



# 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 INFORMATION TECHNOLOGY

### SEMESTER III

Sr. No	Course Category	Course Code	Course Title	Hours per Week			Credits	Maximum Marks				Minimum Passing Marks	No of Hours for ESE
				L	P	T		Mid-Sem Examination	Continual Assessment	End Semester Examination	Total		
1	PCC	25IT301T	Discrete Mathematics	3	-	-	3	20	20	60	100	45	3
2	PCC	25IT302T	Data Structure	3	-	-	3	20	20	60	100	45	3
3	PCC	25IT302P	Data Structure Lab	-	-	4	2	-	25	25	50	25	-
4	PCC	25IT303T	Computer Network	3	-	-	3	20	20	60	100	45	3
5	PCC	25IT303P	Computer Network Lab	-	-	2	1	-	25	25	50	25	-
6	PCC	25IT304P	Software Lab - III	-	-	2	1	-	25	25	50	25	-
7	VEC	25IT305T	Constitution of India	2	-	-	2	10	10	30	50	23	1.5
8	HSSM	25IT306T	Fundamentals of Entrepreneurship	2	-	-	2	10	10	30	50	23	1.5
9	SEC	25IT341P	Career Development – I	-	-	2	1	-	50	-	50	25	-
10	MDM	25IT331M	MDM-I (Refer MDM basket)	2	-	-	2	10	10	30	50	23	1.5
<b>Total</b>				<b>15</b>	<b>-</b>	<b>10</b>	<b>20</b>	<b>90</b>	<b>215</b>	<b>345</b>	<b>650</b>	<b>-</b>	<b>-</b>

#### Multidisciplinary Minor - I

<b>25IT331M</b>	Programming, Data Structures And Algorithms Using Python
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**THIRD SEMESTER**

Course Code	Course Name	Th	Tu	Pr	Credits	Evaluation			
						MSE	CA	ESE	Total
25IT301T	Discrete Mathematics	3	-	-	3	20	20	60	100

Course Objectives	Course Outcomes
<p><b>The aim of this course is</b></p> <ol style="list-style-type: none"> <li>To understand the concepts of graph theory and related algorithm concepts.</li> <li>To understand the concepts of algebraic structures, logic, set theory.</li> </ol>	<p><b>On completion of the course, students will be able to</b></p> <ol style="list-style-type: none"> <li>Form truth tables, proving results by truth tables.</li> <li>Observe the various types of sets, functions and relations.</li> <li>Recognize definition and properties of algebraic structures.</li> <li>Apply concepts of graph theory, shortest path algorithms, concepts of trees and minimum spanning tree to solve engineering problems.</li> <li>Apply counting techniques to solve combinatorial problems.</li> </ol>

<b>Unit I : Mathematical logic &amp; Set theory:</b>	<b>[9Hrs]</b>
Introduction - Statements and notations, Connectives, Conditional statements and tautologies, Principle of Mathematical Induction, Basic concepts of set theory, Validity of the argument, Operations on sets, Power set.	
<b>Unit II : Relation &amp; Function:</b>	<b>[9Hrs]</b>
Relation, types of relation, Matrix & Graphical representation of relation, Composition of relation, Partial ordering, Partial ordered set, Hasse diagram. Definition and types of function, Composition of function, Characteristic function.	
<b>Unit III : Algebraic Structure &amp; Lattices:</b>	<b>[9Hrs]</b>
Binary operations, Group, Problems on groups, subgroup, Lagrange's theorem. Ring, Commutative ring, Ring with unity, Ring with zero divisor, Integral domain, and field. Lattice.	
<b>Unit IV : Graph theory &amp; Trees:</b>	<b>[9Hrs]</b>
Types of graphs, Isomorphic digraph, Paths and circuits, Reachability and connectedness, Matrix representation of graphs, Euler path and Euler circuit. <b>Tree:</b> Trees, Binary tree, spanning tree, Weighted graphs, Prim's algorithm, Kruskal's algorithm.	
<b>Unit V : Combinatorics :</b>	<b>[9Hrs]</b>
Generating Functions, Recurrence Relations, Counting: Permutations & Combinations, Pigeonhole Principle with Simple Applications.	

**Text Books**

S.N	Title	Authors	Edition	Publisher
1.	Discrete Mathematical Structures	Kolman, Busby & Ross	3rd	PHI
2.	Discrete Mathematical Structures with Applications to Computer Science	Tremblay & Manohar		Tata McGraw- Hill.
3.	Discrete mathematics	Swapan kumar Sarkar		S. Chand publications

**Reference Books**

S.N	Title	Authors	Edition	Publisher
1.	Discrete Maths for Computer Scientists & Mathematicians	Mott, Kandel, Baker		Pearson
2.	Discrete Mathematics	Lipschutz		McGraw Hill Professional,
3.	Elements of Discrete Mathematics	C. L. Liu		McGraw Hill Education India.

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**THIRD SEMESTER**

Course Code	Course Name	Th	Tu	Pr	Credits	Evaluation			
						MSE	CA	ESE	Total
25IT302T	Data Structure	3	-	-	3	MSE	CA	ESE	Total
						20	20	60	100

Course Objectives	Course Outcomes
<p><b>This course is intended</b></p> <ul style="list-style-type: none"> <li>To understand basics of algorithm its analysis</li> <li>To Learn the linear data structure like stack, queuelinked list</li> <li>To emphasize implementation of linear data structure</li> <li>To study implement nonlinear data structures like tree;graph</li> <li>To use appropriate data structures for solving various Applications depending on behavioral properties.</li> </ul>	<p><b>Students will be able to</b></p> <ul style="list-style-type: none"> <li>Understand the concept of analysis of algorithms, and implement various sorting searching algorithm</li> <li>Implement ADT such as Stack; Queue</li> <li>Illustrate the operation on linked</li> <li>Select and use appropriate non-Linear data structures for data representation</li> <li>Use an appropriate non-Linear data structures like graph and hashing techniques for data representationfor solving data organization problem</li> </ul>

<b>Unit I: Algorithm, Searching Sorting</b>	<b>[9Hrs]</b>
An introduction to algorithm, time and space analysis of algorithm, general concept of data structure, types of data structures. asymptotic notations-Big O notations, omega notation & theta notation. Average , Best, Worst case analysis, Searching-Linear and Binary search, Selection sort, Bubble sort, Insertion sort, Shell sort, quick sort.	
<b>Unit II: Stacks and Queues</b>	<b>[9Hrs]</b>
Definition and Terminology, ADT stack and its operations, applications of stacks: Expression conversion and evaluation. ADT queue and its operation, Types of queue: Simple queue, circular queue, priority queue, double ended queue. Application of queues.	
<b>Unit III: Linked Lists</b>	<b>[9Hrs]</b>
Singly linked lists: Representation in memory, operation on linked list, algorithms: Traversing, searching, insertion , deletion , Types of linked list: Singly linked list, Circular linked list, Doubly linked list, Circular doubly linked list; Application of Linked Lists.	
<b>Unit IV: Trees Data Structure</b>	<b>[9Hrs]</b>
Trees: Basic Tree Terminologies, representation of tree. Different types of Trees: Binary Tree, Threaded Binary Tree, Binary Search Tree, AVL Tree, B Tree, B+ Tree. Heap sort., Tree traversals algorithm-Inorder, Preorder & Postorder traversal, Tree operations , Applications of trees.	
<b>Unit V: Graph &amp; Hashing Techniques</b>	<b>[9Hrs]</b>
Graph: Basic Terminologies and Representations, Types of Graph, Traversal algorithms: Depth First search and Breadth FirstSearch, Spanning trees: Minimum cost spanning tree. Topological sort, Introduction to Hashing, Hashing Techniques & Collision handling Mechanism, Problem based on hashing.	

**Text Books**

Sr.No.	Title	Authors	Edition	Publisher
1	Fundamentals of Data Structures in C++	E. Horowitz, D. Mehta, S. Sahni	2 <sup>nd</sup>	Silicon Press
2	Programming with C and Data structures	R.S. Bichkar	1 <sup>st</sup>	Universities Press
3	Data structure Algorithm	Algorithm Alferd V. Aho, John E.	1 <sup>st</sup>	Pearson

**Reference Books**

Sr.No.	Title	Authors	Edition	Publisher
1	Data Structures Through C	Kanetkar, Yashavant	2 <sup>nd</sup>	BPB publication
2	Data Structures: A PseudocodeApproach With C	T. H. Cormen, C. E. Leiserson, R.L.Rivest,	3 <sup>rd</sup>	MITPress
3	Data Structure and Algorithm	Pandey, Hari Mohan	2 <sup>nd</sup>	University Science Press

**Online Resources**

1	<a href="https://www.geeksforgeeks.org/data-structures/">https://www.geeksforgeeks.org/data-structures/</a>
2	<a href="https://www.w3schools.com/dsa/dsa_intro.php">https://www.w3schools.com/dsa/dsa_intro.php</a>
3	<a href="https://www.javatpoint.com/data-structure-tutorial">https://www.javatpoint.com/data-structure-tutorial</a>

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**THIRD SEMESTER**

Course Code	Course Name	Th	Tu	Pr	Credits	Evaluation		
						CA	ESE	Total
25IT302P	Data Structure Lab	-	-	4	2	25	25	50

Course Objectives	Course Outcomes
<p><b>This course is intended</b></p> <ol style="list-style-type: none"> <li>To understand basic of algorithm; its analysis</li> <li>To Learn the linear data structure like stack, queue linked list</li> <li>To give emphasis on implementation of linear data structure</li> <li>To study implement nonlinear data structure like tree graph</li> <li>To use appropriate data structures for solving various applications depending on behavioral properties.</li> </ol>	<p><b>Students will be able to</b></p> <ol style="list-style-type: none"> <li>Understand the concept of analysis of algorithms, and implement various sorting searching algorithm</li> <li>Implement ADT such as Stack Queue</li> <li>Illustrate the operation on linked list through implementation</li> <li>Select and use appropriate non Linear data structures like tree for data representation</li> <li>Use an appropriate non Linear data structures like graph and hashing techniques for data representation for solving data organization problem</li> </ol>

Expt. No.	Experiments based on
1	Searching algorithm
2	Sorting algorithm
3	Implementation of ADT-Stack
4	Implementation of ADT-Queue
5	Implementation of Linked operation
6	Implementation of nonlinear data structure-TREE
7	Implementation of BST tree traversing
8	Implementation of nonlinear data structure-Graph Algorithm (DFS; BFS)
9	Open ended practical based on data structure
10	Practical based on content beyond syllabus.

**Text Books**

Sr.No.	Title	Authors	Edition	Publisher
1	Fundamentals of Data Structures in C++	E. Horowitz, D. Mehta, S. Sahni	2 <sup>nd</sup>	Silicon Press
2	Programming with C and Data structures	R.S. Bichkar	1 <sup>st</sup>	Universities Press
3	Data structure Algorithm	Alferd V. Aho, John E.	1 <sup>st</sup>	Pearson Education

**Reference Books**

Sr.No.	Title	Authors	Edition	Publisher
1	Data Structures Through C	Kanetkar, Yashavant	2 <sup>nd</sup>	BPB publication
2	Data Structures : A Pseudocode Approach With C	T. H. Cormen, C. E. Leiserson, R.L.Rivest,	3 <sup>rd</sup>	MIT Press
3	Data Structure And Algorithm	Pandey, Hari Mohan	2 <sup>nd</sup>	University Science Press

**Online Resources**

1	<a href="https://www.geeksforgeeks.org/data-structures/">https://www.geeksforgeeks.org/data-structures/</a>
2	<a href="https://www.w3schools.com/dsa/dsa_intro.php">https://www.w3schools.com/dsa/dsa_intro.php</a>
3	<a href="https://www.javatpoint.com/data-structure-tutorial">https://www.javatpoint.com/data-structure-tutorial</a>
4	<a href="https://www.programiz.com/dsa">https://www.programiz.com/dsa</a>

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**THIRD SEMESTER**

Course Code	Course Name	Th	Tu	Pr	Credits	Evaluation			
						MSE	CA	ESE	Total
25IT303T	Computer Network	3	-	-	3	20	20	60	100

Course Objectives	Course Outcomes
<p><b>This course is intended</b></p> <ol style="list-style-type: none"> <li>To provide students with a strong foundational understanding of computer networks and the Internet.</li> <li>The course aims to explain how data is transmitted across networks, from the physical and link layers up through the transport, application, and security layers.</li> </ol>	<p><b>Students will be able to</b></p> <ol style="list-style-type: none"> <li>To introduce the fundamental concepts of computer networks.</li> <li>To explain the functions of the link layer, including error detection and correction, multiple access protocols, and switched local area network technologies.</li> <li>To develop an understanding of the network layer concepts such as IP addressing, routing algorithms,.</li> <li>To describe transport layer protocols and application layer services</li> <li>To provide knowledge of network security principles, and cryp</li> </ol>

<b>Unit I: Fundamentals of Computer Networks and Internet Computer</b>	<b>[09Hrs]</b>
Introduction to Computer Networks, Network Topologies, What Is the Internet?, The Network Edge and Network Core, Delay, Loss, and Throughput in Packet-Switched Networks, the overview OSI & TCP/IP Models, WiFi: 802.11 Wireless LANs, Introduction to Cellular Networks.	
<b>Unit II: The Link Layer</b>	<b>[09Hrs]</b>
Introduction to the Link Layer, Error-Detection and -Correction Techniques, Multiple Access Links and Protocols, Switched Local Area Networks,	
<b>Unit III: The Network Layer</b>	<b>[09Hrs]</b>
Overview of Network Layer ,What's Inside a Router?, The Internet Protocol (IP): IPv4, Addressing, IPv6, and More, Generalized Forwarding and SDN ,Routing Algorithms ,Intra-AS Routing in the Internet: OSPF ,Routing Among the ISPs: BGP, The SDN Control Plane, ICMP: The Internet Control Message Protocol ,Network Management and SNMP.	
<b>Unit IV: Transport and Applications Layer , and Network Security</b>	<b>[09Hrs]</b>
Introduction and Transport-Layer Services, Multiplexing and Demultiplexing , Connectionless Transport: UDP ,Principles of Reliable Data Transfer, Connection-Oriented Transport: TCP ,TCP Congestion Control ,Principles of Network Applications, The Web and HTTP ,Electronic Mail in the Internet, DNS—The Internet's Directory Service ,Peer-to-Peer Applications, Video Streaming and Content Distribution Networks,	
<b>Unit V: Security in Computer Networks</b>	<b>[09Hrs]</b>
What Is Network Security? Cryptography Fundamentals, Network Security Protocols, Network Attacks and Defense Mechanisms End-Point Authentication ,Securing E-Mail ,Securing TCP,Connections, Network-Layer Security: IPsec and Virtual Private Networks (VPN) ,Securing Wireless LANs ,Operational Security: Firewalls and Intrusion Detection Systems	

**Text Books**

Sr. No.	Title	Authors	Edition	Publisher
1	Computer Networking -A Top-Down Approach	James F. Kurose	7 <sup>th</sup>	Pearson Publication
2	Data Communications and Networking	Fourauzan B.	3 <sup>rd</sup>	TataMcGraw-Hill Publications,
3	Computer Networks	Tanenbaum A.	4 <sup>th</sup>	PHI
4	Cryptography and Network Security	William Stallings	5 <sup>th</sup>	Prentice Hall

**Reference Books**

Sr. No.	Title	Authors	Edition	Publisher
1	An Engineering Approach to Computer Networking	Keshav S	2 <sup>nd</sup>	Pearson Education,
2	Computer Networks and Internet	Comer D.,	2 <sup>nd</sup>	Pearson Education,
3	Local Area Networks	S.K. Basandra & S Jaiswal	3 <sup>rd</sup>	Galgotia Publications

**Online Resources**

1	<a href="https://www.geeksforgeeks.org/computer-network-tutorials/">https://www.geeksforgeeks.org/computer-network-tutorials/</a>
2	<a href="https://www.javatpoint.com/computer-network-tutorial">https://www.javatpoint.com/computer-network-tutorial</a>
3	<a href="https://www.scaler.com/topics/computer-network/">https://www.scaler.com/topics/computer-network/</a>

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**THIRD SEMESTER**

Course Code	Course Name	Th	Tu	Pr	Credits	Evaluation		
						CA	ESE	Total
25IT303P	Computer Network Lab	-	-	2	1	25	25	50

Course Objectives	Course Outcomes
<p><b>This course is intended</b></p> <ol style="list-style-type: none"> <li>To delivers the fundamentals of computer network.</li> <li>To discuss and focuses on network architectures, protocols and applications, techniques for encoding and modulation.</li> </ol>	<p><b>Students will be able to</b></p> <ol style="list-style-type: none"> <li>Learn and apply the concepts of computer network for real time system connection and communication.</li> <li>Analyze data link layer protocol peer to peer mode for handling data and Apply the knowledge of network layer concepts for subnetting.</li> <li>Implement the routing protocols for network route identification for secure data transmission.</li> </ol>

Expt. No.	Experiments based on
1	Study of different types of Network cables and Network Devices practically implement the cross wired cable and straight through cable using clamping tool
2	Connection of Local Area Network and demonstrate the data sharing and hardware sharing
3	Classification of IP address and subnetting.
4	Error detection and correction Techniques
5	Demonstration of Sliding Window Protocol
6	Implement Routing protocol in Computer network.
7	Analyze Wireshark Packet Analyzer Tool.
8	Implement encryption and decryption technique.

**Text Books**



Sr.No.	Title	Authors	Edition	Publisher
1	Computer Networking -A Top-Down Approach,	James F. Kurose	7 <sup>th</sup>	Pearson Publication
2	Data Communications and Networking	Fourauzan B.	3 <sup>rd</sup>	Tata McGraw-Hill Publications,
3	Computer Networks	Tanenbaum A.	4 <sup>th</sup>	PHI

**Reference Books**

Sr.No.	Title	Authors	Edition	Publisher
1	An Engineering Approach to Computer Networking	Keshav S	2 <sup>nd</sup>	Pearson Education,
2	Computer Networks and Internet	Comer D.,	2 <sup>nd</sup>	Pearson Education,
3	Local Area Networks	S.K.Basandra & S. Jaiswal	3 <sup>rd</sup>	Galgotia Publications

**Online Resources**

1	<a href="http://vlabs.iitkgp.ernet.in/ant/">http://vlabs.iitkgp.ernet.in/ant/</a>
2	<a href="https://ns3simulation.com/list-of-network-simulators/">https://ns3simulation.com/list-of-network-simulators/</a>
3	<a href="https://netsim.erinn.io/">https://netsim.erinn.io/</a>

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**THIRD SEMESTER**

Course Code	Course Name	Th	Tu	Pr	Credits	Evaluation		
						CA	ESE	Total
25IT304P	Software Lab – III	-	-	2	1	25	25	50

Course Objectives	Course Outcomes
<p><b>This course is intended</b></p> <ol style="list-style-type: none"> <li>To develop required computer hardware skills.</li> <li>To acquire the competency such as Identify faults, troubleshoot, repair and do preventive maintenance of computer system and its Peripherals.</li> </ol>	<p><b>Students will be able to</b></p> <ol style="list-style-type: none"> <li>Learn &amp; Identify computer peripherals and Microprocessor kit.</li> <li>Demonstrate the installation of Operating Systems and device drivers.</li> <li>Interpret the configuring and maintenance process of various components in computer system and peripheral devices.</li> <li>Identify various faults, repair them and learn how to maintain computer system and its peripherals.</li> </ol>



Expt. No.	Experiments based on
1	Study of computer peripherals. Processor, Motherboard, Hard disk, CD/DVD ROM, Monitor, SMPS, Safety Precautions.
2	Configuration of BIOS.
3	Assembling of Personal Computer.
4	Partitioning Hard disk
5	Installation of Operating System (windows, Linux, ubuntu etc).
6	Execution of basic commands (Unix, Linux, ubuntu etc).
7	Execution of basic networking commands.
8	WI-FI Basics.

**Text Books**

Sr. No	Title	Authors	Edition	Publisher
1	Computer Installation and Servicing	D Bala Subramanian	2nd	Tata McGraw Hill Education private Limited
2	The complete PC Upgrade & Maintenance Guide	Mark Minasi	16th	BPB Publications
3	IBM PC and clones	Govindarajalu	2nd	Tata McGraw Hill Education private Limited

**Online Resources**

1	<a href="https://www.computerhope.com/issues/ch001781.htm">https://www.computerhope.com/issues/ch001781.htm</a>
2	<a href="https://www.javatpoint.com/linux-commands">https://www.javatpoint.com/linux-commands</a>
3	<a href="https://www.geeksforgeeks.org/basic-linux-commands/">https://www.geeksforgeeks.org/basic-linux-commands/</a>

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## B. Tech. Scheme of Examination & Syllabus 2025-26

### INFORMATION TECHNOLOGY

#### THIRD SEMESTER



Course Code	Course Name	Th	Tu	Pr	Credits	Evaluation			
						MSE	CA	ESE	Total
25IT305T	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.	<b>At the end of the course, students will be able to:</b> 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.

<b>Unit I : Introduction to the Constitution</b>	<b>[10 Hrs]</b>
Preamble and Salient Features of the Constitution Fundamental Rights Constitutional Vision Right to Information (RTI) and transparency in governance Mock Parliament / Parliamentary Role Play	
<b>Unit II : Duties and Citizenship</b>	<b>[10 Hrs]</b>
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	
<b>Unit III : Constitution and Society</b>	<b>[10 Hrs]</b>
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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**B. Tech. Scheme of Examination & Syllabus 2025-26****INFORMATION TECHNOLOGY****THIRD SEMESTER**

Course Code	Course Name	Th	Tu	Pr	Credits	Evaluation			
						MSE	CA	ESE	Total
25IT306T	Fundamentals of Entrepreneurship	2	-	-	2	10	10	30	50

Course Objectives	Course Outcomes
<ol style="list-style-type: none"><li>To strengthen business acumen and an entrepreneurial attitude in order to improve employment opportunities and cultivate entrepreneurial abilities.</li><li>To introduce the necessary skills to develop ventures beyond the idea/prototype stage.</li></ol>	<ol style="list-style-type: none"><li>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].</li><li>Apply Design Thinking to identify user needs and define real-world problems from a human-centered perspective.</li><li>Create your own business model using the Lean Canvas template.</li></ol>

**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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### INFORMATION TECHNOLOGY

Course Code	Course Name	Th	Tu	Pr	Credits	Evaluation		
						CA	ESE	Total
25IT341P	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><b>CO1.</b> 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><b>CO2.</b> 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><b>CO3.</b> Students will be able to perform SWOC analysis, formulate SMART goals, and demonstrate professional verbal communication skills in workplace environments.</p> <p><b>CO4.</b> Students will be able to construct logical arguments, participate effectively in debates, and deliver coordinated group presentations with confidence and clarity.</p> <p><b>CO5.</b> 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>



<b>Unit I (10 marks)</b>	[7Hrs]
<b>Number System:</b> - Divisibility Test, LCM/HCF Problems, Factorization, Successive Division, <b>Number Series:-</b> Missing Number Series, Wrong Number series, Letter Series, Analogy (Number, Letter, Word, Non Verbal analogy), <b>Simple Equations :-</b> Two digit, 3 digit, ages and puzzles questions, <b>Ratio &amp; Proportion:-</b> Joining of two ratios, Proportion, Mean Proportions, Problems on ages Linear, circular Arrangement	
<b>Unit II (15 marks)</b>	[7Hrs]
<b>Percentage:</b> - Percentage to ratio conversion, Successive Percentage, Increase Decrease of Percentage, etc. Partnership Problems, <b>Profit Loss:-</b> Concept of Profit loss, Relation between CP ,SP Profit and Loss, Problems on Profit Loss. <b>Discount:-</b> Successive Discount, Relation between MP Discount and Selling Price, Problems based on Discount, Simple Interest, Compound Interest	
<b>Unit III (5 marks)</b>	[5Hrs]
SWOC Analysis and SMART Goal Setting for Personal and Professional Development <b>Corporate Communication I –</b> Professional Verbal Communication in Workplace Environments-	
<b>Unit IV (10 marks)</b>	[6Hrs]
<b>Debating Skills –</b> Logical Thinking, Argument Building, and Public Speaking <b>Group Presentation Skills –</b> Team Coordination, Public Speaking, and Presentation Techniques	
<b>Unit V (10 marks)</b>	[3Hrs]
<b>Verbal Ability Quiz –</b> Grammar, Vocabulary Building, and Reading Comprehension for Professional Communication <b>Continuous Assessment -</b> 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 Carneige	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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Course Code	Course Name	Th	Tu	Pr	Credits	Evaluation			
						MSE	CA	ESE	Total
25IT331M	MDM – I Programming, Data Structures and Algorithms using Python	2	-	-	2	10	10	30	50

Course Objectives	Course Outcomes
<p><b>This course is intended</b></p> <ol style="list-style-type: none"> <li>To introduce the fundamentals of programming and problem-solving using Python, including algorithms, control structures, functions, and data types.</li> <li>To develop skills in using Python data structures, exception handling, file processing, and algorithm analysis techniques.</li> <li>To familiarize students with abstract data types, object-oriented programming, recursion, dynamic programming, and advanced data structures such as linked lists and trees.</li> </ol>	<p><b>Students will be able to</b></p> <ol style="list-style-type: none"> <li>Develop Python programs using appropriate programming constructs, functions, and data structures to solve computational problems.</li> <li>Analyze and implement searching, sorting, recursion, and algorithmic techniques with an understanding of complexity and efficiency.</li> <li>Design solutions using abstract data types, object-oriented concepts, linked structures, trees, and dynamic programming approaches.</li> </ol>

**Unit I: Python Basics** **[10Hrs]**

Informal introduction to programming, algorithms and data structures via gcd, Downloading and installing Python gcd in Python: variables, operations, control flow - assignments, conditionals, loops, functions, Python: types, expressions, strings, lists, tuples, Python memory model: names, mutable and immutable values, List operations: slices etc., Binary search, Inductive function definitions: numerical and structural induction, Elementary inductive sorting: selection and insertion sort In-place sorting, Basic algorithmic analysis: input size, asymptotic complexity,  $O()$  notation, Arrays vs lists, Merge sort, Quicksort, Stable sorting

**Unit II: Dictionaries and Exception Handling** **[10Hrs]**

Dictionaries: More on Python functions: optional arguments, default values, Passing functions as arguments, Higher order functions on lists: map, iter, list comprehension, Exception handling Basic input/output, Handling files, String processing, Backtracking: N Queens, recording all solutions, Scope in Python: local, global, nonlocal names, Nested functions, Data structures: stack, queue, Heaps

**Unit III: Abstract data types** **[10Hrs]**

Abstract datatypes, Classes and objects in Python, "Linked" lists: find, insert, delete, Binary search trees: find, insert, delete, Height-balanced binary search trees, Efficient evaluation of recursive definitions: memorization, Dynamic programming: examples, Other programming languages: C and manual memory management, Other programming paradigms: functional programming

**Text Books**



S.N	Title	Authors	Edition	Publisher
1	Think Python	Allen B. Downey	2nd	O'Reilly Media
2	Introduction to Computation and Programming Using Python	John V. Guttag	2nd	MIT Press

**Reference Books**

S.N	Title	Authors	Edition	Publisher
1	Problem Solving with Algorithms and Data Structures Using Python	Bradley N. Miller, David L. Ranum	1st	Franklin, Beedle & Associates

**Online Resources**

1	<a href="https://onlinecourses.nptel.ac.in/e-learning/preview/noc26_cs109">https://onlinecourses.nptel.ac.in/e-learning/preview/noc26_cs109</a>
2	<a href="https://www.w3schools.com/python/?utm_source=chatgpt.com">https://www.w3schools.com/python/?utm_source=chatgpt.com</a>

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