



ST. VINCENT PALLOTTI COLLEGE OF ENGINEERING & TECHNOLOGY, NAGPUR

(An autonomous institution affiliated to Rashtrasant Tukadoji Maharaj Nagpur University)

B. Tech. Scheme of Examination & Syllabus 2025 - 26 COMPUTER SCIENCE AND ENGINEERING (CYBER SECURITY)

SEMESTER III

Sr No	Course Category	CourseCode	Course Title	Hours per Week			Credits	Maximum Marks				Minimum Passing Marks	No. of Hours for ESE
				L	T	P		Mid-Sem Examination	Continual Assessment	End Sem Examination	Total		
1	PCC	25CS301T	Applied Mathematics - III	2	-	-	2	10	10	30	50	23	1.5
2	PCC	25CS302T	Data Structures	3	-	-	3	20	20	60	100	45	3
3	PCC	25CS302P	Data Structures Lab	-	-	2	1	-	25	25	50	25	-
4	PCC	25CS303T	Operating System	3	--	-	3	20	20	60	100	45	3
5	PCC	25CS303P	Operating System Lab	-	-	2	1	-	25	25	50	25	-
6	PCC	25CS304T	Information Security Fundamentals	2	-	-	2	10	10	30	50	23	1.5
7	PCC	25CS305P	Cryptography Lab	-	-	2	1	-	25	25	50	25	-
8	HSSM	25CS306T	Constitution of India	2	-	-	2	10	10	30	50	23	1.5
9	HSSM	25CS307T	Fundamentals of Entrepreneurship	2	-	-	2	10	10	30	50	23	1.5
10	SEC	25CS341P	Career Development - I	-	-	2	1	-	50	-	50	25	-
11	MDM	25CS331M	MDM - I (Refer MDM basket)	2	-	-	2	10	10	30	50	23	1.5
Total				16		8	20	90	215	345	650	-	-

Multidisciplinary Minor – I

25CS331M

Cyber Security and Privacy

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SEMESTER III

Course Code	Course Name	Th	Tu	Pr	Credits	Evaluation			
						MSE	CA	ESE	Total
25CS301T	Applied Mathematics – III	2	-	-	2	7.5	7.5	30	50

Course Objectives	Course Outcomes
<p>The aim of this course is</p> <ol style="list-style-type: none">To provide general understanding of cyber security relationship with numbers.To provide knowledge of basic of mathematical models used in information securityTo provide role of mathematics in a complex system such as the internet.	<p>Students will be able to</p> <ol style="list-style-type: none">To solve and analyze problems involving modular arithmetic, including congruence relations, application of the division algorithm, Euler's theorem, and the Chinese Remainder Theorem.To solve problems using principles of mathematical logic and set theory.To investigate and solve engineering problems through the application of graph theory, trees, and spanning tree algorithms.

Unit I

Analytic Number theory:

Euclid's Lemma, Euclidean algorithm, basic properties of congruences, residue classes and complete residue system, Euler Fermat theorem, Lagrange's theorem and its applications, Chinese remainder theorem, primitive roots.

[10Hrs]

Unit II

Mathematical Logic & set theory: - Introduction to statements and notions, connectives, Conditional statements and tautologies, Quantifiers, Principle of Mathematical induction, Basic concepts of set theory, Operations on sets, Power set.

[10Hrs]

Unit III

Graph Theory & Trees: Types of graphs, definitions, Paths and circuits, Reachability and connectedness, Matrix representation of graphs, Sub graphs and Quotient graphs, Isomorphic graphs, Euler Path and Euler Circuit, Binary trees, Labeled trees, undirected trees, spanning trees of connected relations, Prim's algorithm, Kruskal's algorithm.

[10Hrs]

Text Books

S.N	Title	Authors	Edition	Publisher
1	Elementary Number Theory	David M. Burton	7th Edition	MC Graw Hill
2	Discrete mathematics structures	Kolman, Busby & Ross	3 rd edition	PHI
3	Discrete mathematical structures with applications to Computer Science	Tremblay & Manohar		Tata Mc-Graw Hill
4	Discrete Mathematics	Swapan Kumar Sarkar		S. Chand Publications

Reference Books

S.N	Title	Authors	Edition	Publisher
1	Discrete Maths for Computer Science and Mathematics	Mott, Kandel, Baker		Pearson
2	Discrete Mathematics and its applications	K. H. Rosen,	7 th Edition	Tata Mc-Graw Hill

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SEMESTER III

Course Code	Course Name	Th	Tu	Pr	Credits	Evaluation			
						MSE	CA	ESE	Total
25CS302T	Data Structures	3	-	-	3	20	20	60	100

Course Objectives	Course Outcomes
<p>This course is intended</p> <ol style="list-style-type: none"> To provide knowledge of basic concepts in data structures and algorithms. To choose the appropriate data structure and algorithm design method for a specified application. To efficiently implement the different data structures and solutions for specific problems 	<p>Students will be able to</p> <ol style="list-style-type: none"> To understand the basic concept of data structures, time complexity and analyse the various sorting and searching algorithms. To implement dynamic data structures like singly, doubly and circular linked list. Apply the different linear data structures like stack and queue to various computing problems. Implement different types of trees and apply them to problem solution. Demonstrate the representation of graphs and their applications in real life problem.
Unit I	[10 Hrs]
<p>Introduction: - Concept of Data structures, Time and space analysis of algorithms, Big oh, theta notations and omega notations, Average, best and worst case analysis</p> <p>Searching and sorting techniques- Linear search, Binary search, Insertion sort, selection sort, Bubble Sort, radix Sort, Merge Sort, Quick Sort.</p>	
Unit II	[10 Hrs]
<p>Stack and Queue - Array representation of stacks, Queues, Dequeue, Circular queue, Polish notation, Application of stack & queue: Conversion from Infix to Postfix, Evaluation of postfix expressions, Priority Queues.</p>	
Unit III	[8 Hrs]
<p>Linked Lists: Concept of LL, Types of LL, operations on linked list, Implementation of stack and queue using linked lists, singly linked list, polynomial representations and manipulations are using linked list, circular linked list, doubly linked list, Implementation of linked list using static and dynamic memory allocation, Generalized list, sparse matrix.</p>	
Unit IV	[8 Hrs]
<p>Trees: Basic Terminology, Application of trees, Basic trees, Binary tree representations, threaded storage representation, binary tree traversals, binary search trees, Preliminary treatment of AVL Trees.</p>	
Unit V	[9 Hrs]
<p>Graphs: Definition & terminology, Graph representation: matrix representation of Graph, List of structure, other representation of graphs, Breadth First Search, Depth First Search, Spanning trees, shortest path algorithm, topological sorting.</p>	

Text Books

S. N	Title	Authors	Edition	Publisher
1	Fundamentals of Data Structure	Horowitz and Sahani	2 Edition	CBS Publications
2	Data Structures using C	Tanenbaum	2 Edition	C Pearson Education
3	Data structure and Algorithm	Lafore	2 Edition	BPB Publication

Reference Books

S. N	Title	Authors	Edition	Publisher
1	Data Structure and Program Design in C	Kruse, Leung and Tondo	Second	PHI
2	Schaum's outline: Data Structures	Seymour Lipschutz	Third	Tata Mc Graw Hill

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Course Code	Course Name	Th	Tu	Pr	Credits	Evaluation		
						CA	ESE	Total
25CS302P	Data Structures Lab	-	-	2	1	25	25	50

Course Objectives	Course Outcomes
<p>This course is intended to provide</p> <ol style="list-style-type: none"> 1. Apply basic C programming constructs such as arrays and structures. 2. Implement and evaluate searching and sorting algorithms using procedural programming. 3. Design and implement linear data structures (Stacks, Queues, Linked Lists) using static and dynamic memory. 4. Implement non-linear data structures (Trees and Graphs) including traversal, insertion, deletion, and search operations. 	<p>Student will be able to:</p> <ol style="list-style-type: none"> 1. Design and implement programs using arrays, structures, and basic searching and sorting algorithms to solve computational problems. 2. Apply and demonstrate the use of linear and non-linear data structures such as stacks, queues, and linked lists using C programming. 3. Construct and implement tree and graph algorithms including traversal, insertion, deletion, and search techniques to solve real-world problems. 4. Apply algorithmic logic to solve computational problems involving both linear and non-linear data structures.

Exp No	Name of Experiment
1	To design and implement basic C program using arrays & structures.
2	To implement a Menu driven program for linear & Binary search methods and demonstrate their constraints.
3	To implement a Menu driven program for Sorting methods.
4	To implement a Program to demonstrate the working of a Stack.
5	To implement a Program to demonstrate the working of a Queue.
6	To implement a Program to apply the concepts of linked list.
7	To implement the non- linear data structure binary tree.
8	To implement BFS and DFS in graph
9	To implement tree traversal operations (ie. In-order, Pre-order and Post-order) on binary tree.
10	To perform insertion and deletion operations on AVL Tree

Text Books

S.N	Title	Authors	Edition	Publisher
1	Data Structure and Program Design in C	Kruse, Leung and Tondo	1st Edition	PHI
2	Schaum's outline: Data Structures	Seymour Lipschutz	-	Tata Mc Graw Hill
3	An Introduction to DS with applications	Trembley and sorenson	1st Edition	Mc Graw Hill

Reference Books

S.N	Title	Authors	Edition	Publisher
1	Data Structure and Program Design in C	Kruse, Leung and Tondo	2 nd Edition	PHI
2	Schaum's outline: Data Structures	Seymour Lipschutz	3 rd Edition	Tata Mc Graw Hill

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Course Code	Course Name	SEMESTER III			Credits	Evaluation			
		Th	Tu	Fri		MSE	CA	ESE	Total
25CS303T	Operating System	3	-	-	3	20	20	60	100

Course Objectives	Course Outcomes
<p>This course is intended</p> <ol style="list-style-type: none"> To understand the fundamentals, structure, and functions of operating systems. To learn process management, CPU scheduling, synchronization, and deadlock handling. To understand memory management and virtual memory concepts. 	<p>Students will be able to</p> <ol style="list-style-type: none"> Explain operating system concepts, architecture, and functions. Analyze processes, threads, IPC, and CPU scheduling algorithms. Apply synchronization techniques and deadlock handling methods. Explain memory management and virtual memory techniques. Use Linux commands for file, directory, permission, and user management.

Unit I	[10 Hrs]
Importance of Operating Systems, Basic Concepts and Terminology, An Operating System Architecture, types of Operating System, Operating System as a Manager: Manager Memory Management Functions, Processor Management Functions, Device Management Functions, Information Management Functions, Files and Security, System calls for Process Management, File Management and Directory Management.	
Unit II	[10 Hrs]
Process Synchronization Hardware, Semaphores, and Classical Problem of Synchronization, Introduction to Deadlocks: Graphical representation of a deadlock, Deadlock handling strategies: Ignore a deadlock, detect a deadlock, recover from a deadlock, prevent a deadlock, Avoid a deadlock.	
Unit III	[8 Hrs]
Management Processes Concept: Processes and Threads. Process Model and Thread Model. Job Scheduler, Process Scheduling, operation on process. Overview of Inter-process communication: Race Conditions, Critical Regions, Mutual Exclusion with busy waiting. Inter – Process Communication (IPC), Bankers Algorithm, Producer Consumer and Dining Philosopher. CPU Scheduling: Introduction to Scheduling, Scheduling criteria, Scheduling Algorithms, Algorithm Evaluation and Scheduling in different Systems.	
Unit IV	[8 Hrs]
Memory Management: Single Contiguous Memory Management, Fixed Partition Memory Management: Introduction Allocation Algorithm, swapping, relocation and address translation Variable Partition: Introduction, Allocation Algorithm, swapping, relocation and address translation, Non-contagious Allocation -general concepts, Paging, Segmentation Virtual Memory Management system: general concepts, Page replacement algorithm	
Unit V	[9 Hrs]
Introduction to Linux, Features, Shell, Shell types, Terminal, Basic Commands, Basic networking commands, File Handling Commands, Linux/Unix file system, Linux File system architecture, Linux file Hierarchy concepts, File and Directory names, Absolute and relative Path names, Linux file permission and basic user management.	

Text Books

S. N	Title	Authors	Edition	Publisher
1.	Operating System Concepts	A. Silberschatz, Galvin	8 th Edition	Wiley
2.	Operating System	B. Godbole	3 rd Edition	The McGraw-Hill.
3.	Operating systems: Internals & design principles	William Stallings,	7 th Edition	Pearson

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Course Code	Course Name	Th	Tu	Pr	Credits	Evaluation		
						CA	ESE	Total
25CS303P	Operating System Lab	-	-	2	1	25	25	50

Course Objectives	Course Outcomes
<p>This course is intended</p> <p>1. Students will gain practical experience with designing and implementing concepts of operating systems such as system calls, CPU scheduling, process management, memory management, file systems and deadlock handling using C language in Linux environment.</p>	<p>Students will be able to</p> <ol style="list-style-type: none">1. Understand and implement basic services and functionalities of the operating system using system calls.2. Analyze and simulate CPU Scheduling Algorithms like FCFS, Round Robin, SJF, and Priority.3. Implement memory management schemes and page replacement schemes.4. Understand the concepts of deadlock in operating systems and implement them in multi programming system.

Experiment No.	Name of Experiment
1.	Demonstrate various operating system also understand Basic UNIX Commands and various UNIX editors such as vi, ed, ex and EMACS.
2.	Implement First Come First Serve CPU Scheduling algorithm
3.	Write a C program for implementation of Priority scheduling algorithm.
4.	Write a C program to simulate Banker's algorithm for the purpose of deadlock avoidance
5.	Write a C program to simulate the following contiguous memory allocation techniques: a) Worst-fit b) Best-fit c) First-fit
6.	Demonstrate Producer-consumer problem Using semaphores
7.	Simulate Page Replacement Algorithms FIFO
8.	Simulate LRU Page Replacement Algorithms LRU
9.	Simulate OPTIMAL Page Replacement Algorithms
10.	Simulate Algorithm for Deadlock Prevention

Text Books

S. N	Title	Authors	Edition	Publisher
1	Operating System	A. Godbole	3 rd Edition	The McGraw-Hill.
2	Operating systems: Internals & design principles	William Stallings,	7 th Edition	Pearson
3	Operating System Concepts	Silberschatz, Galvin	8 th Edition	Wiley

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SEMESTER III

Course Code	Course Name	Th	Tu	Pr	Credits	Evaluation			
						MSE	CA	ESE	Total
25CS304T	Information Security Fundamentals	2	-	-	2	10	10	30	50

Course Objectives	Course Outcomes
<p>This course is intended</p> <ol style="list-style-type: none"> 1. Introduce the basic concepts of information security, threats, and vulnerabilities. 2. Provide fundamental knowledge of cryptography and security mechanisms. 3. Familiarize students with authentication, access control, and network security essentials. 	<p>Students will be able to</p> <ol style="list-style-type: none"> 1. Explain the fundamental principles of information security. 2. Identify and analyze security threats, attacks, and vulnerabilities. 3. Describe basic cryptographic techniques and security protocols. 4. Apply authentication and access control mechanisms.

Unit I	[10 Hrs]
Introduction to Information Security: Definitions of information security, cyber security, and data protection. Security Goals: Confidentiality, Integrity, Availability (CIA). Threats & Attacks: Malware, Phishing, DoS, Social Engineering. Risk Management: Vulnerability assessment, Penetration Testing. Security Mechanisms & Policies: Defense-in-Depth, Zero Trust Model.	
Unit II	[10 Hrs]
Basics of Cryptography: Introduction to Cryptography & Security Services. Classical Cryptographic Techniques: Caesar Cipher, Vigenère Cipher, Play fair Cipher. One-Time Pad & Substitution Techniques. Introduction to Modern Symmetric Cryptography (AES, DES). Hash Functions: MD5, SHA-1, SHA-256.	
Unit III	[10 Hrs]
Authentication & Access Control: Authentication Mechanisms: Passwords, Multi-Factor Authentication (MFA), Biometric Systems. Access Control Models: Discretionary Access Control (DAC), Mandatory Access Control (MAC), Role-Based Access Control (RBAC). Security Tokens & Smart Cards. Authentication Protocols: Kerberos, CHAP, OAuth.	

Text Books

S.N	Title	Authors	Edition	Publisher
1	Cryptography and Network Security: Principles and Practice	William Stallings	8 th Edition	Pearson Education
2	Computer Security: Principles and Practice	William Stallings & Lawrie Brown	5 th Edition	Pearson Education

Reference Books

S.N	Title	Authors	Edition	Publisher
1	Information Security Principles and Practice	Mark Stamp	3 rd Edition	Wiley
2	Network Security Essentials: Applications and Standards	William Stallings	6 th Edition	Pearson Education

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SEMESTER III

Course Code	Course Name	Th	Tu	Pr	Credits	Evaluation		
						CA	ESE	Total
25CS305P	Cryptography Lab	-	-	2	1	25	25	50

Course Objectives	Course Outcomes
<p>This course is intended</p> <ol style="list-style-type: none">1. Provide hands-on exposure to fundamental concepts of information security and cryptography.2. Enable students to understand and implement classical and modern cryptographic algorithms.3. Familiarize students with security threats, attacks, authentication mechanisms, and access control models.	<p>Students will be able to</p> <ol style="list-style-type: none">1. Explain and apply basic concepts of information security, cyber security, and data protection.2. Implement classical and modern cryptographic algorithms for secure data communication.3. Analyze security threats, vulnerabilities, and attacks in real-world systems.4. Apply authentication mechanisms and access control models in secure system design.

Experiment No.	Name of Experiment
1.	Implementation of Caesar Cipher: Encryption and decryption using Caesar Cipher.
2.	Implementation of Vigenère Cipher: Encryption and decryption using Vigenère Cipher.
3.	Implementation of Playfair Cipher: Key generation and encryption/decryption using Playfair Cipher.
4.	One-Time Pad & Substitution Cipher: Implementation of One-Time Pad encryption.
5.	Implementation of Symmetric Key Algorithms: Study and implementation of DES
6.	Implementation of Symmetric Key Algorithms: Study and implementation of AES
7.	Hash Functions: Implementation and comparison of MD5, SHA-1, and SHA-256.
8.	Password Hashing: Store and verify passwords using hashing
9.	Authentication Mechanisms: Study and implementation of Password-based authentication
10.	Access Control Models Implementation of DAC, MAC, and RBAC.

Text Books

S.N	Title	Authors	Edition	Publisher
1	Cryptography and Network Security – Principles and Practice	William Stallings	8th Edition	Pearson Education
2	Cryptography and Network Security	Behrouz A. Forouzan	3rd Edition	Tata Mc Graw Hill

Reference Books

S.N	Title	Authors	Edition	Publisher
1	Applied Cryptography: Protocols, Algorithms, and Source Code in C	Bruce Schneier	2nd Edition	John Wiley & Sons
2	Modern Cryptography: Theory and Practice	Wenbo Mao	1st Edition	Pearson Education

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THIRD SEMESTER

Course Code	Course Name	Th	Tu	Pr	Credits	Evaluation			
						MSE	CA	ESE	Total
25CS306T	Constitution of India	2	-	-	2	10	10	30	50

Course Objectives	Course Outcomes
To enable students to interpret, apply, and analyze the principles of the Constitution of India in civic and social contexts, and develop responsible citizenship with ethical, democratic, and value-based decision-making skills.	At the end of the course, students will be able to: 1.Examine the concepts of the Constitution, including Preamble, Fundamental Rights, constitutional vision, and governance mechanisms. 2.Apply Fundamental Duties, Directive Principles of State Policy, Constitutional Remedies, and citizen responsibilities in real-life civic and social situations. 3.Apply constitutional values of equality, justice, dignity, environmental responsibility, and social responsibility to address social and ethical issues. 4.Analyze contemporary civic issues using Six Thinking Hats technique, group discussions, speeches, and mock parliamentary role play.

Unit I : Introduction to the Constitution	[10 Hrs]
Preamble and Salient Features of the Constitution Fundamental Rights Constitutional Vision Right to Information (RTI) and transparency in governance Mock Parliament / Parliamentary Role Play	
Unit II : Duties and Citizenship	[10 Hrs]
Fundamental Duties and Directive Principles of State Policy Gender equality, social justice, human dignity and relationships Environmental awareness Constitutional Remedies Speeches on democracy and equality and civic awareness	
Unit III : Constitution and Society	[10 Hrs]
Basic values in everyday life Democracy, Corruption and ethical citizenship Role of education and youth in nation-building Civic decision making using Six Thinking Hats Technique Group discussions on contemporary civic issues	

Reference Books

S.N	Title	Authors	Edition	Publisher
1.	Introduction to Constitution of India	Durga Das Basu	21st edition	LexisNexis
2.	Working in a Democratic Constitution: A History of the Indian Experience	Austin Granville	7th edition	Oxford University Press
3.	The Indian Political System	Mahendra Pratap Singh	3rd revised edition	Pearson Education India
4.	A New Look into Social Sciences	Shabbir, Sheikh and Dwadashiwar	3rd edition	S.Chand

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THIRD SEMESTER

Course Code	Course Name	Th	Tu	Pr	Credits	Evaluation			
						MSE	CA	ESE	Total
25CS307T	Fundamentals of Entrepreneurship	2	-	-	2	10	10	30	50

Course Objectives	Course Outcomes
1. To strengthen business acumen and an entrepreneurial attitude in order to improve employment opportunities and cultivate entrepreneurial abilities. 2. To introduce the necessary skills to develop ventures beyond the idea/prototype stage.	1. Develop an entrepreneurial mindset by applying the five effectuation principles [Bird in hand Affordable Loss, Lemonade, Patchwork Quilt or Crazy Quilt, and Pilot-in-the-Plane]. 2. Apply Design Thinking to identify user needs and define real-world problems from a human-centered perspective. 3. Create your own business model using the Lean Canvas template.

Unit I **[10 Hrs]**

Self-Discovery: Find your flow (passion), Principles of Effectuation, Selecting Venture Team. Opportunity Discovery: Identifying problem worth solving, Problem clarification - Understanding of the problem – Problem analysis - Reformulation of the problem - Observation Phase - Empathetic design - Tips for observing - Methods for Empathetic Design

Unit II **[10 Hrs]**

Design Thinking, Look for Solutions. Customer & Solution: Customers & Markets, Identify Market Segment and Niche Market, Identify Jobs, Pains & Gains and Early Adopters, Craft your Value Proposition Canvas, Problem Solution fit.

Unit III **[10 Hrs]**

Basics of Business Model and Lean Approach, Craft your Business Model (Lean Canvas), Risks & Assumptions, Pitching your Business Model. Validation: Blue Ocean Strategy, Building Solution Demo & Conducting Solution interviews, Building an MVP (Minimum Viable Product).

Text Books

S.N	Title	Authors	Edition	Publisher
1.	Innovation and entrepreneurship : practice and principles	Peter Drucker	1986	Allied Publishers
2.	Knowledge-Driven Entrepreneurship, The Key to Social and Economic Transformation	Andersson, Thomas, Formica, Piero, Curley, Martin G	2009	Springer book series

Reference Books

S.N	Title	Authors	Edition	Publisher
1.	Entrepreneurial Development	Khanka S.S.	2020	S. Chand Publications
2.	Effectual Entrepreneurship	Stuart Read, Saras Sarasvathy, Nick Dew, Robert Wiltbank, and Anne-Valérie Ohlsson	2016	Routledge

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THIRD SEMESTER

Course Code	Course Name	Th	Tu	Pr	Credits	Evaluation		
						CA	ESE	Total
25CS341P	Career Development - I	-	-	2	1	50	-	50

Course Objectives	Course Outcomes
To develop students' quantitative aptitude, logical reasoning, verbal communication, critical thinking, self-management, and professional employability skills required for academic success, competitive examinations, and workplace readiness.	<p>CO1. Students will be able to solve problems related to number systems, logical series, equations, ratios, proportions, and arrangement-based reasoning with accuracy and logical understanding.</p> <p>CO2. Students will be able to apply concepts of percentage, partnership, profit and loss, discount, simple interest, and compound interest to solve practical and business-oriented numerical problems.</p> <p>CO3. Students will be able to perform SWOC analysis, formulate SMART goals, and demonstrate professional verbal communication skills in workplace environments.</p> <p>CO4. Students will be able to construct logical arguments, participate effectively in debates, and deliver coordinated group presentations with confidence and clarity.</p> <p>CO5. Students will be able to demonstrate proficiency in grammar, vocabulary, reading comprehension, and professional communication while exhibiting consistent participation, individual responsibility, collaborative teamwork, and professional classroom conduct.</p>

Unit I (10 marks)	[7Hrs]
Number System: - Divisibility Test, LCM/HCF Problems, Factorization, Successive Division, Number Series:- Missing Number Series, Wrong Number series, Letter Series, Analogy (Number, Letter, Word, Non Verbal analogy), Simple Equations :- Two digit, 3 digit, ages and puzzles questions, Ratio & Proportion:- Joining of two ratios, Proportion, Mean Proportions, Problems on ages Linear, circular Arrangement	
Unit II (15 marks)	[7Hrs]
Percentage: - Percentage to ratio conversion, Successive Percentage, Increase Decrease of Percentage, etc. Partnership Problems, Profit Loss:- Concept of Profit loss, Relation between CP, SP Profit and Loss, Problems on Profit Loss. Discount:- Successive Discount, Relation between MP Discount and Selling Price, Problems based on Discount, Simple Interest, Compound Interest	
Unit III (5 marks)	[5Hrs]
SWOC Analysis and SMART Goal Setting for Personal and Professional Development Corporate Communication I – Professional Verbal Communication in Workplace Environments-	
Unit IV (10 marks)	[6Hrs]
Debating Skills – Logical Thinking, Argument Building, and Public Speaking Group Presentation Skills – Team Coordination, Public Speaking, and Presentation Techniques	
Unit V (10 marks)	[3Hrs]
Verbal Ability Quiz – Grammar, Vocabulary Building, and Reading Comprehension for Professional Communication Continuous Assessment - Attendance, Individual Engagement & Team Dynamics	

Text Books

S.N	Title	Authors	Edition	Publisher
1	Quantitative Aptitude By R. S. Aggarwal	R.S. Aggarwal		
2	Quantitative Aptitude	Shripad Deo		Allied Publishers Pvt Ltd
3	A Modern Approach to Verbal & Non-Verbal Reasoning	R.S. Aggarwal		

Reference Books

S.N	Title	Authors	Edition	Publisher
1	Quantitative Aptitude for CAT by Arun Sharma	Arun Sharma		
2	How to Develop Self-Confidence & Influence People by Public Speaking	Dale Carnegie	2004	Sulabh Publications
3	Professional Communication Skills	Alok Jain	2006	S Chand & Company Ltd
4	Soft Skills & Employability Skills	Sabina Pillai	2008	Cambridge

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