sums (POS) forms using Boolean algebra.				
Computer Architecture Laboratory					
List of Laboratory practical					
No	Content				
01	Verify logic behavior of AND, OR, NAND, NOR, EX-OR, EX-NOR, Invert and Buffer gates.				
02	To study and verify NAND as a Universal Gate				
03	To verify De-Morgan's theorem for 2 variables				
04	Design and test of an S-R flip-flop using NAND/NOR gate.				
05	Convert BCD to Excess-3 code using NAND gate				
06	To Convert Binary to Grey Code				
07	Verification of Truth Tables of J-K Flip-Flop using NAND/NOR gate				
08	Realize Decoder and Encoder circuit using Basic Gates.				
09	Design and implement the 4:1 MUX using gates.				

10	Implementation of 4-Bit Parallel Adder Using 7483IC.
11	Design and verify operation of half adder and full adder.
12	Design and verify operation of half subtractor.
13	Design and Implement a 4bit shift register using Flip flops.
14	Implement Boolean function using logic gates in both SOP and POS

Practical conduction

Conducting a two-hour practical session allows for more in-depth exploration and interaction. Here are comprehensive guidelines to effectively conduct a two-hour tutorial session.

Preparation:

Review Content: Ensure a thorough understanding of the theory subject and select key topics or concepts to cover during the session

Set Objectives: Define clear learning objectives that align with the course syllabus and students' learning needs.

Prepare Materials: Gather necessary materials such as lecture notes, slides, handouts, and any supplementary resources or examples.

Engagement Strategies:

Active Participation: Encourage all students to actively engage in discussions and activities throughout the session.

Use of Technology: Utilize multimedia presentations or online tools to enhance learning experiences and engagement.

Group Activities: Incorporate group discussions or collaborative activities to promote peer learning and interaction.

Logistics and Environment:

Classroom Setup: Ensure a comfortable and conducive learning environment with adequate seating, lighting, and equipment for presentations.

Time Management: Manage time effectively to cover all planned activities within the two-hour duration.



T. Parikh

Pimpri Chinchwad Education Trust's Pimpri Chinchwad College of Engineering and Research, Ravet, Pune					
Department: First Year Computer Application (2025 Pattern)				Semester: I	
Course Code:SEC-101- CA			Name of Course: Problem solving Techniques		
Teaching Scheme (Hrs/week):			Credits: 5		
Lecture	Practical	TW	Lecture	Practical	TW
3	4	-	3	2	-
Examination Scheme:					
FA	ESE	Total			
50 Marks	50 Marks	100 Marks			
Course Objective: The course aims to					
1. To familiarize the students with concepts and techniques in Calculus. 2. The aim is to equip them with the fundamental skills of logical reasoning and structured thinking, enabling them to analyze and solve problems efficiently using systematic techniques like algorithms and flowcharts.					
Course Outcome: Upon successful completion of this course, students will be able to					
SEC-101.1	Understand the basic terminology of computers, problem solving, programming Languages and their evolution.				
SEC-101.2	Solve problem requirements by asking questions to disambiguate the requirement statement.				
SEC-101.3	Design the solution from specification of a problem and write pseudo code of the algorithm using basic building blocks or structured programming constructs				
SEC-101.4	Create an algorithm into a C computer program				
SEC-101.5	Evaluate and analyze programs using debugging.				
Course Content					
Unit I	Introduction to Problem solving Technique				(09 Hours)
Types of Problems, Problem solving using computer, Difficulty with problem solving and aspects. Definition & Characteristics of algorithm, Examples of algorithms, Flow charts with examples, Top-down design Problem solving using Arithmetic Statements, Conditional Statement & Iterative Statements such as Addition/Multiplication, check number is positive/negative, Maximum of 2 numbers & 3 numbers, sum of first n numbers, sum of given n numbers, reverse digits of a number, check whether the number is palindrome, check number is prime, factorial of number, factors of number, GCD, LCM of numbers etc.					
Unit II	C Fundamentals				(09 Hours)
Introduction to C, Features of C, Structure of C Program, C Character Set, Identifiers and Keywords, Variables and constants Data types- Basic data types, Enumerated types, Type casting, Declarations, Expressions, Operators and Expressions Unary and Binary arithmetic operators, Increment Decrement operators, Relational and logical operators, Bit wise operators, Assignment operators, Comma operator, size of operator, Ternary conditional operator, Precedence and associativity Input Output Statements: printf(), scanf () , getchar (), putchar(), getch() functions, gets, puts functions, Escape sequence characters, Format specifiers.					

Unit III	Controls & Functions	(09 Hours)
If, If- Else Statements, Nested If Statements, Entry Controlled, Exit Controlled Conditional Branching – switch statement, Loop (while, do...while, for), break, continue, goto statements. Introduction to Functions, Function Arguments, Library & User defined functions, function call, function definition and declaration. Methods for parameter passing, Recursion.		
Unit IV	Array and String	(09 Hours)
Introduction to Array Declarations, Single dimension Arrays, Two dimension Arrays, Arrays & Function. Problems on Arrays: Reading and Writing of Array Elements, Maximum, Minimum, Sum, Average. Sequential And Binary Search. Any one Sorting Algorithm. Matrix Operations. Storage Classes – Auto, Static, Global and Register. Introduction to string and its function.		
Unit V	Pointers, Structures & File Handling	(09 Hours)
Introduction to Pointers, Structures and File Handling, Pointers with arrays and functions ,declaration of pointers, Opening/closing fopen, fclose, Reading/writing text and binary data (fprintf, fscanf, fread, fwrite) Defining and accessing structures, Nested structures, unions, and their differences.		
Learning Resources		
Text Books 1. Title: <i>Let Us C</i> Author: Yashavant S. Kanetkar Publisher: Tata McGraw-Hill Education, New Delhi Edition: 4 Year: 2010 ISBN: 978007066911 2. Title: <i>Programming in ANSI C</i> Author(s): E. Balagurusamy Publisher: Tata McGraw-Hill Education Edition: 6 ISBN: 9781259004612		
Reference Books: 1. Cormen, Leiserson, Rivest, Stein, "Introduction to algorithms" 2. Brian W. Kernighan, Dennis M. Ritchie, "The C Programming Language", ISBN:9788120305960, PHI Learning 3. R.G.Dromey, "HowtoSolveitbyComputer", ISBN:9788131705629, Pearson Education 4. Behrouz A. Forouzan, Richard F. Gilberg, "A Structured Programming Approach Using C", ISBN:9788131500941, Cengage Learning India		
E-resources: 1. Udemy - C Programming For Beginners. 2. An online course on Udemy that covers all the fundamentals of C programming, including control structures, functions, arrays, and file handling.		



T. Parikh

Pimpri Chinchwad Education Trust's Pimpri Chinchwad College of Engineering and Research, Ravet, Pune					
Department: First Year Computer Application (2025 Pattern)				Semester: I	
Course Code: SEC- 101P- CA			Name of Course: Problem solving Techniques		
Teaching Scheme (Hrs/week):			Credits: 2		
Lecture	Practical	TW	Lecture	Practical	TW
-	4	-	-	2	-
Examination Scheme:					
Practical	OR	Total			
35 Marks	15 Marks	50 Marks			
Course Objective: The course aims to					
1. To familiarize the students with concepts and techniques in Calculus, Fourier series . 2. The aim is to equip them with the fundamental skills of logical reasoning and structured thinking, enabling them to analyze and solve problems efficiently using systematic techniques like algorithms and flowcharts.					
Course Outcome: Upon successful completion of this course, students will be able to					
SEC-101P.1	Define algorithms and explain their characteristics.				
SEC-101P.2	Formulate algorithm and draw flow charts to solve a given problem				
SEC-101P.3	Explain use of appropriate data types, control statements				
SEC-101P.4	Create and demonstrate ability to use top-down program design				
SEC-101P.5	Evaluate and analyzing programs using debugging.				
Problem Solving Technique Laboratory					
List of Laboratory practical					
No	Content				
1.	1. Write a C Program to print "Welcome" message 2. Write a c program of sum of two numbers and display output. 3. Write a c program of subtraction of two numbers and display output. 4. Write a c program of multiplication of two numbers and display output. 5. Write a c program of division of two numbers and display output.				
2.	1. Display 1 to n numbers in increasing order. 2. Display 1 to n Numbers in decreasing order 3. Display square of 1 to n numbers. 4. Display area of Triangle . 5. Display area of square.				

3.	Given a positive integer value n ($n \geq 0$) display number, square and cube of Given number
4.	1. Display first mathematical tables, each table up to 10 rows? Generalize this to display first n ($n > 0$) mathematical tables up to m ($m > 0$) rows? 2. Write a C Program to display given no is palindrome or not 3. Write a C Program to display the reverse of a given number.
5.	1. Write a c programme of factorial of given number. 2. Write a C Program to print fibonacci series of a given range 3. Write a program to display a number in text form. For example If the number is 5432 the output should be "FIVE FOUR THREE TWO"
6.	Display following patterns of n rows ($n > 0$), For each pattern write a separate algorithm/program? <pre> * 1 ** 1 2 *** 1 2 3 </pre>
7.	Assignment on exit, goto, continue, break
8.	Write a C Program of menu driven program using switch case to calculate A. Area of Circle B. Area of Square C. Area of Sphere
9.	Assignment on writing C programs in modular way (use of user defined functions)
10.	1. Write a C Program to display maximum number using call by value 2. Write a C Program to display minimum number using call by value 3. Write a C Program to swap of two numbers using call by value.
11.	1. Write a C Program to display addition of two numbers using call by reference 2. Write a C Program to display given no is odd or even using call by reference
12.	1. Implement your own string length and string reversal functions? 2. Write a C Program to display sum of n number using recursion. 3. Accept two string and use concept function
13.	1. Implement your own string length and string reversal functions? 2. Write a C Program to display sum of n number using recursion. 3. Accept two string and use concept function.
14.	1. Write a C program to accept 2D array and perform matrix operations addition, subtraction 2. Write a C program to accept 2D array and display transpose matrix 3.
15.	Write a C Program to display power of a given number (xy) using standard function

Preparation:

Review Content: Ensure a thorough understanding of the theory subject and select key topics or concepts to cover during the session

Set Objectives: Define clear learning objectives that align with the course syllabus and students' learning needs.

Prepare Materials: Gather necessary materials such as lecture notes, slides, handouts, and any supplementary resources or examples.

Engagement Strategies:

Active Participation: Encourage all students to actively engage in discussions and activities throughout the session.

Use of Technology: Utilize multimedia presentations or online tools to enhance learning experiences and engagement.

Group Activities: Incorporate group discussions or collaborative activities to promote peer learning and interaction.

Assessment and Evaluation:

Formative Assessment: Assess student understanding through informal assessments, discussions, and problem-solving activities.

Feedback Mechanism: Provide timely feedback on students' participation and comprehension to support their learning progress

Logistics and Environment:

Classroom Setup: Ensure a comfortable and conducive learning environment with adequate seating, lighting, and equipment for presentations.

Time Management: Manage time effectively to cover all planned activities within the two-hour Duration.

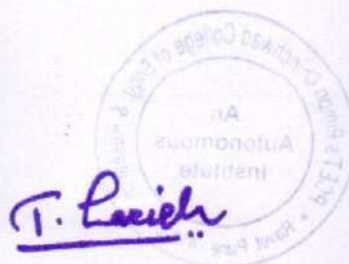


Pimpri Chinchwad Education Trust's Pimpri Chinchwad College of Engineering and Research, Ravet, Pune					
Department: First Year Computer Application (2025 Pattern)				Semester: I	
Course Code: MDC-101-CA			Name of Course: Indian Knowledge System		
Teaching Scheme (Hrs/week):			Credits:2		
Lecture	Practical	TW	Lecture	Practical	TW
1	-	1	1	-	1
Examination Scheme :					
FA	TW	Total			
25 Marks	25 Marks	50 Marks			
Course Objective: The course aims to					
1. To explore the foundational concepts of computing through the lens of the Indian Knowledge System. 2. To introduce students to Indian contributions to logic, mathematics, language processing,and computation. 3. To understand how ancient Indian texts and scholars approached algorithmic thinking. 4. To create interdisciplinary awareness linking traditional knowledge with modern computing.					
Course Outcome: Upon successful completion of this course, students will be able to					
MDC-101.1	Explain core concepts of computation rooted in Indian traditions.				
MDC-101.2	Understand the algorithmic nature of Indian grammatical, logical, and mathematical systems.				
MDC-101.3	Draw connections between classical Indian texts and modern computing principles.				
MDC-101.4	Analyze how IKS can inform contemporary computing and AI approaches.				
MDC-101.5	Apply IKS principles to AI, NLP, and data representation while applying holistic, ethical frameworks to modern computing research.				
Course Content					
Unit I	Overview of Indian Knowledge System (IKS)				(03 Hours)
Introduction to Indian Knowledge System – Meaning, Scope, relevance and logic of IKS to modern disciplines - language, mathematics, astronomy, medicine Introduction to various sources: Vedas, Upanishads, Puranas, Epics and classical texts					
Unit II	Indian Philosophy and Education Traditions				(03 Hours)
Six systems of Indian Philosophy (Shad-Darshanas) – overview. Gurukul system and ancient universities (Nalanda, Takshashila, Vikramshila) Concept of holistic education and value-based learning. What is computing? Basic terminology.					



T. Parikh

Unit III	Indian Logic and Foundations of Computation	(03 Hours)
Nyaya Sutras: classical Indian logic system Tarka, inference (anumana), and syllogism (Nyaya model). Comparison with Boolean logic and propositional calculus. Contributions of Aryabhata, Bhaskara, Pingala, etc. Positional notation, zero, combinatorics. Pingala's binary system and Chandas Shastra (prosody and early algorithmic thinking)		
Unit IV	Paninian Grammar and Language Processing	(03 Hours)
Panini's Ashtadhyayi as a formal language system. Sandhi rules and production rules. Panini as a precursor to modern NLP (Natural Language Processing). Recursive thinking in Indian texts. Algorithms for arithmetic, root extraction, calendar calculations. Case study: Kuttaka (pulverizer) method by Aryabhata.		
Unit V	IKS in Contemporary Context	(03 Hours)
Relevance to AI, data representation, and computational linguistics. IKS-inspired frameworks in computing research. Ethical and holistic perspectives from IKS in the digital age. Short presentation on an IKS-based computing concept. Individual/group project linking IKS with modern computing.		
Learning Resources		
Text Books 1. "Indian Knowledge Systems: A Historical Perspective" Author: Dr. K. K. Aziz Edition: 1st Edition Publisher: Concept Publishing Company Year: 2012 2. The Roots of Indian Civilization: A History of the Ancient Indians Author: Dr. M. R. Singh Edition: 1st Edition Publisher: Rupa Publications Year: 2016		
Reference Books: 1. Indian Mathematics: A Concise History Author: K. S. Shukla Edition: 1st Edition Publisher: Har Anand Publications Year: 2007 2. The Vedic Knowledge System Author: Dr. P. V. Kane Edition: 1st Edition Publisher: Bharatiya Vidya Bhavan Year: 2010 3. The Indian Mind: Essentials of Indian Philosophy and Culture Author: C. K. S. Pillai Edition: 3rd Edition Publisher: Motilal Banarsidass Year: 2014		



Pimpri Chinchwad Education Trust's Pimpri Chinchwad College of Engineering and Research, Ravet, Pune					
Course Code: VAC 101-CA			Name of Course: Environmental Science and Sustainability		
Department: First Year Computer Application (2025 Pattern)				Semester: I	
Teaching Scheme (Hrs/week):			Credits:2		
Lecture	Practical	TW	Lecture	Practical	TW
2	-	-	2	-	-
Examination Scheme :					
FA	ESE	Total			
25 Marks	25Marks	50 Marks			
Course Objective: The course aims to					
1. Develop a foundational understanding of ecological principles, natural resources, and environmental systems. 2. Develop knowledge about various environmental problems like pollution (air, water, soil), climate change, biodiversity loss, and resource depletion.					
Course Outcome: Upon successful completion of this course, students will be able to					
VAC-101.1	Understand basic environmental concepts ,the irrelevance to business operations, and forthcoming sustainability challenges				
VAC-101.2	Evaluate pollution control and sustainable waste management practices.				
VAC-101.3	Identify various types of pollution and their causes				
VAC-101.4	Explain key environmental laws and regulations in India.				
VAC-101.5	Apply sustainable development principles to propose practical environmental solutions in real-life scenarios.				
Course Content					
Unit I	Introduction to Environment				(06 Hours)
Fundamental environmental concepts and their relevance to business operations; Components and segments of the environment, the man-environment relationship, and historical environmental movements.					
Unit I					
Fundamental environmental concepts and their relevance to business operations; Components and segments of the environment, the man-environment relationship, and historical environmental movements.					



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Unit II	Natural Resources and Sustainability	(06 Hours)
Classification of natural resources, issues related to their overutilization, and strategies for their conservation. Sustainable practices in managing resources, including deforestation, water conservation, energy security, and food security issues. The conservation and equitable use of resources, considering both intergenerational and intergenerational equity, and the importance of public awareness and education.		
Unit III	Ecosystems, Biodiversity, and Sustainable Practices	(06 Hours)
Introduction of various natural ecosystems and its structure, functions, and ecological characteristics. The importance of biodiversity, the threat sits faces, and the methods used for its conservation. Ecosystem emphasizing the need for sustainable ecosystem management. Strategies for in situ and ex situ conservation, nature reserves, and the significance of India as a mega diverse nation.		
Unit IV	Environmental Pollution, Waste Management, and Sustainable Development	(06 Hours)
Various types of environmental pollution, including air, water, noise, soil, and marine pollution, and their impacts on businesses and communities. Causes of pollution, such as global climate change, ozone layer depletion, the greenhouse effect, and acid rain, Solid waste management; Natural and man-made disasters, their management, and the role of businesses in mitigating disaster impacts		
Unit-V	Social Issues, Legislation, and Practical Applications	(06 Hours)
Dynamic interactions between society and the environment, with a focus on sustainable development and environmental ethics. Role of businesses in achieving sustainable development goals and promoting responsible consumption. Overview of key environmental legislation and judiciary's role in environmental protection, including the Water (Prevention and Control of Pollution) Act of 1974, the Environment (Protection) Act of 1986, and the Air (Prevention and Control of Pollution) Act Of 1981.		
Learning Resources		
Reference Books: 1. Poonia, M.P .Environmental Studies (3rded.),Khanna Book publishing Co. 2. Bharucha ,E. Text book of Environmental Studies(3rded.) Orient Black swan Private Ltd. 3. Dave,D.,& Katewa,S.S.Text Book of Environmental Studies. Cengage Learning India Pvt Ltd. 4. Rajagopalan ,R. Environmental Studies:from crisis to cure(4thed.).Oxford University Press. 5. Miller, G.T.& Spoolman S .Living in the Environment.(20thed.).Cengage. 6. Basu, M., & Xavier Savarimuthu, S. J. Fundamentals of environmental studies. Cambridge UniversityPress. 7. Roy, M. G. Sustainable Development: Environment ,Energy and Water Resources Ane Books. 8. Pritwani, K.Sustainability of business in the context of environmental management. CRCPress. 7. Wright, R. T.& Boorse ,D .F .Environmental Science: Toward A Sustainable Future(13thed.). Pearson.		
E-resources: 1. https://www.ourplanet.com 2. https://www.undp.org/content/undp/en/home/sustainable-development-goals.html		

Preparation:

Review Content: Ensure a thorough understanding of the theory subject and select key topics or concepts to cover during the session

Set Objectives: Define clear learning objectives that align with the course syllabus and students' learning needs.

Prepare Materials: Gather necessary materials such as lecture notes, slides, handouts, and any supplementary resources or examples.

Engagement Strategies:

Active Participation: Encourage all students to actively engage in discussions and activities throughout the session.

Group Activities: Incorporate group discussions or collaborative activities to promote peer learning and interaction

Assessment and Evaluation:

Formative Assessment: Assess student understanding through informal assessments, discussions, and problem-solving activities.

Feedback Mechanism: Provide timely feedback on students' participation and comprehension to support their learning progress.

Logistics and Environment:

Classroom Setup: Ensure a comfortable and conducive learning environment with adequate seating, lighting, and equipment for presentations.



Pimpri Chinchwad Education Trust's Pimpri Chinchwad College of Engineering and Research, Ravet, Pune					
Department: First Year Computer Application (2025 Pattern)				Semester: I	
Course Code: OE 101-CA			Name of Course: Data Science I		
Teaching Scheme (Hrs/week):			Credits:2		
Lecture	Practical	Tutorial	Lecture	Practical	Tutorial
2	0	-	2	0	-
Examination Scheme :					
FA	ESE	Total			
25 Marks	25 Marks	50 Marks			
Course Objective:					
1. To understand need of Data Science 2. To Know role of Statistics in Data Science 3. To know Data Science Models and Tasks					
Course Outcome:					
OE-101.1	Define and explain the key concepts of Data Science, including its tasks, models, and lifecycle stages.				
OE-101.2	Apply appropriate data pre-processing techniques and use data visualization tools to explore, interpret, and communicate data insights effectively.				
OE-101.3	Demonstrate the use of descriptive statistics to summarize and analyze datasets relevant to real-world applications.				
OE-101.4	Explain basic Data Science tasks such as classification, prediction, clustering, and association using tools like WEKA or R.				
OE-101.5	Evaluate the role of data visualization and exploratory data analysis (EDA) in uncovering patterns, trends, and insights from datasets				
Course Contents					
Unit I	Introduction				06 Hrs
What and why learn Data Science?, Types of Data -structured, semi-structured, unstructured Data Applications of Data Science, The Data Science Lifecycle, Role of Data Scientists Data sources-Open Data, Social Media Data, Multimodal Data, standard datasets					
Unit II	Statistical Foundations for Data Science				06 Hrs
Data Objects and Attributes, Attribute Types: Nominal, Binary, Ordinal Attributes, Numeric Attributes, Discrete versus Continuous Attributes, Role of statistics in Data Science. Descriptive statistics					
Unit III	Descriptive Statistics				06 Hrs
Measuring the Frequency, Measuring the Central Tendency: Mean, Median, and Mode, Measuring the Dispersion: Range, Standard deviation, Variance, Inter quartile Range					

Unit IV	Data science Models and Tasks	06 Hrs
Predictive and Descriptive Models, Introduction to Data Science Tasks – Classification, Prediction, Association, Clustering, Performing simple Data Science Tasks using WEKA / R.		
Unit V	Data Visualization	06 Hrs
Introduction to Exploratory Data Analysis (EDA), Data visualization, Basic data visualization tools – Box Plots, Histograms, Bar charts/graphs, Scatter plots, Line charts, Area plots, Pie charts.		
Learning Resources		
Reference Books 1. Data Science Fundamentals and Practical Approaches, Gypsy Nandi, Rupam Sharma, BPB Publications, 2020. 2. Data Mining Concepts and Techniques, Third Edition, Jiawei Han, Micheline Kamber, Jian Pei, Morgan Kaufmann, 2012. 3. A Hands-On Introduction to Data Science, Chirag Shah, University of Washington Cambridge University Press		
E-Resources 1. https://www.ibm.com/analytics/data-science 2. https://cs109.github.io/2015/ 3. https://nptel.ac.in/courses/111104146 4. https://nptel.ac.in/courses/106106212		



T. Laxmi

Pimpri Chinchwad Education Trust's Pimpri Chinchwad College of Engineering and Research, Ravet, Pune					
Department: First Year Computer Application (2025 Pattern)				Semester: I	
Course Code: OE-101-CA			Name of Course: Introduction to Cyber Security I		
Teaching Scheme (Hrs/week):			Credits:2		
Lecture	Practical	Tutorial	Lecture	Practical	Tutorial
2	-	-	2	-	-
Examination Scheme :					
FA	ESE	Total			
25 Marks	25 Marks	50 Marks			
Course Objective: The course aims to					
1. Understand the basic concepts of cyber security and cyber threats. 2. Learn about safe internet practices, data privacy, and protection mechanisms. 3. Explore the legal, ethical, and societal issues in cyber security. 4. Gain hands-on exposure to common tools and techniques for personal and organizational security.					
Course Outcome: Upon successful completion of this course, students will be able to					
OE-101.1	Identify different types of cyber threats and attacks				
OE-101.2	Apply basic security practices in personal and professional digital environments.				
OE-101.3	Demonstrate awareness of cyber laws and ethical issues.				
OE-101.4	Use elementary tools to analyze vulnerabilities and secure digital assets				
OE-101.5	Assess the safe and responsible digital practices for data security				
Course Contents					
Unit I	Introduction to Cyber Security				(06 Hours)
Definition Meaning, scope, and importance of cyber security. Evolution and scope of cybersecurity. Elements of information security: CIA triad (Confidentiality, Integrity, Availability). Types of assets: data, devices, applications, networks. Discussion on types of cyber security Threats, vulnerabilities, and risks.					
Unit II	Types of Cyber Threats and Attacks				(06 Hours)
Malware: viruses, worms, trojans, ransomware. Phishing and social engineering. Denial-of-Service (DoS) and Distributed DoS. Insider threats and zero-day vulnerabilities, Insider threats and advanced persistent threats (APT) Real-life case studies of cyber incidents - WannaCry Ransomware Attack (2017), BigBasket Data Breach (2020), AIIMS Ransomware Attack (2022, Delhi)					
Unit III	Basics of Network and System Security				(06 Hours)
Firewalls, antivirus, intrusion detection/prevention. Secure Wi-Fi usage, password policies. Encryption basics (symmetric and asymmetric)., Authentication, passwords, and biometrics. Secure browsing, email security, and safe social media practices. Backup and disaster recovery planning					

Unit IV	Data Privacy, Digital Footprint and Security	(06 Hours)
Personal data protection. Social media privacy settings. Tracking and cookies. Safe browsing habits. Mobile and email security. Secure use of cloud and apps. Personal data vs. sensitive personal data. Digital footprint: active vs. passive. Why privacy and security matter in everyday life • How data is created online (social media, browsing, apps, IoT devices)		
Unit V	Emerging Trends and Career in Cyber Security	(06 Hours)
Cloud security and mobile security, IoT security. Cyber security in e-commerce, banking, and government. Career opportunities and certifications (CEH, CISSP, CompTIA Security+). Future challenges and global cyber security landscape. Understanding terms & conditions before sharing data. Risks of oversharing on social media		
Learning Resources		
Reference Books: 1. Cyber Security Essentials Author: Charles J. Brooks, Christopher Grow, Philip Craig, Donald Short Edition: 1st Edition Publisher: Wiley Year: 2018 2. Introduction to Cyber Security Author: Chwan-Hwa (John) Wu, J. David Irwin Edition: 1st Edition Publisher: CRC Press Year: 2013 3. Cybersecurity and Cyberwar: What Everyone Needs to Know Author: P.W. Singer, Allan Friedman Edition: 1st Edition Publisher: Oxford University Press Year: 2014		
E-Resources: 1. https://cloud.google.com/security/resources/cybersecurity-forecast 2. https://www.fortinet.com/resources/cyberglossary/types-of-cyber-attacks 3. https://www.coursera.org/articles/types-of-cyber-attacks 4. https://www.geeksforgeeks.org/ethical-hacking/active-and-passive-attacks-in-information-security/		



T. Parikh

**Pimpri Chinchwad Education Trust's
Pimpri Chinchwad College of Engineering and Research, Ravet, Pune**

Department: First Year BCA(2025 Pattern)

Semester: I

Course Code:CO-C101-CA

Co-Curricular Courses (Semester-I)

Teaching Scheme (Hrs/week):

Credits:2

Lecture	Practical	TW	Lecture	Practical	TW
-	-	1	-	-	1

Examination Scheme :

	TW				
	25 Marks				

Course Objective: The course aims to

1. **Holistic Development:** To promote the all-round development of students by enhancing their physical, emotional, social, and intellectual growth beyond academics.
2. **Skill Enhancement:** To develop practical skills such as teamwork, leadership, communication, time management, and problem-solving through hands-on activities.
3. **Social Responsibility:** To instill a sense of civic duty and community engagement by involving students in social service, environmental, or community-based projects.
4. **Creativity and Innovation:** To encourage creative expression and innovative thinking through art, drama, music, debate, and other extracurricular opportunities.
5. **Confidence Building:** To build self-esteem and confidence by providing platforms for performance, competition, and public interaction.

Course Outcome: Upon successful completion of this course, students will be able to

CO-C101.1	Explain Improved Communication and Interpersonal Skills.
CO-C101.2	Apply Leadership and Teamwork Principles in Real-World Contexts.
CO-C101.3	Demonstrate Responsibility and Ethical Behavior.
CO-C101.4	Utilize Time Management and Organizational Skills Effectively.
CO-C101.5	Express in Reflective and Lifelong Learning.

Course Content:

Students are required to go through the Co-curricular Courses and select as per their interest. They will have to complete the activities to earn marks and credits. Experts will conduct classes on campus / online and the evaluation will be done through activities, discussions, presentations, and lecture methods. Students will be required to submit a report on the activities performed related to topics

Evaluation will be based on the performance in assessments and report of activities submitted by a student on the activity. Faculty members will be allotted for mentoring the activities

In case the students participate outside the college / or in college activities, marks and credits will be assigned

Preparation:

Review Content: Ensure a thorough understanding of the activity

Set Objectives: Define clear activity objectives that align with the learning and engagement

Prepare Materials: Gather necessary materials such as lecture notes, handouts, and any other material.

Engagement Strategies:

Active Participation: Encourage all students to actively engage in discussions and activities.

Group Activities: Incorporate group activities or collaborative activities to promote learning and interaction.

Assessment and Evaluation:

Assessment: Assess student understanding through informal assessments, discussions and other activities.

Feedback Mechanism: Provide timely feedback on students' participation and comprehension to support their learning progress

Logistics and Environment:

Classroom Setup: Ensure a comfortable and conducive learning environment with adequate seating, lighting, and equipment for presentations.

Time Management: Manage time effectively to cover all planned activities



T. Laxkar

Pimpri Chinchwad Education Trust's Pimpri Chinchwad College of Engineering and Research, Ravet, Pune					
Department: First Year Computer Application (2025 Pattern)				Semester: I	
Course Code: AEC-101-CA			Name of Course: Business Communication		
Teaching Scheme (Hrs/week):			Credits:2		
Lecture	Practical	TW	Lecture	Practical	TW
1	-	1	1	-	1
Examination Scheme :					
FA	TW	Total			
25 Marks	25 Marks	50 Marks			
Course Objective: The course aims to					
1. To help students acquire fundamental proficiency in English. 2. To develop students' reading, listening, speaking, and writing skills. 3. To enhance vocabulary and effective language usage. 4. To improve students' academic and professional writing abilities.					
Course Outcome: Upon successful completion of this course, students will be able to					
AEC-101.1	Understand the language in daily academic and social contexts.				
AEC-101.2	Construct Language Proficiency and Improved Writing Skills				
AEC-101.3	Develop writing skills using AI tools for content generation and editing.				
AEC-101.4	Identification and Correction of Common Writing Errors				
AEC-101.5	Illustrate listening and speaking for effective communication.				
Course Content					
Unit I	Vocabulary Building				(03 Hours)
The concept of Word Formation, Root words from foreign languages and their use in English, Acquaintance with prefixes and suffixes from foreign languages in English, Synonyms, antonyms, and standard abbreviations, Listening Comprehension					
Unit II	Basic Writing Skills				(03 Hours)
Sentence Structures, Use of phrases and clauses in sentences, Importance of proper punctuation, Creating coherence, Organizing principles of paragraphs in documents, Techniques for writing precisely Subject-verb agreement, Noun-pronoun agreement, Misplaced modifiers,Articles,Prepositions, Redundancies.					
Unit III	AI Tools for English Language Learning				(03 Hours)
Introduction to AI in Language Learning, Benefits and Limitations of AI Tools, Responsible Use of AI Tools in Academics, Grammar & Writing Tools.					

Unit IV	Nature and Style of sensible Writing	(03 Hours)
Introduction to Sensible Writing, Writing Techniques and Styles, Structure of Writing-Writing Introduction and Conclusion, Paragraph development and logical flow, Practical Writing Applications-Module Writing Practices, Comprehension, Précis Writing, Extended Writing Forms- Essay Writing, Interviews, Formal Presentations.		
Unit V	Oral Communication	(03 Hours)
Listening Comprehension, Pronunciation, Intonation, Stress and Rhythm, Common Everyday Situation: Conversations and Dialogues, Communication at Workplace, Interviews, Formal Presentation.		
Learning Resources		
Reference Books: 1. Anjana Tiwari, <i>Communication Skills in English (with Lab Manual)</i>, Khanna Book Publishing Co., New Delhi, 2023. (AICTE Recommended Textbook) 2. KulBhushan Kumar, <i>Effective Communication Skills</i>, Khanna Book Publishing Co., New Delhi, 2022. <i>On Writing Well: The Classic Guide to Writing Nonfiction</i>, Harper Resource Book, 2001, ISBN-13: 9780060891541. 3. Sanjay Kumar and Pushp Lata, <i>Communication Skills</i>, Oxford University Press, New Delhi, 2011, ISBN-13: 9780198063318.		
E-resources: https://www.coursera.org/learn/sciwrite Coursera - Writing in the Sciences - A free course that helps learners develop writing skills, with a focus on writing clearly and concisely in the sciences, which can be applied to many writing contexts.		



T. Laxish

SEMESTER II



Pimpri Chinchwad Education Trust's Pimpri Chinchwad College of Engineering and Research, Ravet, Pune					
Department: First Year BCA(2025 Pattern)				Semester II	
Course Code:CC-151-CA			Name of Course: Mathematical Foundations of Computer Science - II		
Teaching Scheme (Hrs/week):			Credits:3		
Lecture	Practical	TW	Lecture	Practical	TW
3	-	-	3	-	-
Examination Scheme :					
FA	ESE	Total			
50 Marks	50 Marks	100 Marks			
Course Objective: The course aims to					
1. To offer the learner the relevant Linear Algebra concepts through Computer Science applications. 2. To formulate, solve, apply, and interpret properties of linear systems.					
Course Outcome: Upon successful completion of this course, students will be able to					
CC-151.1	Develop understanding of logical reasoning and proof techniques.				
CC-151.2	Explain and analyze the structure of algebraic systems such as semigroups, monoids, groups, subgroups, and cyclic groups				
CC-151.3	Introduce mathematical tools foundational to numerical methods				
CC 201.4	Formulate and solve linear programming models using graphical and simplex methods, and interpret optimal solutions in real-life contexts.				
CC-151.5	Apply linear programming and transportation models for effective decision-making and optimization in computing scenarios.				



T. Laxmi

Course Content		
Unit I	Logic and Methods of Proofs	(09 Hours)
Propositions, logical operations (basic connectives), compound statements, construction truth table, quantifiers, conditional statements, tautology, contradiction, contingency, logical equivalence. Conjunctive Normal Forms (CNF) and Disjunctive Normal Forms (DNF). Methods of proofs: Rules of inference for propositional logic, modus ponens, modus tollens, syllogism, proof by contradiction, Mathematical Induction.		
Unit II	Algebraic Structures	(09 Hours)
Introduction to Algebraic Structures Semi-group Properties of Semi-group, Monoid and its examples. Group, Properties of groups, Subgroup, Cyclic group and its Examples.		
Unit III	Numerical Methods	(09 Hours)
Concept and importance of errors in numerical methods. Solution of algebraic and transcendental equations: Bisection method and Newton-Raphson methods. Numerical Inter pollution : Newton's Forward Newton's Backward interpolation formula and Lagrange's formula. Numerical Integration : Trapezoidal rule and Simpson's 1/3 rule Only formula and problem solving for all the topics mentioned above.		
Unit IV	Linear Programming Problem	(09 Hours)
Linear Programming: Introduction, LP formulation, Graphical method for solving LPs with two variables, Special cases in graphical methods, Simplex method, Duality.		
Unit V	Transportation problem	(09 Hours)
Transportation Problem : Definition, Linear form, North-west corner method, Least Cost Method, Vogel's approximation method for finding feasible solution, MODI method for finding optimum solution.		
Text Books: 1. Sastry S.S., Introductory Methods of Numerical Analysis, Fifth Edition, PHL, 2022. 2. Taha Hamdy A., Operations Research: An Introduction Eighth Edition, Pearson Prentice Hall, 2003. 3. S.B.Singh, Discrete Structures, Khanna Book Publishing, 2023.		
Reference Books: 1. Rosen Kennet H. and Krithivasan Kamala, Discrete Mathematics and its Applications, McGraw Hill, India, 2019. 2. Chakravorty J.G and Ghosh P.R., Linear Programming and Game Theory, Moulik Library, 2017. 3. Sharma J. K., Operations Research: Theory and Applications, Fourth Edition, Macmillan Publisher, 2007.		
E-resources: 1. https://www.math.iitb.ac.in/~siva/si50716/SI507lecturenotes.pdf		



T. Parikh

Pimpri Chinchwad Education Trust's Pimpri Chinchwad College of Engineering and Research, Ravet, Pune					
Department: First Year BCA(2025 Pattern)				Semester: II	
Course Code:CC-152T-CA			Name of Course: Microcontroller Basics and Applications		
Teaching Scheme (Hrs/week):			Credits:5		
Lecture	Practical	Tutorial	Lecture	Practical	Tutorial
3	4	-	3	2	-
Examination Scheme :					
FA	ESE	Total			
50 Marks	50 Marks	100 Marks			
Course Objective					
1. To study the basics of microcontrollers. 2. To learn 8051 Programming. 3. To understand interfacing techniques of 8051microcontroller. 4. To learn to design simple applications using 8051microcontroller.					
Course Outcome:					
CC-152.1	Understand the architecture and internal organization of microcontrollers like the 8051,				
CC-152.2	Identify the different addressing modes and instruction classifications in microcontroller programming				
CC-152.3	Apply the programming model using embedded C.				
CC-152.4	Implement use of 8051microprocessor using Assembly Level Language and C.				
CC-152.5	Familiarize with the architectural block diagrams and key features of an advanced microcontroller.				
Course Content					
Unit I	Introduction of Microcontrollers				(09 Hours)
Introduction to microcontrollers, difference in controller and processor. Architecture of 8051, Internal block diagram, Internal RAM organization, SFRS, pin diagram of 8051,Address , data and control bus, I/O ports structure& operation, External Memory Interface					
Unit II	Addressing Modes and Instruction classification				(09 Hours)
Introduction and Structre of Instruction Set, Instruction classification: Arithmetic , logical, data transfer, etc Addressing Modes: Immediate, register, direct, indirect and relative, assembler directives (ORG, END), features with examples					
Unit III	Programming model of 8051				(09 Hours)
Introduction of Programming using C and Assembly language, I/O Bit & Byte programming using assembly language for LED and seven segment display (SSD)interfacing. Introduction to 8051 programming in C					

Unit IV	Real World interfacing and Applications of 8051	(09 Hours)
Interfacing LCD, solenoid switch, opto-coupler, seven segment (multiplexing mode), Speed Control of DC motor Applications of 8051 i)Traffic Light controller ii) LCD iii) Gate Emulator(Logic Gate study using microcontroller)		
Unit V	Advanced Controllers	(09 Hours)
MCS-96 Microcontrollers Architectural block diagram, features, ARM Microcontrollers Architectural block diagram, features, PIC Microcontrollers Architectural block diagram, features,		
Learning Resources		
Text Books: 1.Muhammad Ali Mazidi, Janice Gillispie Mazidi and McKinley, 8051 microcontroller and Embedded system using Assembly and C, Pearson Education, 2nd Edition 2008. 2.K. Uma Rao and Andhe Pallavi, The 8051 microcontroller – Architecture, programming and applications:, Pearson publications, First Edition 2010.		
Reference Books: 1.Myke Predko, Programming and Customizing the 8051 Microcontroller, Tata McGraw-Hill Publishing Company Ltd, Tata McGraw-Hill Edition 1999 2.Microcontroller: Architecture, implementation and Programming by Kenneth Hintz and Daniel Tabak, Tata McGraw Hill		
E-resources: 1. www.intel.com		
MOOC/NPTEL/YouTube Links: 1. Course Title: 8051 Microcontroller: Architecture, Programming, and Interfacing Instructor: Prof. Subrata Roy Institution: Indian Institute of Technology (IIT) Kharagpur Platform: NPTEL 2. YouTube Playlist Link: NPTEL - 8051 Microcontroller Playlist		



T. Laxmi

Pimpri Chinchwad Education Trust's Pimpri Chinchwad College of Engineering and Research, Ravet, Pune					
Department: First Year Computer Application (2025 Pattern)					Semester: II
Course Code: CC-152P-CA			Name of Course: Microcontroller Basics and Applications		
Teaching Scheme (Hrs/week):			Credits:2		
Practical		Tutorial	Practical	TW	
4		-	2		-
Examination Scheme :					
Practical	OR	Total			
35 Marks	15 Marks	50 Marks			
Course Objective: The course aims to					
1. To study the basics of microcontrollers. 2. To learn 8051 Programming. 3. To understand interfacing techniques of 8051microcontroller. 4. To learn to design simple applications using 8051microcontroller.					
Course Outcome: Upon successful completion of this course, students will be able to					
CC-152P.1	Understand and Write programs using an instruction set of 8051 microcontrollers.				
CC-152P.2	Apply the Interfacing concept to I/O peripherals with 8051 microcontroller.				
CC-152P.3	Design simple microcontroller-based applications				
CC-152P.4	Implement embedded c program to real-time application.				
CC-152P.5	Demonstrate the knowledge of 8051 microcontroller architecture and programming to interface and control a stepper motor for real-time embedded system applications.				
List of Laboratory practical					
No.	Content				
01	Study of 8051 microcontroller chip, keil µvision-5.				
02	Study of proteus simulator for 8051 simulation.				
03	Program to find Largest/smallest from a series.				
04	Program to perform Addition / subtraction / multiplication/division of 8/16 bit data.				
05	Program to perform Arithmetic, logical & code conversion problems				
06	Program to perform data transfer/exchange between specified memories locations.				
07	Interfacing of LED/LEDs to 8051 microcontroller.				
08	Interfacing of switch & LED to 8051 microcontroller.				
09	Waveform generation using DAC Interface to 8051 Microcontroller. 36				
10	Traffic light controller using 8051 microcontroller.				
11	Interfacing LCD to 8051Microcontroller.				
12	Interfacing with IR sensor to 8051 microcontroller and LCD.				

13	ADC interfacing to 8051 Microcontroller.
14	Stepper motor interfacing to 8051 microcontroller.
15	DC motor interfacing to 8051 microcontroller.

Practical conduction:

Conducting a two-hour practical session allows for more in-depth exploration and interaction. Here are comprehensive guidelines to effectively conduct a two-hour tutorial session.

Preparation:

Review Content: Ensure a thorough understanding of the theory subject and select key topics or concepts to cover during the session

Set Objectives: Define clear learning objectives that align with the course syllabus and students' learning needs.

Prepare Materials: Gather necessary materials such as lecture notes, slides, handouts, and any supplementary resources or examples.

Engagement Strategies:

Active Participation: Encourage all students to actively engage in discussions and activities throughout the session.

Use of Technology: Utilize multimedia presentations or online tools to enhance learning experiences and engagement.

Group Activities: Incorporate group discussions or collaborative activities to promote peer learning and interaction.

Assessment and Evaluation:

Formative Assessment: Assess student understanding through informal assessments, discussions, and problem-solving activities.

Feedback Mechanism: Provide timely feedback on students' participation and comprehension to support their learning progress.

Logistics and Environment:

Classroom Setup: Ensure a comfortable and conducive learning environment with adequate seating, lighting, and equipment for presentations.

Time Management: Manage time effectively to cover all planned activities within the two-hour Duration.



Pimpri Chinchwad Education Trust's Pimpri Chinchwad College of Engineering and Research, Ravet, Pune					
Department: First Year BCA(2025 Pattern)				Semester: II	
Course Code:CC-153T-CA			Name of Course: Fundamentals of Operating Systems and Networking		
Teaching Scheme (Hrs/week):			Credits:2		
Lecture	Practical	Tutorial	Lecture	Practical	Tutorial
3	-	-	3	-	-
Examination Scheme :					
FA	ESE	Total			
50 Marks	50 Marks	100 Marks			
Course Outcome:					
CC-153.1	Understand the fundamentals of the operating system, including its architecture, components, and basic functions.				
CC-153.2	Analyze and compare CPU scheduling algorithms, memory management techniques, and process synchronization methods in modern operating systems.				
CC-153.3	Apply the concepts of multithreaded programming, CPU scheduling, process management, process synchronization, memory management, deadlocks, and storage systems.				
CC-153.4	Use the features of input/output systems and file handling methods to distinguish their roles in system performance.				
CC-153.5	Demonstrate the use of networking tools and hardware to test and analyze the functioning of local networks.				
Course Content					
Unit I	Operating Systems Overview & Structure				(09 Hours)
Operating Systems Overview: Definition, Evaluation of O.S, Components & Services of OS, Structure, Architecture, types of Operating Systems, Batch Systems, Concepts of Multiprogramming and Time Sharing, Parallel, Distributed and real time Systems.					
Operating Systems Structures: Operating system services and systems calls, system programs, operating system structure, operating systems generations.					
Unit II	Process Management				(09 Hours)
Process Management: Process Definition, Process states, Process State transitions, Process Scheduling, Process Control Block, Threads, Concept of multi-threads, Benefits of threads, Types of threads.					
Process Scheduling: Definition, Scheduling objectives, Scheduling algorithms, CPU scheduling Preemptive and Non-preemptive Scheduling algorithms (FCFS, SJF and RR), Performance evaluation of the scheduling Algorithms.					



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Unit III	Process Synchronization	(09 Hours)
Process Synchronization: Introduction, Inter-process Communication, Race Conditions, Critical Section Problem, Mutual Exclusion, Semaphores, Monitors. Deadlocks: System model, deadlock characterization, deadlock prevention, avoidance, Banker's algorithm, Deadlock detection, and recovery from deadlocks.		
Unit IV	Memory Management	(09 Hours)
Memory Management: Logical and Physical address map, Swapping, Memory allocation, MFT, MVT, Internal and External fragmentation and Compaction, Paging, Segmentation. Virtual Memory: Demand paging, Page Replacement algorithms, Allocation of frames, thrashing. I/O Management: Principles of I/O Hardware: Disk structure, Disk scheduling algorithms		
Unit V	Networking Models and Transmission Media	(09 Hours)
Computer Networks Introduction: Definition, Goals, Applications, Components, Types of Networks: LAN, MAN, WAN, Internet, Network Topologies: Bus, Star, Ring, Mesh, Hybrid, Communication Types: Synchronous vs. Asynchronous, Communication Modes: Simplex, Half Duplex, Full Duplex, Peer-to-Peer vs. Client-Server LANs (comparison) Reference Models: OSI Model: 7 Layers and Their Functions, TCP/IP Model: Layers, Transmission Media: Guided Media: a) Twisted Pair: UTP vs. STP, Structure, Applications, b) Coaxial Cable: BNC Connector, Use Cases, c) Fiber Optics: Structure, Modes, Sizes, Advantages & Disadvantages Unguided Media: Wireless: Electromagnetic Spectrum b) Propagation Methods: Ground, Sky, Line-of-Sight c) Radio Waves, Infrared, Microwave d) Wireless Technologies (Intro): Wireless LANs (IEEE 802.11): Architecture, MAC Layer (Intro only), Bluetooth: Architecture (Piconet, Scatternet), Use Cases		
Learning Resources		
Text Books: - Ekta Walia, Operating Systems: Concepts, Khanna Publishing House, New Delhi, 2022 (AICTE Recommended Textbook) - Abraham Silberschatz, Peter Baer Galvin, Greg Gagne, Operating System Principles, 7th Edition or later, Wiley India Pvt. Ltd., New Delhi, 2006, ISBN-13: 9788126509627. - James F. Kurose and Keith W. Ross, Computer Networking: A Top-Down Approach, 6th Edition or later, Pearson Education, India, ISBN-13: 9789332585492.		
Reference Books: - Andrew S. Tanenbaum, Modern Operating Systems, 3rd Edition, Prentice Hall India, ISBN-13: 9788120339046. - Sumitabha Das, UNIX Concepts and Applications, 4th Edition, Tata McGraw-Hill, ISBN-13: 9780070635463. - Behrouz A. Forouzan, Data Communications and Networking, 5th Edition, McGraw-Hill Education, India, 2017, ISBN-13: 9781259064753.		

Pimpri Chinchwad Education Trust's
Pimpri Chinchwad College of Engineering and Research, Ravet, Pune

Department: First Year BCA(2025 Pattern)				Semester: II	
Course Code:CC-153P-CA			Name of Course: Fundamentals of Operating Systems and Networking		
Teaching Scheme (Hrs/week):			Credits:1		
-	2	-		1	-
Examination Scheme :					
Practical	OR	Total			
25 Marks	-	25 Marks			
Course Objective: The course aims to					
1. To develop students' programming skills related to Operating Systems. 2. To simulate real-world OS functionalities through practical implementations. 3. To implement core OS concepts such as CPU scheduling, memory management, deadlock handling, and inter-process communication (IPC).					
Course Outcome: Upon successful completion of this course, students will be able to					
CC-153P.1	Explain the fundamentals of the operating system.				
CC-153P.2	Understand the concept of comprehend multithreaded programming, CPU scheduling, process management, process synchronization, memory, deadlocks, and storage management.				
CC-153P.3	Compare the performance of CPU scheduling algorithms				
CC-153P.4	Identify the features of I/O and File handling methods.				
CC-153P.5	Implement the idea to use basic networking tools and hardware to test and analyse local networks.				
List of Practical's:					
No.	Content				
01	Write a C program to simulate the FCFS CPU Scheduling algorithm.				
02	Write a C program to Simulate Shortest Job First (SJF) CPU Scheduling Algorithm				
03	Write a C program to simulate the Round Robin CPU Scheduling algorithm.				
04	Write a C program to simulate Bankers Algorithm for Deadlock Avoidance.				
05	Write a C program to write a C program for implementing sequential file allocation method				
06	Write a C program to simulate the First Fit contiguous memory allocation technique.				
07	Write a C program to implement FIFO page replacement technique.				
08	Write a C program to implement FIFO page replacement technique.				
09	Identify and Compare Network Cables: UTP, STP, and Coaxial				
10	Display and Interpret IP Address and MAC Address using ip configuration				
11	Test Network Connectivity Using ping Command				
12	Identify and Draw Various Network Topologies (Star, Ring, Mesh, etc.)				
13	Demonstrate Communication Modes: Simplex, Half Duplex, Full Duplex				
14	Share Files Between Two PCs Using LAN or Wi-Fi				
15	Trace Route to a Website Using tracert or trace route Command				

Guidelines For Tutorial/ Practical conduction

Post Tutorial Follow-up:

Reflection: Reflect on the tutorial session to evaluate its effectiveness and identify areas for improvement in future sessions.

Student Support: Offer additional office hours or online support for students who may need further assistance with tutorial material or assignments. By following these guidelines, you can conduct a structured and engaging two-hour tutorial session that enhances students' understanding and retention of theory subjects while fostering active learning and participation.

Structure of the Practical:

Introduction and Agenda Setting (05 minutes): Welcome students and outline the agenda for the tutorial session. Clarify the learning objectives and expectations for the session.

Recap or Review (07 minutes): Recap briefly the key points from previous sessions or relevant topics. Address any lingering questions or uncertainties from the previous material.

Presentation and Explanation (15 minutes): Present new material or delve deeper into selected topics. Provide clear explanations using examples, diagrams, or visual aids to aid understanding. Break down complex ideas into manageable parts and ensure clarity in explanations.

Interactive Discussion and Q&A (12 minutes): Engage students in discussions related to the presented material. Encourage active participation and critical thinking through open-ended questions. Address student queries and encourage them to ask questions for clarification.

Application and Practice (15 minutes): Assign activities or problem-solving exercises that apply the newly learned concepts. Monitor students' progress and provide guidance as they work through the tasks. Facilitate peer-to-peer learning by encouraging students to discuss their approaches with peers.

Summary and Conclusion (05 minutes): Summarize the main points covered during the tutorial session. Reinforce key concepts and their relevance to the broader course objectives. Prepare students for the next steps in their learning journey related to the topic.

Feedback and Next Steps (05 minutes): Gather feedback from students on the tutorial session, including what they found most helpful and any areas needing improvement. Provide recommendations for further study, additional resources, or upcoming assignments related to the topic.

Preparation:

Review Content: Ensure a thorough understanding of the theory subject and select key topics or concepts to cover during the session.

Set Objectives: Define clear learning objectives that align with the course syllabus and students' learning needs.

Prepare Materials: Gather necessary materials such as lecture notes, slides, handouts, and any supplementary resources or examples.



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Engagement Strategies:

Active Participation: Encourage all students to actively engage in discussions and activities throughout the session.

Use of Technology: Utilize multimedia presentations or online tools to enhance learning experiences and engagement.

Group Activities: Incorporate group discussions or collaborative activities to promote peer learning and interaction.

Assessment and Evaluation:

Formative Assessment: Assess student understanding through informal assessments, discussions, and problem-solving activities.

Feedback Mechanism: Provide timely feedback on students' participation and comprehension to support their learning progress.



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Pimpri Chinchwad Education Trust's
Pimpri Chinchwad College of Engineering and Research, Ravet, Pune

Department: First Year Computer Application (2025 Pattern)				Semester: II	
Course Code: SEC-151T-CA			Name of Course: Basics of Object Oriented Programming		
Teaching Scheme (Hrs/week):			Credits:2		
Lecture	Practical	Tutorial	Lecture	Practical	Tutorial
3	2	-	3	2	-
Examination Scheme :					
FA	ESE	Total			
50 Marks	50 Marks	100 Marks			
Course Objective: The course aims to					
1. To understand the principles of object-oriented programming and apply them using Java. 2. To design and develop robust, reusable, and modular applications using classes, objects, inheritance, polymorphism.					
Course Outcome: Upon successful completion of this course, students will be able to					
SEC-151.1	Explain the object oriented programming system concepts				
SEC-151.2	Understand syntax and semantics of Java programming language				
SEC-151.3	Develop modular programs using Java				
SEC-151.4	Identify the setup JDK environment to create, debug and run Java programs using packages and Interface				
SEC-151.5	Implement and develop programs using exception handling				
Course Content					
Unit I	Introduction to Java Programming and Fundamentals of Object Oriented Programming				(09 Hours)
Fundamentals of Object Oriented Programming: Basic Concepts of Object Oriented Programming (OOP), Benefits and Applications of OOP. Java Evolution: Java Features, Difference between Java, C and C++, Java Environment. Overview of Java Language: Introduction to Simple Java Program, Use of Comments and Math function, Application of two classes, Java Program Structure, Java Tokens and statements, Implementing Java program And JVM, Command Line Arguments.					
Unit II	Basics of Java Programming				(09 Hours)
Constants, Variables and Data Types: Constants, Variables, Data Types, Declaration of Variables, Giving Typecasting. Operators & Expressions: Arithmetic operators, Relational operators, Logical operators, Assignment operators, Increment & Decrement operators, conditional operators, Bitwise operators, Arithmetic Expressions, Evaluation of Expressions, Type Conversions in Expressions, Operator Precedence & Associativity. Decision Making, Branching & Looping: Decision Making with Control Statements, Looping statements, Jump in loops, Labelled loops					

T. Laxish

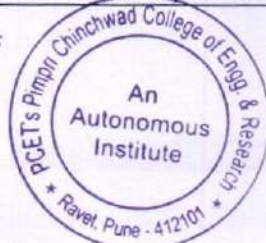
Unit III	Object Oriented Programming Concepts in Java	(09 Hours)
Classes, Objects and Methods: Defining Class, Methods Declaration, Constructors, Methods Overloading, Overriding Methods, Inheritance Arrays, Strings and Vectors: 1D arrays, Creating an Array, 2D arrays, Strings, Vectors, Wrapper Classes, Enumerated Types Inheritance: Defining, extending classes, and Implementing Interfaces. Multiple inheritance and polymorphism.		
Unit IV	Packages and Exception Handling in Java	(09 Hours)
Packages: Basics of packages, System packages, Creating and accessing packages ,Creating User defined packages, Adding class to a package. Exception Handling: Using the main keywords of exception handling: try, catch, throw, throws and finally; Nested try, Multiple catch statements, Creating user defined exceptions		
Unit V	File Handling in Java	(09 Hours)
Exception Handling: Using the main keywords of exception handling: try, catch, throw, throws and finally; Nested try, Multiple catch statements, Creating user defined exceptions File Handling , Overview of Different Stream (Byte Stream, Character stream) , Readers and Writers class , File Class , File Input Stream , File Output Stream , Input Stream Reader and Output Stream Writer class ,FileReader and FileWriter class , Buffered Reader class.		
Learning Resources		
Reference Books: 1. Arunesh Goyal, The Essentials of JAVA, Khanna Book Publishing Company Private Limited, 2012. 2. Tanweer Alam, Core JAVA ,Khanna Book Publishing Company Private Limited,2015. 3. Y. Daniel Liang, Introduction to JavaProgramming,7thEdition, Pearson,2008. 4. S. Malhotra and S. Choudhary, Programming in Java, 2nd Edition, Oxford University Press, 2014.		
MOOC/NPTEL/YouTube Links: 1. https://www.w3schools.com/java/		



[Handwritten signature] **T. Laxmi**

Pimpri Chinchwad Education Trust's
Pimpri Chinchwad College of Engineering and Research, Ravet, Pune

Department: First Year computer Application (2025 Pattern)				Semester: II	
Course Code: SEC- 151P- CA			Name of Course: Basics of Object Oriented Programming		
Teaching Scheme (Hrs/week):			Credits:2		
Practical			Practical		
4			2		
Examination Scheme :					
Practical	OR	Total			
35 Marks	15	50 Marks			
Course Objective: The course aims to					
1.To understand the principles of object-oriented programming and apply them using Java 2.To design and develop robust, reusable, and modular applications using classes, objects, inheritance, and polymorphism.					
Course Outcome: Upon successful completion of this course, students will be able to					
SEC-151P.1	Understand object oriented programming system concepts				
SEC-151P.2	Explain the syntax and semantics of Java programming language				
SEC-151P.3	Develop modular programs using Java				
SEC-151P.4	Implement the setup JDK environment to create, debug and run Java programs				
SEC-151P.5	Design and develop programs using exception handling				
List of Laboratory practical					
No	Content				
01	Write a program to read two numbers from user and print their product.				
02	Write a program to print the square of a number passed through command line arguments.				
03	Write a program to send the name and surname of a student through command line arguments and print a welcome message for the student.				
04	Write a java program to find the largest number out of n natural numbers.				
05	Write a java program to find the Fibonacci series & Factorial of a number using recursive and non-recursive functions				
06	Write a java program to multiply two given matrices.				
07	Write a Java program for sorting a given list of names in ascending order.				
08	Write a Java program that checks whether a given string is a palindrome or not .Ex: MADAM is a palindrome.				
09	Write a java program to read n number of values in an array and display It in reverse order.				
10	Write a Java program that displays the number of characters, lines and words in a text.				
11	Write a Java program to create a class Employee with a method called calculate Salary ().Create two sub classes Manager and Programmer. In each subclass, override the calculate Salary () method to calculate and return the salary based on their specific roles.				



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12	Write a Java program using an interface called 'Bank' having function 'rate_of_interest ()'. Implement this interface to create two separate bank classes 'SBI' and 'PNB' to print different rates of interest. Include additional member variables, constructors also in classes 'SBI' and 'PNB'
13	Write a Java package program for the class book and then import the data from the package and display the result.
14	Write a Java program for demonstrating the divide by zero exception handling.

Practical conduction:

Conducting a four-hour practical session allows for more in-depth exploration and interaction. Here are comprehensive guidelines to effectively conduct a two-hour tutorial session for a theory subject.

Preparation:

Review Content: Ensure a thorough understanding of the theory subject and select key topics or concepts to cover during the session

Set Objectives: Define clear learning objectives that align with the course syllabus and students' learning needs.

Prepare Materials: Gather necessary materials such as lecture notes, slides, handouts, and any supplementary resources or examples.

Engagement Strategies:

Active Participation: Encourage all students to actively engage in discussions and activities throughout the session.

Use of Technology: Utilize multimedia presentations or online tools to enhance learning experiences and engagement.

Group Activities: Incorporate group discussions or collaborative activities to promote peer learning and interaction.

Assessment and Evaluation:

Formative Assessment: Assess student understanding through informal assessments, discussions, and problem-solving activities.

Feedback Mechanism: Provide timely feedback on students' participation and comprehension to support their learning progress.

Logistics and Environment:

Classroom Setup: Ensure a comfortable and conducive learning environment with adequate seating, lighting, and equipment for presentations.

Time Management: Manage time effectively to cover all planned activities within the two-hour duration.

Pimpri Chinchwad Education Trust's
Pimpri Chinchwad College of Engineering and Research, Ravet, Pune

Department: First Year Computer Application (2025 Pattern)

Course Code: SEC- 152T- CA

Name of Course: Web Technologies

Teaching Scheme (Hrs/week):

Credits:2

Lecture	Practical	Tutorial	Lecture	Practical	Tutorial
1	-	-	1	-	-

Examination Scheme :

FA	ESE	TW			
-	-	25 Marks			

Course Objective: The course aims to

1. The aim is to provide foundational knowledge and practical skills essential for web development.
2. This course introduces students to the core technologies and tools used in creating and managing websites.

Course Outcome: Upon successful completion of this course, students will be able to

SEC-152.1	Understand the concepts and architecture of the World Wide Web, Markup languages along with Cascading Style Sheets.
SEC-152.2	Explain the concepts of event handling and data validation mechanisms
SEC-152.3	Define the concepts of embedded dynamic scripting on client and server side Internet Programming and basic full stack web development.
SEC-152.4	Develop modern interactive web applications.
SEC-152.5	Design static web pages using Html and CSS.

Course Content

Unit I	HTML Fundamentals & Structure	(3 Hours)
Introduction to HTML, history of HTML, Objective ,basic Structures of HTML, Header Tags, body tags, Paragraph Tags, Tags for FORM Creation, TABLE, FORM, TEXT AREA, SELECT, IMG, IFRAME FIELDSET, ANCHOR. Lists in HTML, Introduction to DIV tag, NAVBAR Design.		
Unit II	Introduction to PHP and MYSQL	(3 Hours)
PHP syntax (variables, operators, loops, arrays),Embedding PHP in HTML: simple server-side logic – CRUD operations with MySQL using PHP (INSERT, SELECT, UPDATE, DELETE)		
Unit III	Advanced Java Script	(3 Hours)
Introduction to JavaScript: Functions and Events, Document Object model traversing using JavaScript. Output System in JavaScript i.e. Alert, throughput, Input box, Console. Variables and Arrays in JavaScript. Date and String handling in JavaScript. Manipulating CSS through JavaScript: Form Validation like Required validator, length validator, Pattern validator. Advanced JavaScript, Combining HTML, CSS and JavaScript events and buttons, controlling your browser: Introduction to AJAX, Purpose, advantages and disadvantages, AJAX based Web applications and alternatives of AJAX.		

Unit IV	Introduction To XML	(3 Hours)
Introduction to XML: uses, Key concepts, DTD8 schemas, XSL, XSLT, and XSL Elements and transforming with XSLT. Introduction to XHTML. JSON: Introduction to JSON, Key sand Values, Types of Values, Arrays, Objects.		
Unit V	Introduction to Web design	(3 Hours)
Introduction to Boot strap downloads/linking, using classes of Bootstrap, understanding the Grid System in Bootstrap. Introduction to www, Protocols and Programs, Applications and development tools, web browsers, DNS, Web hosting Provider, Setting up of Windows/Linux/Unix web servers, Web hosting in cloud, Types of Web Hosting.		
Learning Resources		
Textbooks 1. Web Technology Author: N.P. Gopalan, J. Akilandeswari Publisher: PHI Learning Pvt. Ltd., New Delhi. Edition: 2nd Year: 2014 ISBN: 8120350065 2. Web Programming and Internet Technologies: An E-Commerce Approach Author(s): Porter Scobey, 3. Pawan Lingras Publisher: Jones & Bartlett Learning Edition: 2nd Print ISBN: 9781284070682		
MOOC/NPTEL/YouTube Links: 1. https://onlinecourses.swayam2.ac.in/nou25_cs17/preview [Web Based Technologies and Multimedia Applications By Prof. P.V. Suresh Indira Gandhi National Open University, New Delhi] 2. https://video.search.yahoo.com/search/video;_ylt=AwrOsn2_bKV0PlouxhP7w8QF;_ylu=c2xrA3RleHQEaXQDQWxzbl1RyeQRzZWMDcmVsBHBvewMz?p=Introduction+to+HTML&fr2=p:s,v:v,m:rs-top,ct:relatedSearches&fr=mcafee#id=8&vid=dfb23c553148d37208dadbf313f3bfd1&action=view [HTML - Introduction - W3Schools.com]		



T. Laxmi

Pimpri Chinchwad Education Trust's Pimpri Chinchwad College of Engineering and Research, Ravet, Pune					
Department: First Year Computer Application (2025 Pattern)				Semester: II	
Course Code: SEC-152P-CA			Name of Course: Web Technologies		
Teaching Scheme (Hrs/week):			Credits:1		
Practical		Tutorial	Practical		Tutorial
1		-	1		-
Examination Scheme :					
FA	TW	Total			
	25 Marks	-			
Course Objective:					
1. To familiarize the students with concepts and techniques in Calculus, Fourier series and Linear Algebra. 2. The aim is to equip them with the techniques to understand advanced level mathematics and its applications that would enhance analytical thinking power, useful in their disciplines					
Course Outcome:					
SEC -152 P.1	Understand the concepts and architecture of the World Wide Web, Markup languages along with Cascading Style Sheets.				
SEC- 152 P.2	Explain the concepts of event handling and data validation mechanisms				
SEC- 152 P.3	Define the concepts of embedded dynamic scripting on client and server side Internet Programming and basic full stack web development.				
SEC- 152 P.4	Develop modern interactive web applications.				
SEC -152 P.5	Design static web pages using Html and CSS.				
List of Laboratory practical					
No.	Content				
01	Create your class time table using table tag				
02	Design a Webpage for your college containing description of courses, department, faculties, library etc. using list tags, href tags, and anchor tags.				
03	Create a web page using Frame with rows and columns where we will have header frame, left frame, right frame, and status bar frame. On clicking in the left frame, information should be displayed in right frame.				
04	Create Your Resume using HTML, use text, link ,size, color and lists				
05	Create a Web Page of a super market using(internal CSS)				
06	Write a HTML Program to create your college web site using for mobile device.				
07	Write an HTML/JavaScript page to create login page with validations				
08	Develop a Simple calculator for addition, subtraction, multiplication and division operation using JavaScript				
09	Write a JavaScript program using Switch case.				
10	Write a Program to retrieve date from a text file and display in git using AJAX.				

11	Create XML file to store Student Information like Register Number, Name, Mobile Number, DOB, and Email-Id.
12	Use External CSS to format your timetable.
Preparation: Prepare Materials: Gather necessary materials such as lecture notes, slides, handouts, and any supplementary resources or examples.	
Engagement Strategies: Active Participation: Encourage all students to actively engage in discussions and activities throughout the session. Use of Technology: Utilize multimedia presentations or online tools to enhance learning experiences and engagement. Group Activities: Incorporate group discussions or collaborative activities to promote peer learning and interaction.	
Assessment and Evaluation: Quizzes/Tests: Short Coding tasks, Discussions, Regular quiz Assignments: Assess students understanding through informal assessments and classroom activity Guest Lecture: Invite guest speakers for better understanding and live examples for topic clarity	
Logistics and Environment: Classroom Setup: Computer Lab with Internet and access to cloud platforms. Small groups for effective practical teaching. Ensure a comfortable and conducive learning environment with adequate seating, lighting, and equipment for presentations. Time Management: Manage time effectively to cover all planned activities within the two-hour duration.	



T. Laxmi

Pimpri Chinchwad Education Trust's
Pimpri Chinchwad College of Engineering and Research, Ravet, Pune

Department: First Year BCA(2025 Pattern)					Semester : II	
Course Code: OE-151-CA			Name of Course: Data Science-II			
Teaching Scheme (Hrs/week):			Credits:1			
Lecture	Practical	Tutorial	Lecture	Practical	Tutorial	
-	1	-	-	1	-	
Examination Scheme :						
FA	TW	Total				
	25 Marks	-				
Course Objective: The course aims to						
1. To provide hands on training in Ms Excel (spreadsheet concepts).						
2. To develop practical skills in Ms Excel and R						
3. To understand features and Analysis tools for data visualization.						
4. To enable students to create, analyze and present data effectively						
Course Outcome: After successful completion of this course, learner will be able to						
OE-151.1	Define the features available in Ms Excel for Data Visualization					
OE-151.2	Understand the fundamentals of data science (Ms Excel and R)					
OE-151.3	Explain data processing and data analysis techniques using Ms Excel					
OE-151.4	Analyze data by applying various functions and filters in Ms Excel and R					
OE-151.5	Implement the functions in Ms Excel and R					
List of Assignments						
No.	Content					
1	Basics – Ms Excel interface and basic features. Prepare simple to complex spreadsheet. Creating templates in Excel. Data types and Formatting					
2	Using Formulas and Functions -. Formatting Cells with Number formats, Font formats, Alignment, Borders, Cell referencing, Sorting and filtering datasets. Printing Workbooks					
3	Data Analysis Tools - Pivot Tables & Pivot Charts, Conditional formatting Visualization - Creating bar, line, pie, scatter charts, Dynamic charts with slicers and Power BI					
4	Calculations in MS-Excel using Basic Functions (Sum, Average, Max, Min, Count, etc). Use of Text Functions (Upper, Lower, Proper, Left, Mid, Right , Trim, Len, Exact, Concatenate, Find, Substitute). Use of Arithmetic Functions (SumIf, SumIfs CountIf, CountIfs ,AverageIf, AverageIfs).					
5	Introduction to R and the basics of R Mini project – Use of all the features to make a project on the topic and difference between visualization using Excel, R and Power BI in terms of ease of use and presentation					

Preparation:

Start with the History: Review what students learned in Data Science I (Data Visualization). Outline the key topics for Data Science II

Prepare Materials (Resource Planning): Revise the charts and other Data Visualization tools used in DSI

Engagement Strategies:

Active Participation: Use flipped classroom approach, Brainstorming for dataset coding and Mini projects. Encourage all students to actively engage in discussions and activities throughout the session.

Use of Technology: Utilize multimedia presentations or online tools to enhance learning experiences and engagement.

Group Activities: Incorporate group discussions or collaborative activities to promote peer learning and interaction.

Assessment and Evaluation:

Quizzes/Tests: Short Coding tasks, Discussions, Regular quiz

Assignments: Assess students understanding through informal assessments and classroom activity

Guest Lecture: Invite guest speakers for better understanding and live examples for topic clarity

Logistics and Environment:

Classroom Setup: Computer Lab with Internet and access to cloud platforms. Small groups for effective practical teaching. Ensure a comfortable and conducive learning environment with adequate seating, lighting, and equipment for presentations.

Time Management: Manage time effectively to cover all planned activities within the two-hour duration.



T. Parikh

Pimpri Chinchwad Education Trust's
Pimpri Chinchwad College of Engineering and Research, Ravet, Pune

Department: First Year BCA(2025 Pattern)

Semester:
Semester: II

Course Code: OE-151-CA

Name of Course: Cyber Security II
(Introduction to Cyber Security Law in India)

Teaching Scheme (Hrs/week):

Credits:2

Lecture	Practical	Tutorial	Lecture	Practical	Tutorial
1	--	-	1	--	-

Examination Scheme :

FA1	TW	Total			
-	25 Marks	-			

Course Objective: The course aims to

1. To understand the legal framework governing cyber space in India.
2. To explore the IT Act, 2000 and its amendments.
3. To identify legal provisions dealing with cybercrime and data protection.
4. To examine real-life cases and enforcement challenges.

Course Outcome: Upon successful completion of this course, students will be able to

OE-151.1	Explain the structure and scope of Indian cyber law.
OE-151.2	Identify key cybercrimes and corresponding legal remedies.
OE-151.3	Analyze legal issues related to privacy, digital contracts, and cyber forensics.
OE-151.4	Apply relevant legal provisions to real-world cyber incidents.
OE-151.5	Implement the provisions in business scenarios to resolve ethical dilemmas and promote Corporate social responsibility.

Course Content

Unit I	Introduction to Cyber Law	(3 Hours)
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Concept, Definition and Objectives of Cyber Law, Importance and Scope of cyber law. Evolution, Emergence and Need for cyber law in India. Overview of global legal framework.

Unit II	Information Technology Act, 2000	(3 Hours)
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Information Technology Act, 2000 - Objectives, scope, and features of the Act. Elaborate the Key definitions and provisions of the Act. IT Act, 2000 vs IT (Amendment) Act, 2008 features and differences.

Unit III	Cyber Crimes under Indian Law	(3 Hours)
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Types of cybercrimes: hacking, phishing, cyberstalking, identity theft, financial fraud, cyber terrorism and cyber defamation. Penalties and punishments under the IT Act. Relevant sections of IPC and IT Act. Case studies of notable cybercrimes in India like The Union Bank of India SWIFT Hack (2016), The Cosmos Bank Cyber Attack (2018, Pune), The Amitabh Bachchan Twitter Hack (2019), Paytm Data Leak Extortion Case (2020)

Unit IV	Data Protection and Privacy	(3 Hours)
Right to Privacy as a fundamental right (Pettaway judgment). Data Protection Bill (overview of the latest draft/law). Consent, sensitive personal data, obligations of data fiduciaries. Role of CERT-In and Cyber Crime Cells. Cyber forensics and role of judiciary. Cyber Appellate Tribunal. Police, judiciary, and investigation procedures in cyber law cases		
Unit V	Case Studies and Contemporary Emerging Issues	(3 Hours)
Social media regulation and digital ethics, E-commerce, digital payments, and cyber law Future challenges: AI, IoT, blockchain & cyber governance Important Indian case laws (e.g., Shreya Singhal v. Union of India), Swami Ramdev v. Facebook, Twitter & Google (2019), Google India Pvt. Ltd. v. Visaka Industries (2020). Social media and fake news. Cyber bullying, online harassment, OTT regulation. Cross-border jurisdiction and challenges.		
Learning Resources		
Text Book: 1. Cyber Law Author: Pavan Duggal Edition: 3rd Edition (also available as "An Exhaustive Section-Wise Commentary"), 2023 Publisher: Universal LexisNexis Year: 2023 2. The Indian Perspective Author: Pavan Duggal Edition: 1st Edition Publisher: Saakshar Law Publications Year: 2002		
Reference Book: 1. Ethics and Politics of the Indian Constitution by Rajeev Bhargava, Oxford University Press, New Delhi, 2008 2. The Constitution of India by B.L.Fadia Sahitya Bhawan;New edition(2017 Introduction to the Constitution of India by D D Basu Lexis Nexis;Twenty-Third, 2018 Edition		
E-Resources and MOOC/NPTEL/YouTube Links: 1. https://www.constitution.org/cons/india/const.html 2. https://www.sci.gov.in/constitution		
Preparation: Start with the History: Begin with a brief introduction to the history of India's struggle for independence and how it led to the need for a new Constitution. Explain the Objectives: Highlight the key objectives of the Constitution—such as ensuring justice, liberty, equality, and fraternity for all citizens.. Prepare Materials: Gather necessary materials such as lecture notes, slides, handouts, and any supplementary resources or examples.		

Assessment and Evaluation:

Quizzes/Tests: Regularly quiz students on the Constitution's provisions to reinforce their learning. **Assignments:** Ask students to research specific articles or aspects of the Constitution and present their findings.

Class Discussions and Debates: Organize debates on constitutional topics such as the balance of power between the Centre and States or the significance of Fundamental Rights.

Logistics and Environment:

Classroom Setup: Ensure a comfortable and conducive learning environment with adequate seating, lighting, and equipment for presentations.

Time Management: Manage time effectively to cover all planned activities within the two-hour duration.



T. Parikh



Pimpri Chinchwad Education Trust's Pimpri Chinchwad College of Engineering and Research, Ravet, Pune					
Department: First Year BCA(2025 Pattern)					Semester: II
Course Code:VAC-151-CA			Name of Course: Introduction of Indian Constitution		
Teaching Scheme (Hrs/week):			Credits:2		
Lecture	Practical	Tutorial	Lecture	Practical	Tutorial
1	--	1	1	--	1
Examination Scheme :					
FA1	TW	Total			
25 Marks	25 Marks	50 Marks			
Course Objective: The course aims to					
1. To introduce students to the basic principles and philosophy of the Indian Constitution. 2. To understand the structure, powers, and functioning of various parts of government. 3. To create awareness about the rights and duties of citizens. 4. To promote constitutional values such as justice, equality and liberty					
Course Outcome: Upon successful completion of this course, students will be able to					
VAC-151.1	Analyze the Indian Constitution's history, Preamble, Fundamental Rights, and basic structure				
VAC-151.2	Describe the roles of the President, Prime Minister, and the legislative bodies (Lok Sabha and Rajya Sabha).				
VAC-151.3	Examine the powers of the Governor, Chief Minister, and the State Secretariat				
VAC-151.4	Assess the functioning of local government bodies like District Administration, Municipal Corporations, and Zila Panchayats.				
VAC-151.5	Evaluate the role of the Election Commission in conducting free and fair elections				
Course Content					
Unit I	The Constitution-Introduction				(3 Hours)
The History of the Making of the Indian Constitution - Colonial rule, nationalist movement, need for constitution. Preamble and the Basic Structure (doctrine) including Constituent Assembly - Composition, role, and debates. The interpretation of Fundamental Rights and Duties and the interpretation State Policy Principles. Salient features of the Constitution. Citizenship: Meaning and provisions.					
Unit II	Union Government				(3 Hours)
The concept of Sovereign, Socialist, Secular, Democratic, Republic. Detailed structure of the Indian Union. President-Role and Power. Prime Minister and Council of Ministers. Lok Sabha and Rajya Sabha. Philosophy of the Preamble: Justice, Liberty, Equality, Fraternity.					

Unit III	State Government	(3 Hours)
Directive Principles of State Policy - Classification: Socialist, Gandhian, Liberal-Intellectual. The relationship between DPSPs and Fundamental Rights. Its relevance and implementation in present times. Judicial interpretation and importance in governance with regards to Governor–Role and Power. Chief Minister and Council of Ministers. State Secretariat.		
Unit IV	Local Administration	(3 Hours)
Evolution of local self governance in India, 73 rd and 74 th constitution amendments. The structure of gram sabha, gram panchayat, panchayat samiti, zilla parishad. Functions, powers and responsibility of panchayat raj samiti. Structure, Functions, power and role of Urban local bodies		
Unit V	Election Commission	(3 Hours)
Introduction to Election Commission, Article status 324 to 329, Functions, Power, Role and Responsibility of Election Commission especially - Chief Election Commissioner and State Election Commissioner. Role of Technology in Election Commission live EVM, VVPATs. Online voter services		
Learning Resources		
Reference Book: 1. Ethics and Politics of the Indian Constitution by Rajeev Bhargava, Oxford University Press, New Delhi, 2008 2. The Constitution of India by B.L.Fadia Sahitya Bhawan; New edition (2017) 3. Introduction to the Constitution of India by D D Basu Lexis Nexis; Twenty-Third, 2018 edition		
E-Resources and MOOC/NPTEL/YouTube Links: 1. https://www.constitution.org/cons/india/const.html 2. https://www.sci.gov.in/constitution		
Preparation: Start with the History: Begin with a brief introduction to the history of India's struggle for independence and how it led to the need for a new Constitution. Explain the Objectives: Highlight the key objectives of the Constitution—such as ensuring justice, liberty, equality, and fraternity for all citizens.. Prepare Materials: Gather necessary materials such as lecture notes, slides, handouts, and any supplementary resources or examples.		



T. Laxmi

Assessment and Evaluation:

Quizzes/Tests: Regularly quiz students on the Constitution's provisions to reinforce their learning. **Assignments:** Ask students to research specific articles or aspects of the Constitution and present their findings.

Class Discussions and Debates: Organize debates on constitutional topics such as the balance of power between the Centre and States or the significance of Fundamental Rights. Mock Rajya Sabha and Mock Lok Sabha to understand the functioning and encourage awareness of national issues.

Logistics and Environment:

Classroom Setup: Ensure a comfortable and conducive learning environment with adequate seating, lighting, and equipment for presentations.

Time Management: Manage time effectively to cover all planned activities within the two-hour duration.



T. Laxish

	Pimpri Chinchwad Education Trust's Pimpri Chinchwad College of Engineering & Research Ravet, Pune IQAC PCCOER	
Academic Year: 2025 – 26 Term: I & II	Board of Studies	Record No: ACAD/R/06

Board of Studies – Bachelor in Computer Application

Task Force for Curriculum Design and Development

Composition of BoS

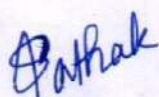
Sr. No.	Name of the Member	Designation	Category	Nominated By
1	Dr. Smriti Pathak	HoD	Chairman	Ex-Officio
2	Dr. Janardan Pawar	Principal Indira College of commerce and science	Subject Expert other than Parent University	Academic Council
3	Dr. Chaitali Gadekar	Principal, MGM's College of Computer Science and Information Technology, Navi Mumbai, University of Mumbai.		
4	Dr. Rahul Kulkarni	HOD (Computer Management) Chaligaon Education Society's ASC College North Maharashtra University		
5	Dr. Dipak Gore	Associate Professor C. T. Bora College, Shirur	University Nominee	Vice Chancellor SPPU
6	Mr. Advait Lele	Unit Risk Manager	Professional expert from industry	Academic Council
7	Mr. Yogesh Shinde	Founder and CEO Bamboo India		Academic Council
8	Indrayani Deshpande	QA Analyst Quorum software	PG Meritorious Alumnus	Chairman



T. Laxmi

Team Members for Course Design

Sr. No	Team Member Name
01	Assi. Prof. Sneha Mane
02	Assi. Prof. Kamini Fulpagar
03	Assi. Prof. Harshada Deshpande
04	Assi. Prof. Sheetal More
05	Assi. Prof. Bharati Patange
06	Assi. Prof. Vishal Shisupal



Dr. Smriti Pathak

Chairman - Board of Studies (Bachelor of Computer Application) Pimpri Chinchwad College of Engineering and Research, Ravet Pune

