



HYDERABAD (SIND)
NATIONAL COLLEGIATE BOARD

HSNC Board's

Smt. Chandibai Himathmal Mansukhani College (Autonomous)

(Affiliated to the University of Mumbai)

University College Code : 217-JD Office : T14



Estd. 1965

Principal : Dr. Manju Lalwani Pathak

Ref No: CHM (A) AC/C/01/2025

Date: 18th June 2025

CIRCULAR

The immediate attention of all concerned is invited to this office Circular No. CHM (A) AC 05/2025 dated 19th May, 2025 regarding the Choice Based and Credit Based Syllabus (CBCS) for all subjects of F.Y.B.Sc. & T.Y.B.Sc. in Computer Science SEM - I & SEM - V respectively.

It is hereby communicated that the recommendations of the syllabus made by the Ad-hoc Board of Studies in Computer Science coordinated by the Dean, Faculty of Applied Sciences in the meeting of Academic Council held on 23rd May, 2025 vide item No. 2.1, have been accepted and subsequently passed.

In accordance, therewith, the syllabus as per the CBCS has been brought into force with effect from the academic year 2025 – 2026 and accordingly the same is attached for reference and is available on the College's website www.chmcollege.in

Ulhasnagar - 421 003

18th June, 2025

Dr. Manju Lalwani Pathak

Principal & Chairperson, Academic Council

Copy forwarded for information to:-

- 1) The Dean, Faculty of Applied Sciences
- 2) The Chairperson, Ad-hoc Board of Studies.
- 3) The Controller of Examination.
- 4) The Registrar



HSNC Board's
Smt. Chandibai Himathmal Mansukhani College, Ulhasnagar
(Autonomous)
Affiliated to the University of Mumbai

Bachelor of Science
(Computer Science)
(Self-Financing Course)

Semester – I

Choice Based and Credit Based syllabus
as per NEP 2020 with effect from the
Academic Year 2025-2026

PREAMBLE

In today's digital age, the influence of computers on how we live and work is profound and far-reaching. Computers have become integral to the fabric of modern civilization. Their widespread application across industries has sparked rapid technological progress, resulting in constantly evolving domains within the computing field. In response, it is essential for students to build a strong foundation that not only supports current competencies but also prepares them to adapt to ongoing advancements.

Aligned with the objectives of the National Education Policy (NEP) 2020, the updated undergraduate Computer Science curriculum aims to equip students with the agility, skills and knowledge required to confidently navigate the dynamic world of technology. Acknowledging that programming languages, tools, and platforms may change over time, the curriculum emphasizes adaptability and resilience. Students will engage with a broad spectrum of programming paradigms, tools, and technologies while gaining a deep understanding of the core principles of Computer Science.

The program's broad spectrum encompasses not only essential key courses such as programming, data structures, computer architecture, algorithms, but also database systems, operating systems, and software engineering. These are complemented by including advanced subjects in areas like artificial intelligence, computer networks, distributed computing, cybersecurity, computer graphics, human-computer interaction, multimedia systems, scientific computing, web technologies and various state-of-the-art disciplines in ever evolving field of computer science.

Key Philosophy the Program:

- **Establish Strong Foundations:** Develop a solid conceptual base in Computer Science.
- **Imbibe Practical Skills:** Cultivate problem-solving, programming, and design capabilities.
- **Embrace Emerging Trends:** Introduce new technologies and concepts in a progressive and coherent manner.
- **Prepare for Industry Demands:** Equip students to confidently face challenges in the ICT sector.

In recognition of the evolving aspirations of our students, this program is designed not only to prepare them for professional careers in the technology sector but also to facilitate opportunities for advanced research. The primary objective is to provide a comprehensive curriculum that integrates both theoretical foundations and practical expertise, equipping graduates with the skills necessary to excel in their professional endeavours while fostering a commitment to lifelong learning.

This program serves as a gateway to a successful career in the software industry while also encouraging students to pursue further academic and research opportunities. Graduates will be well-positioned to transition seamlessly into postgraduate studies in Computer Science, where they may engage in research and development roles, contribute to the IT industry, or explore careers in business management.

As we present this curriculum, we invite students to embark on a journey of intellectual exploration and innovation, ensuring they are not only well-prepared for the present but also strategically positioned to adapt and shape the future of Computer Science.

PROGRAMME SPECIFIC OUTCOME (PSOs)

PSO – 1: Comprehensive Understanding and Knowledge Base: Cultivate a deep understanding of the core theories, systems, and applications that serve as the foundation of Computer Science. This involves building a solid grasp of theoretical concepts while developing practical expertise in applying these principles to real-world scenarios.

PSO – 2: Analytical Abilities and Problem-Solving Skills: Develop key skills and analytical capabilities necessary for creating computer-based solutions to real-world challenges. This includes honing critical thinking abilities for problem identification and analysis, as well as strengthening the skills required to design and implement efficient solutions using computational tools.

PSO – 3: Proficiency in Emerging Technologies: Equip students with expertise in emerging computing technologies, enabling them to develop innovative solutions for both industry and research. This includes familiarizing students with state-of-the-art technologies and their applications, while promoting hands-on exploration and experimentation with new tools and platforms

PSO – 4: Readiness for Advanced Studies: Cultivate the essential academic skills and knowledge necessary for students to pursue advanced studies in Computer Science or related fields. This prepares students with the intellectual rigor required for postgraduate education and ensures they are well-poised to embrace lifelong learning and engage in research.

PSO – 5: Development of Industry-Relevant Competencies: Foster the professional skills necessary for a successful career in information technology-driven industries. This involves offering hands-on experience with industry-standard tools and practices, while also promoting a strong understanding of professional ethics and responsibility

PSO – 6: Solo and Collaborative Project Execution: Empower students to work both independently and collaboratively, communicate effectively, and become responsible, proficient, confident, and innovative users of computing technology. This involves fostering self-reliance in problem-solving and project management, while being open to enhancing communication and teamwork skills for effective collaboration.

**Smt. Chandibai Himathmal Mansukhani College
(Autonomous)**

**First Year B. Sc.
(Computer Science)**

Semester- I

Vertical – 1

Digital Systems and Architecture : 2 Credits

Fundamentals of Database Systems : 2 Credits

Computer Science Practical 1 : 2 Credits

**with effect from
Academic Year 2025-2026**

**Smt. Chandibai Himathmal Mansukhani College
(Autonomous)**

**First Year B. Sc.
(Computer Science)**

Semester- I

Title: Digital Systems and Architecture

**Vertical - 1
Major Course- 2 Credits**

**with effect from
Academic Year 2025-2026**

Title: Digital Systems and Architecture
Course Code: CHMCSI1

Sr. No.	Heading	Particulars
1	Description the Course:	Introduction: The Digital Systems and Architecture course offers a fundamental introduction to the key concepts of digital systems and computer architecture. It focuses on the design and organization of digital circuits and systems that underpin today's computing devices. Relevance: In today's fast-paced technological landscape, knowledge of digital systems and architecture is crucial. Digital systems are embedded in everything from smartphones to supercomputers. This course is vital for those aiming to understand how these systems function and play a role in advancing their design and development. Usefulness: The course provides students with the essential knowledge and skills to design, analyze, and optimize digital systems. It also acts as a steppingstone into the broader field of computer architecture, forming a strong foundation for advanced studies and practical applications in modern computing. Application: The knowledge gained in this course has wide-ranging practical applications across areas such as embedded systems, computer networks, signal processing, and more. Students will develop the ability to translate theoretical concepts into practical solutions, effectively bridging the gap between abstract principles and real-world implementation. Interest: Digital Systems and Architecture is an intellectually engaging course that combines theoretical foundations with practical application, capturing students' interest through its dynamic and relevant content. The challenge and excitement of designing efficient, high-performance digital systems often inspire curiosity and enthusiasm among learners. Connection with Other Courses: This course builds essential connections with other areas of computer science, serving as a strong foundation for advanced subjects like computer organization, microprocessor systems,

		and hardware description languages. The concepts learned here contribute to a continuous and cohesive understanding of computer systems. Demand in the Industry: As the demand for faster and more efficient computing systems grows, professionals skilled in digital systems and architecture are increasingly in demand. Industries such as electronics, telecommunications, automotive, and healthcare are actively seeking experts in designing and optimizing digital systems. Job Prospects: Graduates with expertise in digital systems and architecture are well-equipped for a wide range of career opportunities. Potential roles include digital design engineer, embedded systems developer, hardware architect, and systems analyst. The skills gained in this course pave the way for careers in various industries where digital technology is integral to innovation and progress.
2	Vertical 1	Major
3	Type	Theory + Practicum + Teaching methods (Lectures, Problem Solving, Discussion, Presentation, Case Study, Simulations, Interdisciplinary Approach, etc)
4	Credit	2 Credits
5	Hours allotted	30 Hours
6	Marks allotted	50 Marks
7	Course Objectives: 1. To introduce students to number systems and enable them to perform interconversion among binary, decimal, octal, and hexadecimal systems used in digital systems. 2. To develop an understanding of Boolean algebra, logic gates, and various methods for simplifying logic expressions for digital circuit design. 3. To impart knowledge of combinational and sequential circuits, their construction, and working principles, including adders, multiplexers, flip-flops, and counters. 4. To provide a strong foundation in computer organization and architecture, including memory hierarchy, I/O mechanisms, and processor functions. 5. To introduce instruction set architecture, microprocessor operations, pipelining concepts, and compare RISC and CISC paradigms for processor design understanding.	

8	Learning Outcomes: After successful completion of this course, students will be able to – LO1: Understand and apply various number systems and perform accurate conversions between them. LO2: Analyze and simplify digital logic circuits using Boolean algebra and Karnaugh maps LO3: Design and construct combinational and sequential digital circuits including adders, flip-flops, and counters. LO4: Demonstrate understanding of computer architecture concepts, including memory organization, interconnections structures, and I/O methods. LO5: Explain and evaluate instruction sets, addressing modes, and processor functions of 8085/8086 architecture, including concepts of pipelining, ILP, and RISC/CISC.
9	Syllabus UNIT I: • Basics: Number system, Number system conversion (Binary to other number system, Decimal to other number system, Octal to other number system, Hexadecimal to other number system). • Fundamentals of Digital Logic: Boolean algebra, Logic Gates, Simplification of Logic Circuits: Algebraic Simplification, Karnaugh Maps. • Combinational Circuits: Adders, Subtractors, Multiplexer, De-Multiplexer. • Sequential Circuits: Flip- Flops (SR, JK & D), Counters: synchronous and asynchronous Counter. • Computer System: Comparison of Computer Organization & Architecture, Computer Components and Functions, Interconnection Structures. Bus Interconnections, Input / Output: I/O Module Programmed I/O, Interrupt Driven I/O, Direct Memory Access. UNIT II: • Memory System Organization: Classification and design parameters, Memory Hierarchy, Internal Memory: RAM, SRAM and DRAM, Interleaved and Associative Memory. Cache Memory: Design Principles, Memory mappings, Replacement Algorithms, Cache performance, Cache Coherence. Virtual Memory, External Memory: Magnetic Discs, Optical Memory, Flash Memories, RAID Levels • Instructions: Instruction Formats, Instruction Sets, Addressing Modes, Addressing Modes Examples with Assembly Language [8085/8086 CPU]. • Processor Organization: Structure and Function. Register Organization [8085/8086 CPU]. Basic Microprocessor operations: Data Transfer (Register / Memory) Operations, Arithmetic & Logical Operations. Instruction Cycle, Instruction Pipelining. Introduction

	to RISC and CISC Architecture, Instruction Level Parallelism and Superscalar Processors, Design Issues.																																
10	Scheme of Examination and Assessment Pattern Paper – 50 Marks External Examination: Semester End External - 30 marks Time: 01:00 hours Format of Question Paper <table border="1"><thead><tr><th>Question</th><th>Based on</th><th>Options</th><th>Marks</th></tr></thead><tbody><tr><td>Q.1.</td><td>Unit – 1</td><td>Any 2 out of 4</td><td>10</td></tr><tr><td>Q.2.</td><td>Unit – 2</td><td>Any 2 out of 4</td><td>10</td></tr><tr><td>Q.3.</td><td>Unit – 1 and Unit – 2</td><td>Any 2 out of 4</td><td>10</td></tr><tr><td colspan="3"></td><td style="text-align: right;">Total 30</td></tr></tbody></table> Internal Examination: Continuous Evaluation – 20 marks <table border="1"><thead><tr><th></th><th>Assessment / evaluation</th><th>Marks</th></tr></thead><tbody><tr><td>1.</td><td>Class Test – It should be conducted using any learning management system such as MOODLE. The test should have 10 MCQs which should be solved in a time duration of 20 minutes.</td><td>10</td></tr><tr><td>2.</td><td>Presentation, Demonstration, Case Study, Seminar, Posters, Mini-Project, Role play etc.</td><td>10</td></tr><tr><td colspan="2"></td><td style="text-align: right;">Total 20</td></tr></tbody></table>	Question	Based on	Options	Marks	Q.1.	Unit – 1	Any 2 out of 4	10	Q.2.	Unit – 2	Any 2 out of 4	10	Q.3.	Unit – 1 and Unit – 2	Any 2 out of 4	10				Total 30		Assessment / evaluation	Marks	1.	Class Test – It should be conducted using any learning management system such as MOODLE. The test should have 10 MCQs which should be solved in a time duration of 20 minutes .	10	2.	Presentation, Demonstration, Case Study, Seminar, Posters, Mini-Project, Role play etc.	10			Total 20
Question	Based on	Options	Marks																														
Q.1.	Unit – 1	Any 2 out of 4	10																														
Q.2.	Unit – 2	Any 2 out of 4	10																														
Q.3.	Unit – 1 and Unit – 2	Any 2 out of 4	10																														
			Total 30																														
	Assessment / evaluation	Marks																															
1.	Class Test – It should be conducted using any learning management system such as MOODLE. The test should have 10 MCQs which should be solved in a time duration of 20 minutes .	10																															
2.	Presentation, Demonstration, Case Study, Seminar, Posters, Mini-Project, Role play etc.	10																															
		Total 20																															
11	REFERENCES: 1. M. Mano, Computer System Architecture 3rd edition, Pearson 2. Carl Hamacher et al., Computer Organization and Embedded Systems, 6 ed., McGraw-Hill 2012 3. R P Jain, Modern Digital Electronics, Tata McGraw Hill Education Pvt. Ltd., 4th Edition, 2010 4. William Stallings (2010), Computer Organization and Architecture- designing for performance, 8th edition, Prentice Hall, New Jersey. 5. Anrew S. Tanenbaum (2006), Structured Computer Organization, 5th edition, Pearson Education Inc, 6. John P. Hayes (1998), Computer Architecture and Organization, 3rd edition, Tata McGraw-Hill 7. Ramesh Gaonkar (2013), Microprocessor Architecture, Programming and Application with 8085, 6th edition, Penram. 8. Sarangi, S. R. (2021). Basic computer architecture, 1st edition, White Falcon Publishing. https://www.cse.iitd.ac.in/~srsarangi/archbooksoft.html 9. Sarangi, Smruti R. 2023. <i>Next-Gen Computer Architecture</i>. 1st ed. White Falcon. https://www.cse.iitd.ac.in/~srsarangi/advbook/index.html																																

**Smt. Chandibai Himathmal Mansukhani College
(Autonomous)**

**First Year B. Sc.
(Computer Science)**

Semester- I

Title: Fundamentals of Database Systems

**Vertical - 1
Major Course - 2 Credits**

**with effect from
Academic Year 2025-2026**

Title: Fundamentals of Database Systems
Course Code: CHMCSI2

Sr. No.	Heading	Particulars
1	Description the Course:	Introduction The Fundamentals of Database Systems course introduces students to the essential concepts of data organization, management, and retrieval. As a foundational subject in computer science and information technology, it provides the skills and knowledge needed to understand and work with modern databases, which are integral to virtually every data-driven field. Relevance In an era where data is central to decision-making and operations, efficient data management is crucial. This course equips students with the tools to understand how data is stored, structured, and accessed, making it highly relevant for both academic advancement and real-world application. Usefulness The course is particularly valuable for students aspiring to careers in software development, data analytics, systems design, and IT management. It lays the groundwork for working with databases—designing schemas, implementing queries, and ensuring data integrity and efficiency. Applications Skills learned in this course are applicable across industries such as finance, healthcare, education, business, and technology. Students will learn how to model real-life scenarios into structured data formats, create and manage databases, and develop systems for seamless information access and storage. Student Interest The practical nature of the course makes it engaging and intellectually rewarding. Students often find satisfaction in designing efficient data models, solving real-world data problems, and developing applications that rely on structured data management.

		Integration with Other Courses This course serves as a foundation for advanced topics in computer science. It directly supports learning in: • Database Management Systems (DBMS) • Data Warehousing & Data Mining • Big Data Technologies • Software Engineering • Backend & Web Development • Cloud Computing Demand in the Industry: As businesses and organizations amass ever-growing volumes of data, there is an increasing demand for professionals versed in database systems. Industries such as finance, healthcare, e-commerce, and technology actively seek individuals who can design, implement, and manage robust databases. Job Prospects: Graduates proficient in the fundamentals of database systems enjoy promising job prospects. Potential roles include database administrator, data analyst, database developer, and business intelligence analyst. These professionals play a pivotal role in ensuring the efficient and secure management of an organization's data assets.
2	Vertical 1	Major
3	Type	Theory + Teaching methods (Lectures, Problem Solving, Discussion, Presentation, Case Study, Simulations, Interdisciplinary Approach, etc)
4	Credit	2 Credits
5	Hours allotted	30 Hours
6	Marks allotted	50 Marks

7	Course Objectives: 1. To introduce the fundamental concepts of databases and DBMS architectures, including data abstraction, data independence, and data models. 2. To develop the ability to design Entity-Relationship (ER) models and convert them into relational tables using proper constraints. 3. To impart hands-on knowledge of SQL, including Data Definition Language (DDL), Data Manipulation Language (DML), and use of functions and subqueries. 4. To explain relational data models, normalization, and database protection mechanisms for efficient and secure database design. 5. To introduce the concepts of views, transaction control, and data control, focusing on data consistency, concurrency, and user management.
8	Learning Outcomes: After successful completion of this course, students will be able to – LO1: Explain the architecture, components, and advantages of DBMS, and differentiate between various data models and abstraction levels. LO2: Design ER diagrams and convert ER models into normalized relational schemas using appropriate integrity constraints and normalization techniques. LO3: Write and execute SQL queries for database creation, data manipulation, and information retrieval, using joins, subqueries, and built-in functions. LO4: Apply relational algebra concepts and normalization principles to optimize database performance and reduce data redundancy. LO5: Demonstrate proficiency in database security, user access control, views, and transaction management to ensure data integrity and security.
9	Syllabus UNIT I: • Introduction to DBMS: Database, DBMS – Definition, Overview of DBMS, Advantages of DBMS, Levels of abstraction, Data independence, DBMS Architecture. • Data models: Client/Server Architecture, Object Based Logical Model, Record Based Logical Model (relational, hierarchical, network). • Entity Relationship Model and ER to Table: Entities, attributes, entity sets, relations, relationship sets, Additional constraints (key constraints, participation constraints, weak entities, aggregation / generalization), Conceptual Design using ER (entities VS attributes, Entity Vs relationship, binary Vs ternary, constraints beyond ER) Entity to Table, Relationship to tables with and without key constraints.

- **DDL Statements:** Creating Databases, Using Databases, datatypes, Creating Tables (with integrity constraints – primary key, default, check, not null), Altering Tables, Renaming Tables, Dropping Tables, Truncating Tables.
- **DML statements:** Viewing the structure of a table insert, update, delete, select all columns, specific columns, unique records, conditional select, in clause, between clause, limit, aggregate functions (count, min, max, avg, sum), group by clause, having clause.

UNIT II:

- **Relational data model:** Domains, attributes, Tuples and Relations, Relational Model Notation, Characteristics of Relations, Relational Constraints - primary key, referential integrity, unique constraint, Null constraint, Check constraint.
- **Functions:** String Functions (concat, instr, left, right, mid, length, lcase/lower, ucase/upper, replace, strcmp, trim, ltrim, rtrim), Math Functions (abs, ceil, floor, mod, pow, sqrt, round, truncate) Date Functions (adddate, datediff, day, month, year, hour, min, sec, now, reverse) Window Functions (ROW_NUMBER(), RANK(), DENSE_RANK(), NTILE(), and OVER()).
- **Joining Tables and Subqueries:** inner join, outer join (left outer, right outer, full outer) subqueries with IN, EXISTS, subqueries restrictions, Nested subqueries, ANY/ALL clause, correlated subqueries.
- **Normal forms:** Functional dependencies, first, second, third, and BCNF normal forms based on primary keys, lossless join decomposition.
- **Database Protection:** Security Issues, Threats to Databases, Security Mechanisms, Role of DBA, Discretionary Access Control, Backing Up and Restoring databases
- **Views:** Creating views with check options and without check options, altering dropping, renaming and manipulating views.
- **DCL Statements:** Creating/dropping users, privileges introduction, granting/revoking privileges, viewing privileges), User Account Locking and Expiry, Transaction control commands – Commit, Rollback, Savepoints.

10

Scheme of Examination and Assessment Pattern

Paper – 50 Marks

External Examination: Semester End External - 30 marks **Time: 01:00 hours**

Format of Question Paper

Question	Based on	Options	Marks
Q.1.	Unit – 1	Any 2 out of 4	10
Q.2.	Unit – 2	Any 2 out of 4	10
Q.3.	Unit – 1 and Unit – 2	Any 2 out of 4	10
			Total 30

Internal Examination: Continuous Evaluation – 20 marks

	Assessment / evaluation	Marks
1.	Class Test – It should be conducted using any learning management system such as MOODLE. The test should have 10 MCQs which should be solved in a time duration of 20 minutes .	10
2.	Presentation, Demonstration, Case Study, Seminar, Posters, Mini-Project, Role play etc.	10
		Total 20

11

REFERENCES:

1. Fundamentals of Database System, Elmasri Ramez, Navathe Shamkant, Pearson Education, Seventh edition, 2017
2. Database Management Systems, Raghu Ramakrishnan and Johannes Gehrke, 3rd Edition, 2014
3. Murach's MySQL, Joel Murach, 3rd Edition, 3rd Edition, 2019M. Mano, Computer System Architecture 3rd edition, Pearson.
4. Database System Concepts, Abraham Silberschatz, Henry F. Korth, S. Sudarshan, McGraw Hill, 2017
5. MySQL: The Complete Reference, Vikram Vaswani , McGraw Hill, 2017
6. Learn SQL with MySQL: Retrieve and Manipulate Data Using SQL Commands with Ease, Ashwin Pajankar, BPB Publications, 2020.
7. Watt, Adrienne. *Database Design*. 2nd ed. Victoria, BC: BCcampus, 2014.
<https://opentextbc.ca/dbdesign01/>

**Smt. Chandibai Himathmal Mansukhani College
(Autonomous)**

**First Year B. Sc.
(Computer Science)**

Semester- I

Title: Computer Science Practical 1

**Vertical - 1
Major Course- 2 Credits**

**with effect from
Academic Year 2025-2026**

Title: Computer Science Practical 1
Course Code: CHMCSI3

Sr. No.	Heading	Particulars
1	Description the Course:	Introduction: The Major Computer Science Practical Course, which includes Digital Systems and Architecture along with Database Systems, offers a thorough, hands-on exploration of the foundational hardware and software aspects that support modern computing. This course is designed to provide students with a comprehensive understanding of digital systems, computer architecture, and effective data management within databases. Relevance: In an era where seamless integration of hardware and software is crucial, the combination of Digital Systems and Architecture with Database Systems is highly relevant. This practical course highlights the symbiotic relationship between the two, providing students with a well-rounded perspective on designing and building robust computing solutions. Usefulness: This course is highly beneficial for students looking to bridge the gap between hardware and software. By combining digital systems with database concepts, students acquire a unique skill set that empowers them to design, implement, and optimize computing systems in a holistic manner. Application: The skills gained in this practical course have direct applications in developing efficient and integrated computing solutions. Students will learn how to design digital systems, optimize hardware performance, and seamlessly integrate these systems with databases to effectively handle and manipulate data. Interest: The Major Computer Science Practical Course is designed to captivate students by offering a hands-on approach to both hardware and software components. Through practical exercises, students will design digital circuits, implement database solutions, and integrate these components, fostering a deeper

		understanding and appreciation of the complexities of computing systems Connection with Other Courses: This practical course serves as a nexus, linking various courses within the computer science curriculum. It establishes a strong foundation for advanced subjects like computer organization, embedded systems, software engineering, and database management. The integrated approach ensures students gain a deep understanding of the synergies between different aspects of computer science. Demand in the Industry: Professionals who can seamlessly navigate both digital systems and database management are highly sought after. Industries such as electronics, telecommunications, software development, and data analytics actively seek individuals skilled in both hardware and software, recognizing the significant practical value of this dual expertise. Job Prospects: Graduates of this practical course enjoy promising career prospects in roles that require a well-rounded understanding of computing systems. Potential job titles include systems architect, database administrator, embedded systems developer, and hardware-software integration specialist. These professionals are well-equipped to contribute to a wide range of industries in need of comprehensive computing solutions.
2	Vertical 1	Major
3	Type	Practical
4	Credit	2 credits (1 credit = 30 Hours of Practical work in a semester)
5	Hours allotted	60 Hours
6	Marks allotted	50 Marks

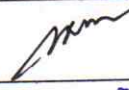
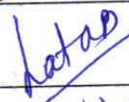
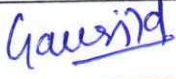
7	Course Objectives: 1. To enable students to simulate and verify basic digital logic circuits including logic gates, adders, subtractors, comparators, and counters using tools like Logisim. 2. To develop skills in the design and implementation of combinational and sequential digital systems, such as multiplexers, flip-flops, shift registers, and ripple counters. 3. To provide practical experience in relational database design, including ER modelling, normalization, and conversion to relational schemas. 4. To enhance proficiency in writing and executing SQL queries, covering DDL, DML, aggregate functions, joins, subqueries, and views using MySQL or similar Database. 5. To introduce the application of transaction control and data control operations such as COMMIT, ROLLBACK, GRANT, and REVOKE, for managing data integrity and security.
8	Learning Outcomes: After successful completion of this course, students would be able to – LO1: Design, simulate, and verify basic digital logic circuits (e.g., gates, adders, subtractors, flip-flops, counters, and multiplexers) using Logisim or equivalent tools. LO2: Simplify Boolean expressions and realize them as optimized digital circuits, ensuring correct logical operation through simulation. LO3: Design ER models and convert them into normalized relational schemas, applying up to 3rd Normal Form for structured database design. LO4: Execute SQL queries involving DDL, DML, joins, subqueries, and built-in functions to manipulate and retrieve data efficiently in a relational database. LO5: Demonstrate the use of transaction control and data control statements (COMMIT, ROLLBACK, GRANT, REVOKE) for maintaining database integrity and security.
9	Syllabus UNIT I: Practical 1: Logic Gates Truth Table Verification: Study and verify the truth table of various logic gates (NOT, AND, OR, NAND, NOR, EX-OR, EX-NOR) using Logisim. Practical 2: Boolean Expression Simplification: Simplify given Boolean expressions and realize them using Logisim. Practical 3: Half/Full Adder Design: Design and verify the operation of a half/full adder using Logisim. Practical 4: Half/Full Subtractor Design: Design and verify the operation of a half/full subtractor using Logisim. Practical 5: Magnitude Comparator: Implement magnitude comparators for 1-bit, 2-bit, and 4-bit inputs using combinational logic circuits with Logisim simulation.

	Practical 6: Flip-Flop Implementation: Verify the operation of flip-flops (e.g., D, JK) using logic gates in Logisim. Practical 7: Counter Operation Verification: Verify the operation of a counter using Logisim. Practical 8: 4-Bit Shift Register Operation: Verify the operation of a 4-bit shift register using Logisim. Practical 9: Multiplexer/Demultiplexer Design: Design and implement expressions using multiplexers/demultiplexers in Logisim. Practical 10: 3-Bit Binary Ripple Counter: Design and implement a 3-bit binary ripple counter using JK flip-flops in Logisim.
	The above practical can be performed using any open-source simulator (like Logisim) (Download it from https://sourceforge.net/projects/circuit/)
	UNIT II: Practical 1: Conceptual Design Using ER Diagrams: Identify entities, attributes, keys, and relationships. Apply generalization and specialization. Practical 2: Database Management Operations: View all databases, create a database, view all tables in a database, create tables with and without constraints, perform CRUD operations. Practical 3: Table Management Operations: Alter a table, drop/truncate/rename tables, perform backup/restore operations on a database. Practical 4: Basic Queries and Aggregate Functions: Execute simple queries and utilize aggregate functions (e.g., COUNT, SUM, AVG). Practical 5: Advanced Query Functions: Utilize date, string, math functions and window function such as ROW_NUMBER in queries. Practical 6: Join queries: Execute inner and outer join queries. Practical 7: Subqueries: Apply subqueries with IN and EXISTS clauses. Practical 8: ER Model to Relational Model Conversion and Normalization: Convert ER model to a relational model and apply normalization up to 3rd Normal Form.

	Practical 9: Views: Create views with and without check options, drop views, select data from views Practical 10: Data Control Language (DCL) Statements: Implement DCL statements for granting and revoking permissions, Demonstrate COMMIT and ROLLBACK statements. These experiments can be implemented using a database management system like MySQL.																								
10	Scheme of Examination and Assessment Pattern Paper – 50 Marks External Examination: Semester End External - 30 marks Time: 02:00 hours Format of Question Paper <table border="1"><thead><tr><th>Question</th><th>Practical Questions Based on</th><th>Marks</th></tr></thead><tbody><tr><td>Q.1.</td><td>Unit – 1</td><td>15</td></tr><tr><td>Q.2.</td><td>Unit – 2</td><td>15</td></tr><tr><td></td><td align="right">Total</td><td>30</td></tr></tbody></table> Note: • Certified Journal is compulsory for appearing at the time of Practical Exam, failing which they will not be allowed to appear for the examination • Students are required to perform 75% of the Practicals for the journal to be duly certified. The journal serves as a record of their practical work and is an essential component of the evaluation process. Internal Examination: Continuous Evaluation – 20 marks <table border="1"><thead><tr><th></th><th>Assessment / evaluation</th><th>Marks</th></tr></thead><tbody><tr><td>1.</td><td>Practical Assignments / Experiments / Hands-On Tests / Presentations / Demonstrations / Online Class Test / Case Studies / Mini-Projects / Complete the code block / Develop the incomplete portion of the code etc.</td><td>15</td></tr><tr><td>2.</td><td>Journal</td><td>05</td></tr><tr><td></td><td align="right">Total</td><td>20</td></tr></tbody></table>	Question	Practical Questions Based on	Marks	Q.1.	Unit – 1	15	Q.2.	Unit – 2	15		Total	30		Assessment / evaluation	Marks	1.	Practical Assignments / Experiments / Hands-On Tests / Presentations / Demonstrations / Online Class Test / Case Studies / Mini-Projects / Complete the code block / Develop the incomplete portion of the code etc.	15	2.	Journal	05		Total	20
Question	Practical Questions Based on	Marks																							
Q.1.	Unit – 1	15																							
Q.2.	Unit – 2	15																							
	Total	30																							
	Assessment / evaluation	Marks																							
1.	Practical Assignments / Experiments / Hands-On Tests / Presentations / Demonstrations / Online Class Test / Case Studies / Mini-Projects / Complete the code block / Develop the incomplete portion of the code etc.	15																							
2.	Journal	05																							
	Total	20																							
11	REFERENCES: 1. R P Jain, Modern Digital Electronics, Tata McGraw Hill Education Pvt. Ltd., 4th Edition, 2010 2. Murach's MySQL, Joel Murach, 3rd Edition, 3rd Edition, 2019. 3. MySQL: The Complete Reference, Vikram Vaswani, McGraw Hill, 2017 4. Learn SQL with MySQL: Retrieve and Manipulate Data Using SQL Commands with Ease, Ashwin Pajankar, BPB Publications, 2020																								

	5. Documentation for Logisim: https://cburch.com/logisim/docs.html
	6. Documentation for MySQL: https://downloads.mysql.com/docs/refman-8.4-en.pdf

Syllabus Committee:

Sr No	Name of the Faculty	Designation and College	Signature
1.	Ms. Ritika Sachdev	Assistant Professor, Smt. CHM College, Ulhasnagar	
2.	Ms. Lata Bhatia	Assistant Professor, Smt. CHM College, Ulhasnagar	
3.	Ms. Razia Khan	Assistant Professor, Smt. CHM College, Ulhasnagar	
4.	Ms. Gauri Hallale	Assistant Professor, Smt. CHM College, Ulhasnagar	

Name & Signature of the BoS Chairperson: Ms. Ritika Sachdev 

Name & Signature of the Dean: Ms. Ritika Sachdev 



**Smt. Chandibai Himathmal Mansukhani College
(Autonomous)**

**First Year B. Sc.
(Computer Science)**

Semester- I

**Vertical - 2
Minor Course**

Not Applicable

**with effect from
Academic Year 2025-2026**

**Smt. Chandibai Himathmal Mansukhani College
(Autonomous)**

**First Year B. Sc.
(Computer Science)**

Semester- I

**Vertical - 3
Open Elective Course: 2+2 Credits**

**with effect from
Academic Year 2025-2026**

OPEN ELECTIVES (OE)

For First Year B.Sc.

(Computer Science, Information Technology, Biotechnology, Data Science)

Students are required to select any two OE subject from the list below

Sr. No	Subject Name
1.	Communicative English
2.	Performing Arts
3.	Journalism in Hindi
4.	Event Management Course in Sindhi
5.	Basic Tools of AI for Economics and Education
6.	Political Communication and Media Skills
7.	Stress Management - I
8.	Social Media and Communication
9.	Urbanization and Real Estate: Concepts and Contemporary Scenarios
10.	Business of Travel and Tours
11.	Lessons of Reel Making
12.	Basic Accounting
13.	Soft Skills for Corporate Life
14.	Business Statistics and SPSS
15.	Beautician : Strategic Business Planning
16.	Current Trends of Fashion Design: Financial Perspective
17.	Digital Marketing
18.	Managing Family Wealth through Family Office
19.	Online Trading in Stock Market



**Smt. Chandibai Himathmal Mansukhani College
(Autonomous)**

**First Year B. Sc.
(Computer Science)**

Semester- I

Vertical – 4

Vocational Skill Course (VSC) : 2 Credits

Skill Enhancement Course (SEC) : 2 Credits

**with effect from
Academic Year 2025-2026**

**Smt. Chandibai Himathmal Mansukhani College
(Autonomous)**

**First Year B. Sc.
(Computer Science)**

Semester- I

Title: Introduction to Programming with Python

Vertical - 4

Vocational Skill Course (VSC) - 2 Credits

**with effect from
Academic Year 2025-2026**

Title: Introduction to Programming with Python

Course Code: CHMCSI4

Sr. No.	Heading	Particulars
1	Description the Course:	Introduction: The Introduction to Programming with Python course is designed as a starting point for anyone new to coding, offering a solid foundation in one of the most versatile and accessible programming languages. Known for its clear syntax and ease of learning, Python is an excellent choice for beginners looking to develop essential programming skills. Relevance: In today's technology-driven world, programming has become a vital skill across numerous fields. Python, as a high-level interpreted language, holds particular relevance due to its wide range of applications—including web development, data analysis, artificial intelligence, and automation—making it a valuable tool for professionals in virtually any domain. Usefulness: The course offers a comprehensive introduction to core Python concepts, including syntax, data structures, and control flow. It enables learners to develop the skills needed to write effective and efficient code. Given Python's versatility, the knowledge gained is applicable across a broad spectrum of programming challenges and practical applications. Application: By the end of the course, participants will be equipped to use Python for practical purposes such as automating tasks, solving everyday problems, and building simple programs. This foundational knowledge also paves the way for further study in specialized fields like data science, machine learning, or web development. Interest: Python's easy-to-understand syntax and powerful libraries make it an ideal language for beginners. The course is designed to engage learners with hands-on projects, inspiring a passion for coding and problem-solving. Connection with Other Courses: Python serves as an ideal gateway into the broader world of programming, thanks to its compatibility with other languages and technologies. The foundational skills developed in this course prepare learners to confidently progress to more

		advanced programming topics and specialized fields such as data science, machine learning, web development, and beyond. Demand in the Industry: Python continues to rise in popularity across industries due to its versatility, clean syntax, and strong community support. Its widespread adoption in fields such as technology, finance, healthcare, and academia has created a strong demand for professionals skilled in Python, making it a valuable asset for career advancement in today's job market. Job Prospects: Completing this course will open up entry-level opportunities in software development, quality assurance, data analysis, and scripting. Python developers are in high demand for their ability to quickly create prototypes and contribute across various stages of the software development process.
2	Vertical 4	VSC (Vocational Skill Course)
3	Type	Practical
4	Credit	2 credits (1 credit = 30 Hours of Practical work in a semester)
5	Hours allotted	60 Hours
6	Marks allotted	50 Marks
7	Course Objectives: 1. To introduce the fundamental concepts of Python programing, including syntax, variables, data types, operators, and basic input/output operations. 2. To develop control flow logic using conditional and iterative statements, enhancing problem-solving and algorithmic thinking. 3. To enable students to implement core data structures like lists, tuples, dictionaries, arrays, and strings, and perform manipulations using built-in functions. 4. To impart functional and modular programming skills, including the use of user-defined functions, recursion, lambda expressions, modules, and packages. 5. To expose students to file handling, regular expressions, and date-time operations, providing a solid foundation for real-world programming and data processing applications.	

8	Learning Outcomes: LO1: Understand and apply the syntax and semantics of Python programming language, including variables, operators, and basic input/output. LO2: Implement control flow using decision-making and looping constructs such as if, for, while, break, and continue statements LO3: Manipulate and process structured data using Python data structures like arrays (NumPy), strings, lists, tuples, and dictionaries. LO4: Design and develop modular programs using functions and modules including recursion, lambda functions, and parameter handling. LO5: Handle external data through file operations, regular expressions, and date-time modules for solving real-time programming problems.
9	Syllabus UNIT I: Practical 1: Overview and Basic Elements of Python Programming: - Utilizing IDLE as a basic calculator. - Practicing print statements using IDLE. - Programs that create and use variables. - Developing programs with input and output operations. - Implementing programs that explore data types and type conversions. - Creating programs that use command line arguments. - Writing programs to understand operator precedence and associativity. Practical 2: Control Statements: - Writing programs using if, if...else, and if...elif...else statements - Developing programs with nested if statements - Implementing decision-making using the match...case statement - Writing programs using while loops. - Creating iterative solutions with for loops. - Utilizing jump statements such as break and continue for flow control. - Understand the use of return for outputting function results and assert for debugging by validating conditions. Practical 3: Arrays: - Implementation of array creation techniques, including indexing and slicing operations - Development of programs to perform fundamental and mathematical operations on arrays - Utilization of NumPy arrays with emphasis on slicing, conventional indexing, and advanced indexing methodologies - Examination of array properties, including dimensionality and other structural attributes

Practical 4: Functions:

- a) Development of programs utilizing user-defined functions
- b) Implementation of various types of function parameters
- c) Construction of recursive function-based solutions
- d) Exploration and application of built-in functions
- e) Use of lambda (anonymous) functions in program logic
- f) Composition of functions to build complex operations
- g) Integration of standard library modules and creation of custom modules

Practical 5: Strings:

- a) Development of programs for string creation and manipulation
- b) Implementation of indexing and slicing techniques for string processing
- c) Utilization of built-in string functions for various operations
- d) Construction of programs focused on string formatting
- e) Design of programs to insert substrings into existing strings

UNIT II:**Practical 6: Exploring List, Tuples:**

- a) Development of programs to create and initialize lists
- b) Implementation of programs utilizing list functions and methods
- c) Construction of programs that perform basic list operations
- d) Exploration of list slicing techniques and working with nested lists
- e) Design of programs using list comprehension for efficient processing
- f) Creation and initialization of tuples through programming
- g) Utilization of built-in functions for manipulating tuples

Practical 7: Working with Dictionaries:

- a) Development of programs to create dictionaries and perform various operations on them
- b) Construction of programs to iterate over dictionaries using loops
- c) Implementation of programs utilizing different operators on dictionaries
- d) Exploration of various built-in dictionary methods through programming
- e) Implementation of programs to create dictionaries using dictionary comprehension

Practical 8: Files in Python:

- a) Development of programs to create and open text and binary files for reading and writing data
- b) Implementation of programs utilizing the tell() and seek() methods for file manipulation
- c) Design of programs to serialize and deserialize Python objects using the pickle module
- d) Construction of programs to perform operations with directories

Practical 9: Regular Expressions:

- Development of programs to search for specific patterns within strings using sequence and special characters
- Implementation of programs to substitute one pattern with another in a string
- Design of programs that apply regular expressions for pattern matching in files

Practical 10: Date And Time in Python:

- Development of programs to display the current time, date, and date-time information
- Implementation of programs to create, combine, and format dates and times
- Construction of programs to find, compare, and sort dates in a list
- Design of programs to measure the execution time of code
- Exploration of programs utilizing the calendar module for various operations

10**Scheme of Examination and Assessment Pattern**

Paper – 50 Marks

External Examination: Semester End External - 30 marks Time: 02:00 hours

Format of Question Paper

Question	Practical Questions Based on	Marks
Q.1.	Unit – 1	15
Q.2.	Unit – 2	15
		Total 30

Note:

- Certified Journal is compulsory** for appearing at the time of Practical Exam, failing which they will not be allowed to appear for the examination
- Students are required to perform 75% of the Practicals for the journal to be duly certified. The journal serves as a record of their practical work and is an essential component of the evaluation process.

Internal Examination: Continuous Evaluation – 20 marks

	Assessment / evaluation	Marks
1.	Practical Assignments / Experiments / Hands-On Tests / Presentations / Demonstrations / Online Class Test / Case Studies / Mini-Projects / Complete the code block / Develop the incomplete portion of the code etc.	15
2.	Journal	05
		Total 20

REFERENCES:

1. Practical Programming: An Introduction to Computer Science Using Python 3, Paul Gries, Jennifer Campbell, Jason Montojo, Pragmatic Bookshelf, 2nd Edition, 2014
2. Programming through Python, M. T Savaliya, R. K. Maurya & G M Magar, Sybgen Learning India, 2020.
3. Python: The Complete Reference, Martin C. Brown, McGraw Hill, 2018
4. Beginning Python: From Novice to Professional, Magnus Lie Hetland, Apress, 2017
5. Programming in Python 3, Mark Summerfield, Pearson Education, 2nd Ed, 2018
6. Python Programming: Using Problem Solving Approach, ReemaThareja, Oxford Univeristy Press, 2017
7. Let Us Python, Yashwant. B. Kanetkar, BPB Publication, 2019
8. Documentation for Python <https://docs.python.org/3.13/tutorial/index.html>

**Smt. Chandibai Himathmal Mansukhani College
(Autonomous)**

**First Year B. Sc.
(Computer Science)**

Semester- I

Title: LINUX Operating System

Vertical - 4

Skill Enhancement Course (SEC) - 2 Credits

**with effect from
Academic Year 2025-2026**

Title: LINUX Operating System

Course Code: CHMCSI5

Sr. No.	Heading	Particulars
1	Description the Course:	Introduction: The Linux Operating System course provides a foundational yet technically rigorous introduction to computing, focusing on the architecture, functionality, and practical use of this widely adopted open-source operating system. Relevance: Linux plays a critical role across multiple industries—including server administration, software development, cybersecurity, cloud computing, and the Internet of Things—making this course highly pertinent to the demands of today's digital ecosystem. Usefulness: Linux is the dominant operating system in global server environments, making proficiency in it essential for effective server management and maintenance. A significant number of development tools and environments are built for or optimized on Linux, greatly enhancing a developer's efficiency and capabilities. Renowned for its strong security architecture, Linux is a cornerstone in the cybersecurity domain, where in-depth knowledge is crucial for professionals. Major cloud platforms are built on or heavily rely on Linux, making it a vital skill for cloud administrators. Additionally, Linux's widespread use in IoT devices and embedded systems highlights its importance for professionals working in these rapidly growing technological areas. Application: This course introduces students to the fundamental concepts and practical uses of Linux, with focused coverage of key domains including server administration, software development, cybersecurity, cloud computing, and the Internet of Things (IoT). Interest: Thanks to its open-source nature and wide-ranging capabilities, Linux appeals to individuals who value powerful command-line tools, as well as those seeking a stable, reliable operating system with a robust command-line interface.

		Connection with Other Courses: The course complements network administration curricula by incorporating essential Linux commands, while also aligning with software development courses to promote a well-rounded understanding of modern computing environments. Demand in the Industry: Industry leaders consistently value Linux for its stability, security, and cost-efficiency, driving strong and ongoing demand for professionals skilled in Linux systems. Job Prospects: Graduates of the Linux Operating System course are equipped to pursue a range of careers, including positions as system administrators, network administrators, DevOps engineers, cloud administrators, cybersecurity analysts, and software developers.
2	Vertical 4	SEC (Skill Enhancement Course)
3	Type	Practical
4	Credit	2 credits (1 credit = 30 Hours of Practical work in a semester)
5	Hours allotted	60 Hours
6	Marks allotted	50 Marks
7	Course Objectives: 1. To introduce the fundamental concepts, architecture, and features of the Linux operating system. 2. To enable learners to use essential Linux shell commands, including regular expressions, for basic system operations. 3. To provide knowledge on setting up environment variables and managing file permissions for secure Linux system operations. 4. To develop proficiency in using Linux text editors and writing shell scripts for automating routine administrative tasks. 5. To familiarize learners with installing compilers and developing basic programs using Python in the Linux environment.	

8	Learning Outcomes: LO1: To explain the fundamental concepts, architecture, and features of the Linux operating system. LO2: To apply various Linux shell commands, including regular expressions, for effective system management. LO3: To configure Linux environment variables and manage file permissions to ensure system security. LO4: To develop shell scripts using Linux text editors for automating system tasks. LO5: To install compilers and write basic programs in Python on the Linux platform.
9	Syllabus UNIT I: Practical 1: a) Introduction to Linux Operating System and Basics: History of Linux, GNU Info and Utilities, Various Linux Distributions, The Unix/Linux architecture, Features of Unix/Linux • Explore the role of an operating system and its fundamental functions. • Examine the history of UNIX and the evolution of Linux from it. • Illustrate and explain the basic architecture of Linux, including User Space, Kernel, and Hardware. • Identify five key features that set Linux apart from other operating systems. b) Installation of Ubuntu Linux Operating System: Booting and installing from USB/DVD, Using Ubuntu Software Center / Using Synaptic, Exploring useful software packages. • Demonstration or video tutorial on installing the Linux Operating System. • Log into Ubuntu and execute the command 'sudo apt update && sudo apt upgrade.' • Install and explore the Ubuntu Software Center and Synaptic Package Manager. Practical 2: Becoming an Ubuntu Power User: Administering system and user settings, Learning Unity keyboard shortcuts, Using the Terminal • Learn user management commands in Linux. • Execute user management commands such as who, whoami, su, sudo, login, logout, exit, passwd, useradd/adduser, usermod, userdel, groupadd, groupmod, groupdel, gpasswd, chown, chage, chgrp, chfn, etc. • Practice Unity/GNOME shortcuts like Ctrl+Alt+T and Alt+Tab Practical 3: a) Linux Basics: Starting the shell, Shell prompt, Command structure, File Systems and Directory Structure, man pages, more documentation pages

- Learn general-purpose Linux commands and programming within the Linux editor environment.
- Explore the Linux filesystem hierarchy (tree structure) with a diagram of the file system.
- Execute commands like 'pwd', 'cd /', and 'ls -l' to observe the structure.
- Install the 'tree' command with 'sudo apt install tree' and explore the /etc directory.
- Use 'man ls' and 'info bash' to access and read the documentation.

b) File System Commands:

touch, help, man, more, less, pwd, cd, mkdir, rmdir, ls, find, etc.

- Understand file system management commands in Linux.
- Execute file system commands such as touch, help, man, more, less, pwd, cd, ls, find, and others.
- Use file and directory management commands like mkdir, rmdir, echo, sort, head, tail, less, more, file, type, split, vim, and more.

Practical 4: File Handling Commands:

cat, cp, rm, mv, more, file, wc, od, cmp, diff, comm, gzip, gunzip, zip, unzip, tar, ln, umask, etc.

- Understand file handling commands in Linux.
- Execute file handling commands such as cat, cp, rm, mv, more, file, wc, od, cmp, diff, comm, gzip, gunzip, zip, unzip, tar, ln, umask, bzip2, locate, and more.
- Experiment with the 'ln' command for creating links and 'umask' to manage default permission settings.

Practical 5:

a) General Purpose Utility Commands:

cal, date, echo, man, printf, passwd, script, who, uname, tty, stty, etc.

- Understand general-purpose utility commands in Linux.
- Execute general-purpose utility commands such as cal, date, echo, man, printf, passwd, script, who, uname, tty, stty, and others.

b) Linux File Permissions:

Understanding Linux file permissions, Using Linux groups. Decoding file permissions, Changing security settings, chmod, chown, chgrp.

- Understand file permission commands in Linux.
- Study file and directory permissions in both single and multi-user environments.
- Use 'ls -l' to view file permissions.
- Modify permissions with commands like 'chmod', 'chown', and 'chgrp'.
- Explain the meaning of permissions such as 755, 644, and others.

UNIT II:

Practical 6: Linux Security:

Understanding Linux Security, working with passwords, Understanding ssh

- Switch to the root user using 'sudo su' and observe the associated privileges.

- Change a user's password with the command 'sudo passwd username'.
- Install and enable SSH using 'sudo apt install openssh-server'.
- Start the SSH service and test a local SSH connection.

Practical 7:

a) Networking Commands:

who, whoami, ping, telnet, ftp, ssh, etc.

- Verify network connectivity and examine active sessions.
- Run the following commands: who, whoami, ping google.com, ssh user@localhost, ip a, ss -tuln.

b) Editors:

vi, sed, awk

- Open a file in vi, insert text, and save the changes.
- Use sed to replace, insert, or delete lines within a file.
- Write awk scripts to print specific patterns, manipulate columns, and perform arithmetic operations.

c) Simple Filters and I/O Redirection:

cut, paste, grep family, tee, uniq, tr, piping and redirection etc.

- Run filter and redirection commands such as head, tail, cut, paste, sort, grep, tee, uniq, and tr on sample text files.
- Combine filters using pipes and redirect the output to files.

Practical 8: Shell Scripting:

Defining variables, reading user input, exit and exit status commands, expr, test, [], if conditional, logical operators, Conditions (for loop, until loop, and while loop), arithmetic operations, Redirecting input/output in scripts, creating your own redirection.

- Write scripts to perform arithmetic calculations, calculate simple and compound interest, determine if a year is a leap year, max/min of three numbers, compare two strings, etc.
- Utilize loops (for, while, until) and conditional statements (if, case).
- Develop a script for a menu-driven calculator using case statement.
- Implement the 'read' command and check for the existence of files or directories.

Practical 9: Working and Managing Processes:

sh, ps, kill, nice, at, batch, etc.

- Execute process management commands such as ps, pstree, top, nice, kill, pkill, killall, xkill, fg, bg, pgrep, renice, etc.

- Start a process with a low priority and modify its priority using renice.

Practical 10:

a) **Job scheduling commands:**

ps, nice, renice, at, batch, cron table

- Schedule a one-time task using the 'at' command.
- View scheduled 'at' jobs with 'atq' and remove them using 'atrm'.
- Set up a cron job to execute a script daily or weekly.

b) **Installation of Python Compiler and Environment Setup and Basic programming using Python.**

10

Scheme of Examination and Assessment Pattern

Paper – 50 Marks

External Examination: Semester End External - 30 marks Time: 02:00 hours

Format of Question Paper

Question	Practical Questions Based on	Marks
Q.1.	Unit – 1	15
Q.2.	Unit – 2	15
		Total 30

Note:

- **Certified Journal is compulsory** for appearing at the time of Practical Exam, failing which they will not be allowed to appear for the examination
- Students are required to perform 75% of the Practicals for the journal to be duly certified. The journal serves as a record of their practical work and is an essential component of the evaluation process.

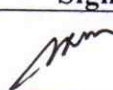
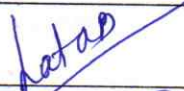
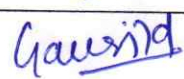
Internal Examination: Continuous Evaluation – 20 marks

	Assessment / evaluation	Marks
1.	Practical Assignments / Experiments / Hands-On Tests / Presentations / Demonstrations / Online Class Test / Case Studies / Mini-Projects / Complete the code block / Develop the incomplete portion of the code etc.	15
2.	Journal	05
		Total 20

REFERENCES:

1. Linux Command line and Shell Scripting Bible, Richard Blum, Wiley India.
2. Unix: Concepts and Applications, Sumitabha Das, 4th Edition, McGraw Hill.
3. Official Ubuntu Book, Matthew Helmke& Elizabeth K. Joseph with Jose Antonio Rey and Philips Ballew, 8th Ed.
4. Linux Administration: A Beginner's Guide, Fifth Edition, Wale Soyinka, Tata McGraw-Hill, 2008.
5. Linux: Complete Reference, Richard Petersen, 6th Edition, Tata McGraw-Hill
6. Beginning Linux Programming, Neil Mathew, 4th Edition, Wiley Publishing, 2008.
7. <https://ubuntu.com/tutorials/command-line-for-beginners#1-overview>
8. <https://oracle-samples.github.io/oltrain/tracks/ol/intro-ol/>

Syllabus Committee:

Sr No	Name of the Faculty	Designation and College	Signature
1.	Ms. Ritika Sachdev	Assistant Professor, Smt. CHM College, Ulhasnagar	
2.	Ms. Lata Bhatia	Assistant Professor, Smt. CHM College, Ulhasnagar	
3.	Ms. Razia Khan	Assistant Professor, Smt. CHM College, Ulhasnagar	
4.	Ms. Gauri Hallale	Assistant Professor, Smt. CHM College, Ulhasnagar	

Name & Signature of the BoS Chairperson: Ms. Ritika Sachdev 

Name & Signature of the Dean: Ms. Ritika Sachdev 



**Smt. Chandibai Himathmal Mansukhani College
(Autonomous)**

**First Year B. Sc.
(Computer Science)**

Semester- I

Vertical – 5

Ability Enhancement Course (AEC) : 2 Credits

Value Education Course (VEC) : 2 Credits

Indian Knowledge System (IKS) : 2 Credits

**with effect from
Academic Year 2025-2026**

**Smt. Chandibai Himathmal Mansukhani College
(Autonomous)**

**First Year B. Sc.
(AEC- Ability Enhancement Course)**

Semester- I

**Title: Introduction to Communication Skills in
English**

**Vertical - 5
AEC - 2 Credits**

**with effect from
Academic Year 2025-2026**

Title: Introduction to Communication Skills in English
Course Code: CHMSCIAECI

Sr. No.	Heading	Particulars
1	Description of the Course:	Effective communication is the cornerstone of academic and professional success. This course introduces learners to foundational skills in English communication, with a focus on both oral and written competencies essential in academic, social, and workplace contexts. It aims to equip learners with the ability to read critically, write precisely, speak confidently, and listen actively. Emphasis is placed on building clarity, coherence, and conciseness in communication, along with an understanding of audience, purpose, and tone. The course integrates grammar reinforcement, vocabulary building, reading comprehension, and practice-oriented modules such as email etiquette, group discussion, and formal writing. Through dynamic classroom interactions and practical assessments, learners will gain confidence in using English effectively and purposefully.
2	Vertical 5	AEC- Ability Enhancement Course
3	Type	Theory+ Tutorial (Teaching Methods: Lecture/ Discussion/ Presentation/ Reading sessions/ Worksheets/ Listening to audio clips etc.)
4	Credit	2 Credits
5	Hours allotted	30 Hours
6	Marks allotted	50 Marks
7	Course Objectives:	1. To introduce students to the fundamentals of effective communication and its components. 2. To enhance students' reading comprehension through exposure to multiple genres and contexts. 3. To develop grammatical accuracy and lexical resourcefulness for academic and professional communication. 4. To strengthen verbal and non-verbal presentation skills and promote interactive speaking abilities. 5. To build competence in real-world writing tasks such as email drafting, bio-data preparation, and descriptive writing.

8	Learning Outcomes: Students will be able to LO-1: Understand and apply key principles of effective communication in varied contexts. LO-2: Comprehend and analyze written texts using appropriate reading strategies. LO-3: Recognize and correct common grammatical and lexical errors. LO-4: Engage in clear, confident, and context-appropriate spoken interactions. LO-5: Produce structured, coherent, and grammatically correct written content for academic and workplace use.
9	Syllabus UNIT I: Foundations of English Communication A) Core Concepts of Communication • Principles of Effective Communication: The 7 Cs • Verbal and Non-verbal Communication with Examples • Cross-cultural Communication in the Globalized World • Technology in Communication: Email, Messaging, Video Conferencing • Listening for Detail and Intent: Barriers to Listening and Strategies B) Reading Comprehension • Understanding the Main Idea and Supporting Details • Interpreting Tone, Purpose, and Bias • Using Context Clues for Vocabulary Building • Reading Visual Texts: Graphs, Charts, and Infographics <i>Sample readings will include excerpts from news articles, reports, editorials, and educational essays (200–250 words).</i> C) Grammar and Vocabulary • Subject-Verb Agreement • Sentence Structures • Punctuation and Capitalization • Commonly Confused Words • Editing and Proofreading Practice <i>A remedial and functional approach will be followed with contextual exercises.</i> UNIT II: Applied Communication Skills A) Speaking and Listening Skills • Introducing Oneself in Academic/Professional Settings • Participating in Group Discussions and Expressing Opinions • Delivering a Short Speech (2–3 minutes) on Familiar Topics • Understanding and Responding to Instructions • Listening Comprehension Practice through Audio/Video Clips

B) Functional Writing Skills

- Formal Email Writing with Subject and Tone Sensitivity
- Descriptive Paragraph Writing (People, Places, Processes)
- Bio-data and Resume Writing
- Drafting Job Applications (Solicited and Unsolicited)
- Writing a Statement of Purpose

10

Scheme of Examination and Assessment Pattern
Paper – 50 Marks

External Examination: Semester End External - 30 marks Time: 1:00 hour

Format of Question Paper

Question No	Nature of Questions	Marks
Q. 1	Short Notes (2 out of 4) Unit – I (A) – Principles and Types of Communication	10
Q. 2 (A)	Reading Comprehension – Unseen Passage (200–250 words) Unit –I (B)	06
Q. 2 (B)	Grammar – Error Correction, Transformation of Sentences (Unit- I - C)	04
Q. 3	Formal Writing Task (1 out of 2 choices) – Email, Resume, SoP, etc. (Unit – II -B)	10
Total		30

Internal Examination: Continuous Evaluation - 20 marks

	Assessment / evaluation	Marks
1.	Activity-Based Assessment – Presentation or Conversation Skills: Individual or group task based on Unit 2(A). Scheduled and assessed during regular class hours.	05
2.	Participation in One Additional Classroom Activity: Activity may include listening to audio clips, reading aloud, group discussion, summarizing, or vocabulary building.	05
3.	Attendance and Overall Engagement: Attendance as per institutional norms, along with active participation in class discussions and tasks.	05
4.	Short Writing Task (Descriptive Paragraph, Email, or SOP extract): Based on Unit 2(B); to be completed as a classroom assignment or home submission	05
Total		20

11

REFERENCES:

1. Adler, Ronald B., et al. *Understanding Human Communication*. 15th ed., Oxford UP, 2021.
2. Bailey, Stephen. *Academic Writing: A Handbook for International Students*. 5th ed., Routledge, 2018.

3. Barrass, Robert. *Students Must Write: A Guide to Better Writing in Coursework and Examinations*. Routledge, 2005.
4. Brown, Gillian, and George Yule. *Teaching the Spoken Language: An Approach Based on the Analysis of Conversational English*. Cambridge UP, 1983.
5. Carnegie, Dale. *The Quick and Easy Way to Effective Speaking*. Pocket Books, 2006.
6. Chaney, Lillian, and Jeanette Martin. *Intercultural Business Communication*. 6th ed., Pearson, 2014.
7. Cullen, Pauline, et al. *English Grammar in Use Supplementary Exercises*. Cambridge UP, 2019.
8. Eastwood, John. *Oxford Guide to English Grammar*. Oxford UP, 2005.
9. Gerson, Sharon J., and Steven M. Gerson. *Technical Communication: Process and Product*. 9th ed., Pearson, 2021.
10. Hewings, Martin. *Advanced Grammar in Use: A Self-study Reference and Practice Book for Advanced Learners of English*. 3rd ed., Cambridge UP, 2013.
11. Jones, Leo. *Functions of English: Communication Practice in English*. Cambridge UP, 1981.
12. Kumar, Sanjay, and Pushp Lata. *Communication Skills*. 2nd ed., Oxford UP, 2018.
13. Lynch, Tony. *Listening in Language Learning*. Longman, 1988.
14. McCarthy, Michael, and Felicity O'Dell. *Academic Vocabulary in Use*. Cambridge UP, 2008.
15. Nordquist, Richard. *The Essentials of English Grammar*. McGraw-Hill Education, 2016.
16. Quirk, Randolph, et al. *A Comprehensive Grammar of the English Language*. Longman, 1985.
17. Seely, John. *The Oxford Guide to Writing and Speaking*. Oxford UP, 2005.
18. Straus, Jane, et al. *The Blue Book of Grammar and Punctuation*. 12th ed., Jossey-Bass, 2021.
19. Wallace, Catherine. *Reading*. Oxford UP, 1992.
20. Zinsser, William. *On Writing Well: The Classic Guide to Writing Nonfiction*. Harper Perennial, 2016.

Department of English:

Sr. No	Name of the Faculty	Designation and College	Signature
1.	Prof. (Dr.) Pratima Das	Head & Professor, Dept. of English, Smt. CHM College	<i>Pratima Das</i>
2.	Prof. (Dr.) Kailas Aute	Professor, Dept. of English, Smt. CHM College	<i>Kailas Aute</i>
3.	Mr. Ananda Pandhare	Asst. Professor, Dept. of English, Smt. CHM College	<i>Ananda Pandhare</i>
4.	Ms. Sana Karale	Asst. Professor, Dept. of English, Smt. CHM College	<i>Sana Karale</i>

Name & Signature of the Ad hoc BoS Chairperson: Prof. (Dr.) Pratima Das *Pratima Das*

Name & Signature of the Dean: Prof. (Dr.) Pratima Das *Pratima Das*



**Smt. Chandibai Himathmal Mansukhani College
(Autonomous)**

First Year

Semester- I

Title: Communication Skills in Sindhi

Vertical - 5

Ability Enhancement Course - 2 Credit

**with effect from
Academic Year 2025-2026**

Title: Communication Skills in Sindhi**COURSE CODE: CHMSINAECI**

Sr. No.	Heading	Particulars
1	Description the Course:	Sindhi communication skills (B.Com.) Communication is the core component of the commerce and trade. In communication, language plays very significant role. If a student has mastered the skills of language, undoubtedly, he or she would be able to communicate in the best manner. In this course basic part of Sindhi language would be taught based on the NEP 2020. The innovative approach likes critical thinking, creative mind, use of technology will lead to communicating and participating with the different groups. The vocabulary section would be given prominence. The course would be in the Devanagari script so that it can attract majority of the students. Even non-Sindhi students shall have opportunity to adopt this course.
2	Vertical 1	AEC – Ability Enhancement Course
3	Type	Theory+ Practicum (Teaching Method: Lecture/ Discussion/Reading)
4	Credit	2 credits (1 credit = 15 hours for theory or 30 hours of Practical work in a semester)
5	Hours allotted	30 Hours
6	Marks allotted	50Marks (50 Marks each)
7	Course Objectives:	After successful completion of this course: 1. The learner will get understanding of communication skills. 2. The learner will understand how to accurate the pronunciation of special words in Sindhi 3. The learner will improve the conversation skill in Sindhi. 4. The learner will become best communicator in Sindhi language
8	Learning Outcomes:	Student will be able to LO1: Know the basic special features of Sindhi language. LO2: Understand the skills of communication. LO3: Knowing the conversation with businessmen and customers LO4: Know the etiquettes with parents, relatives, friends and others in effective way

Unit I – Fundamental of Sindhi Communication

- Introduction of Communication skill through Pictorial Presentation
- Importance of Language
- Basic aspects of language
 - i) Types of Language, ii) Role of Language, iii) Changes in Language
 - iv) Non-violent aspects of language v) Language & New generation
 - vi) Language & Modern Technology
- New Education Policy (NEP) & Importance of language
- Sindhi language: (Special features of spoken Sindhi language with pronunciation through audio visual presentation)

Unit II – Functional Communication

- Importance of Communication
- Types of Communication (Presentation through video clips)
 - i) Verbal, ii) Non-verbal, iii) Written iv) Digital Communication
- Characteristics of Communication
- Obstacles in Communication of Sindhi Language
- Methods of Best Communication through role plays
- Spoken Sindhi in Business
- Conversation with customers and proprietors

यूनिट – 1

- स्मचारी भाषा : वाक्फियत
- भाषा जी अहमियत
- भाषा जा बुनियादी पहल
 - i) किस्म, ii) भाषा जो किरदार, iii) भाषा मे तबदीलियूं iv) भाषा जा अहिसासाती पहलू v) भाषा ऐं नई नसल
- नई तैलीमी नीति ऐं बोलियुन जी अहमियत
- असां जी सिंधी बोली

यूनिट – 2

- राबते जी अहमियत
- राबते जा किस्म
 - i) जिबानी राबतो, ii) गैर जिबानी राबतो, iii) लिखत राबतो iv) डिजीटल राबतो
- राबते मां फायदा
- राबते में रंडकूं
- बेहतर राबते जा तरीका
- ग्राहकन सां सिंधी बोलीअ मे गुफ्तगू

10

Scheme of Examination and Assessment Pattern

Paper – 50 Marks

External Examination: Semester End External - 30 marks Time: 1:00 hour

Format of Question Paper

Attempt any 4 out of 6 questions.

Question No	Nature of Questions	Marks
Q1.	Objective Type – Fill in the Blanks / MCQs (Unit I0	15
Q2.	Question on reading skill (Unit II)	07
Q3.	Writing short story from outlines (Unit II)	08
		Total 30

Note:

1. Equal Weightage is to be given to all the modules.
2. Use of non-programmable scientific calculator is allowed in the examination.

Internal Examination: Continuous Evolution - 20 marks

	Assessment / evaluation	Marks
1.	Speaking Activities: (Presentation) Making presentations in the classroom	10
2.	Listening Activities: (Assignment) Listening to speeches, dialogues, announcement and summarizing them	10
	Total	20

11

REFERENCE BOOKS:

1. Sanchari Basha – By Dr. Pushpa Kodwani
2. Sindhi Pahakaa – Dr. Jetly M.K.
3. Sindhi Muhavahra – By Hardwani Lachhman
4. Sindhi Adhyat mak Shabdhkesh – By Hardwani Lachhman
5. Acho Sindhi Sikhu – By Hardwani Lachhman

Syllabus Committee:

Sr No	Name of the Faculty	Designation and College	Signature
1.	Mrs. Kajal Ramchandani	H.O.D. of Jai Hind College	<i>Kajal</i>
2.	Mrs. Komal Totani	Assistant Teacher, Smt. CHM College	<i>Pratima</i>

Name & Signature of the BoS Chairperson: (Mrs. Kajal Ramchandani) *Kajal*

Name & Signature of the Dean: (Dr. Pratima Das) *Pratima Das*



**Smt. Chandibai Himathmal Mansukhani College
(Autonomous)**

First Year

Semester- I

**Title: Environmental Management and
Sustainable Development-I**

**Vertical - 5
VEC- 2 Credits**

**with effect from
Academic Year 2025-2026**

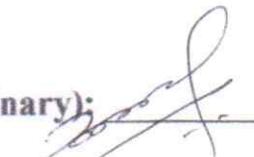
Title: Environmental Management and Sustainable Development-I**Course Code: CHMVECI**

Sr. No.	Heading	Particulars
1	Description of the Course:	This course introduces students to the basics of environmental management and sustainable development. It explains how ecosystems work, the importance of biodiversity, and the need to protect our natural resources. Students will learn about different environmental problems, human impact on nature, and how to manage disasters. The course also covers Indian environmental movements, ethics, and the role of public awareness. Real-life examples and case studies help students understand the connection between nature and human communities in a simple and practical way.
2	Vertical 5	VEC
3	Type & Teaching methods	Theory + Practicum Lecture/Discussion/Presentation/Case study,etc
4	Credits	2 Credits
5	Hours allotted	30 Hours
6	Marks allotted	50 Marks
7	Course Objectives: 1. To introduce about ecosystems, biodiversity and to make aware for the need of conservation. 2. To sensitize students towards environmental concerns, issues, and impacts of human population. 3. To analyze the impact of human population growth and development activities on the environment, including issues related to displacement, disaster response, and rehabilitation. 4. To foster awareness of environmental ethics and the role of cultural and social movements in shaping sustainable environmental practices through communication, policy, and activism.	
8	Learning Outcomes: Students will be able to - LO1: Explain the interrelationships within ecosystems and analyze energy flow and succession, using examples from various ecological zones. - LO2: Critically evaluate biodiversity levels and conservation strategies, applying knowledge of endemic species, threats, and ecological services to real-world scenarios. - LO3: Assess the socio-environmental implications of population growth, displacement, and disasters, incorporating case studies to understand sustainable development challenges.	

	LO4: Demonstrate an understanding of environmental ethics and advocacy, by interpreting the influence of cultural values, environmental movements, and communication strategies on sustainability.									
9	Syllabus UNIT I: Ecosystems, Biodiversity and Conservation • Introduction, structure, and function of ecosystems; Energy flow: food chains, food webs and ecological succession. Case studies of the following: a) Forest ecosystem b) Grassland ecosystem c) Desert ecosystem d) Aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries) • Levels of biological diversity: genetic, species and ecosystem diversity; Biogeographic zones of India; Biodiversity patterns • India as a mega-biodiversity nation; Endangered and endemic species of India • Threats to biodiversity: Habitat loss, poaching of wildlife, man-wildlife conflicts, biological invasions; Conservation of biodiversity: In-situ and Ex-situ conservation of biodiversity. • Ecosystem and biodiversity services: Ecological, economic, social, ethical, aesthetic and Informational value UNIT II: Human Communities and the Environment • Human population growth: Impacts on environment, human health and welfare. • Resettlement and rehabilitation of project affected persons; case studies. • Disaster management: floods, earthquake, cyclones and landslides. • Environmental movements: Chipko, Silent valley, Bishnois of Rajasthan. • Environmental ethics: Role of Indian and other religions and cultures in environmental conservation. • Environmental communication and public awareness, case studies (e.g. CNG vehicles in Delhi).									
10	Assessment Pattern Scheme of Examination and Assessment Pattern Paper – 50 Marks External Examination: Semester End External - 30 marks Time: 1:00 hours Format of Question Paper Attempt any 3 out of 4 questions. <table><tr><th>Question No.</th><th>Nature of Questions</th><th>Marks</th></tr><tr><td>Q.1</td><td>Theory based on Unit I</td><td>10</td></tr><tr><td>Q.2</td><td>Theory based on Unit I</td><td>10</td></tr></table>	Question No.	Nature of Questions	Marks	Q.1	Theory based on Unit I	10	Q.2	Theory based on Unit I	10
Question No.	Nature of Questions	Marks								
Q.1	Theory based on Unit I	10								
Q.2	Theory based on Unit I	10								

	Q.3	Theory based on Unit II	10
	Q.4	Theory based on Unit II	10
		Total	30
Internal Examination: Continuous Evaluation - 20 marks			
	Assessment / evaluation		Marks
	1.	Class Test, Creative writing/visits/role play (Short notes/ MCQ's/ Match the Pairs/ Answer in one sentence/ Quiz)	10
	2.	Project /Presentation / Viva/Group Discussion/Case study	10
		Total	20
11	REFERENCES : 1. Carson, R. 2002. Silent Spring. Houghton Mifflin Harcourt. 2. Gadgil, M., & Guha, R. 1993. This Fissured Land: An Ecological History of India. Univ. of California Press. 3. Gleeson, B. and Low, N. (eds.) 1999. Global Ethics and Environment, London, Routledge. 4. Gleick, P. H. 1993. Water in Crisis. Pacific Institute for Studies in Dev., Environment & Security. Stockholm Env. Institute, Oxford Univ. Press. 5. Sodhi, N.S., Gibson, L. & Raven, P.H. (eds). 2013. Conservation Biology: Voices from the Tropics. John Wiley & Sons. 6. Thapar, V. 1998. Land of the Tiger: A Natural History of the Indian Subcontinent. 7. Warren, C. E. 1971. Biology and Water Pollution Control. WB Saunders. 8. Wilson, E. O. 2006. The Creation: An appeal to save life on earth. New York: Norton. 9. Harper, Charles L. (2017) Environment and Society, Human Perspectives on Environmental Issues 6th Edition. Routledge. 10. Rajagopalan, R. (2011). Environmental Studies: From Crisis to Cure. India: Oxford University Press. 11. Harris, Frances (2012) Global Environmental Issues, 2nd Edition. Wiley- Blackwell.		

Name & Signature of the Dean & Ad-hoc BoS Chairperson (Interdisciplinary):


Dr. Nitin Arekar



**Smt. Chandibai Himathmal Mansukhani College
(Autonomous)**

First Year

Semester- I

Title: Indian Knowledge System

**Vertical - 5
IKS Subject - 2 Credits**

**with effect from
Academic Year 2025-2026**

Title: Indian Knowledge System

Course Code:CHMIKSI

Sr. No.	Heading	Particulars
1	Description of the Course:	This course introduces students to the Indian Knowledge System (IKS), emphasizing its historical depth, cultural relevance, and interdisciplinary value. Rooted in the context of Indian civilization, it explores the holistic development of knowledge from ancient to pre-modern times, including contributions in medicine, mathematics, logic, linguistics, governance, arts, and sciences. By revisiting the traditional education systems and intellectual heritage of India, the course encourages learners to connect ancient insights with contemporary disciplines. It aims to enhance awareness, foster appreciation of indigenous wisdom, and reveal the interconnectedness of various streams of knowledge, aligning with the goals of the NEP 2020.
2	Vertical 5	IKS
3	Type	Theory+ Practicum (Teaching Methods: Lecture/ Discussion/ Presentation etc.)
4	Credit	2 Credits
5	Hours allotted	30 Hours
6	Marks allotted	50 Marks
7	Course Objectives: 1. To sensitize the students about context in which they are embedded i.e. Indian culture and civilization including its Knowledge System and Tradition. 2. To help student to understand the knowledge, art and creative practices, skills and values in ancient Indian system. 3. To help to study the enriched scientific Indian heritage. 4. To introduce the contribution from Ancient Indian system & tradition to modern science & Technology	
8	Learning Outcomes: Students will be able to LO1: Understand and appreciate the rich Indian Knowledge Tradition LO2: Understand the contribution of Indians in various fields LO3: Experience increase subject-awareness and self-esteem LO4: Develop a comprehensive understanding of how all knowledge is ultimately intertwined	

Syllabus

UNIT I: Introduction

- Introduction to IKS (What is knowledge System, Characteristic Features of Indian Knowledge System)
- Why IKS? (Macaulay's Education Policy and its impact, Need of revisiting Ancient Indian Traditions)
- Scope of IKS (The Universality of IKS (from Micro to Macro), development form Earliest times to 18th Century CE)
- Tradition of IKS (Ancient Indian Education System: Home, Gurukul, Pathashala, Universities and ancient educational centres)
- Relevant sites in the vicinity of the Institute (Water Management System at Kanheri, Temple Management of Ambarnath, etc.)

UNIT II:

- Medicine (Ayurveda)
- Alchemy
- Mathematics
- Logic
- Art of Governance (Arthashastra)

UNIT III: (Select Any FIVE out of the following)

- Aesthetics
- Town Planning
- Strategic Studies
- Krishi Shastra
- Vyakaran & Lexicography
- Natyashastra
- Ancient Sports
- Astronomy
- Yoga and Wellbeing
- Linguistics
- Chitrasutra
- Architecture
- Taxation
- Banking
- Trade and Commerce

Scheme of Examination and Assessment Pattern

Paper – 50 Marks

External Examination: Semester End External - 30 marks Time: 1:00 hours

Format of Question Paper

Question No	Nature of Questions	Marks
Q1	Attempt any TWO Questions out of FIVE.	06
Q2	Attempt any THREE Questions out of FIVE	12
Q3	Attempt any THREE Questions out of FIFTEEN	12
		Total 30

Internal Examination: Continuous Evaluation - 20 marks

	Assessment / evaluation	Marks
1.	Class Test during the lectures (Short notes/ MCQ's/ Match the Pairs/ Answer in one sentence/ Puzzles).	10
2	Participation in Workshop/ Conference/Seminar/ Case Study/Field Visit/ Certificate Course/Project presentation /viva .	10
		Total 20

REFERENCES:

1. Concise history of science in India- D.M. Bose, S.N Sen, B.V. Subbarayappa.
2. Positive sciences of the Ancient Hindus- Brajendranatha seal, Motilal Banarasidas, Delhi 1958
3. History of Chemistry in Ancient India & Medieval India, P.Ray- Indian Chemicals Society, Calcutta 1956.
4. Charaka Samhita- a scientific synopsis, P. Ray & H.N Gupta National Institute of Sciences of India New Delhi 1965.
5. MacDonnell A.A- History of Sanskrit literature
6. Winternitz M- History of Indian Literature Vol. I, II
7. Dasgupta S.N & De S.K- History of Sanskrit literature Vol' I'
8. Ramkrishna Mission- cultural heritage of India Vol' I, II
9. Majumdar R. C & Pushalkar A.D- History & culture of the Indian people, Vol. I, II & III.
10. Keith A.B- History of Sanskrit literature'

Name & Signature of the Dean & Adhoc BoS Chairperson(Interdisciplinary):

(Dr. Nihir Arekar)



**Smt. Chandibai Himathmal Mansukhani College
(Autonomous)**

**First Year B. Sc.
(Computer Science)**

Semester- I

Vertical – 6

OJT, FP, CEP, CC, RP

**with effect from
Academic Year 2025-2026**

**Smt. Chandibai Himathmal Mansukhani College
(Autonomous)**

First Year

Semester- I

Title: Cocurricular Course-I

**Vertical - 6
Cocurricular Course - 2 Credits**

**with effect from
Academic Year 2025-2026**

Title: Cocurricular Course - I

Course Code: CHMCCI6

Sr. No.	Heading	Particulars
1	Description the Course:	This student-friendly Co-Curricular Course is uniquely designed to promote holistic development through active participation in various college-based activities. Unlike traditional theory-based subjects, this course emphasizes hands-on involvement and experiential learning. Students are encouraged to explore their interests and talents by engaging in cultural, social, literary, sports, extension, or club-based events conducted by the college throughout the academic year. Participation will be recorded and assessed based on involvement, initiative, team spirit, creativity, and consistency. The aim is to nurture essential life skills such as leadership, communication, collaboration, and responsibility in a supportive, informal setting. This non-theory course offers students the opportunities and the freedom to learn beyond the classroom and grow into well-rounded individuals, contributing positively to campus life and society.
2	Vertical 6	Cocurricular Course (Mandatory)
3	Type Teaching Methods	Non Theory Participation, Report Writing, Presentation etc.
4	Credit	2 Credits
5	Hours allotted	30 Hours
6	Marks allotted	50 Marks
7	Course Objectives: 1. To inculcate a spirit of active participation in cultural, social, environmental, and creative activities. 2. To enhance personal and interpersonal skills through real-life experiences and teamwork. 3. To foster a sense of responsibility, leadership, and community engagement among students. 4. To develop self-confidence and emotional well-being through creative expression and collaboration. 5. To integrate classroom learning with experiential learning for holistic growth.	
8	Learning Outcomes: By the end of the course, students will be able to: LO1: Participate meaningfully in diverse co-curricular activities and reflect on their learning experiences. LO2: Demonstrate improved communication, leadership, and teamwork skills. LO3: Exhibit increased awareness of social responsibility and civic engagement. LO4: Build confidence through creative, cultural, and intellectual expressions. LO5: Maintain a portfolio or activity log to track participation and personal development.	

9

Syllabus

Unit I - Suggested Areas of Participation in the activities:

- **Cultural Events:** Drama, dance, music, literary events, debates, etc.
- **Social Outreach:** Blood donation, awareness campaigns, cleanliness drives.
- **Clubs & Societies:** Photography, quiz, environment club, shram club, etc.
- **Sports & Fitness:** College tournaments, yoga, marathons, fitness challenges.
- **Institutional Events:** Foundation Day, Annual Day, College Festivals, Intercollegiate events.
- **National Festivals:** Independence Day, Republic Day etc.

Unit II - Program Specific Topics

- **Workshops/Seminars:** Report Writing, Personality Development, Soft Skills, Leadership Talks.
- **Speak, Show, Shine:** Presentation / Poster Presentation / Viva and Learning Experience

Mode of Evaluation:

- **Faculty Coordinator:** To guide and evaluate student progress.
- **Participation Proof:** Certificates, photos, attendance records.
- **Reflective Journal:** Minimum 2–3 pages summarizing experiences, learning, and growth.
- **Final Viva/Presentation:** 5-minute talk on poster presentation and on overall learning.

10

Scheme of Examination and Assessment Pattern Based on 3 approved Activities Semester End External - 30 marks

Activity No	Nature of Activities	Marks
1.	Title of Approved Activity - 1	10
2.	Title of Approved Activity - 2	10
3.	Title of Approved Activity - 3	10
	Total	30

Internal Examination: Continuous Evaluation – 20 marks

	Assessment / Evaluation	Marks
1.	Reflective journal	10
2.	Presentation/ poster presentation/viva	10
	Total	20

Suggested Readings:

- How to Win Friends and Influence People
- The 7 Habits of Highly Effective People
- Thinking, Fast and Slow
- Leaders Eat Last
- Talk Like Ted

Name & Signature of the Principal & Chairperson, Academic Council:


Dr. Manju Lalwani Pathak