



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 Physics SEM - I & SEM - V respectively.

It is hereby communicated that the recommendations of the syllabus made by the Ad-hoc Board of Studies in Physics coordinated by the Dean, Faculty of Pure Sciences in the meeting of Academic Council held on 23rd May, 2025 vide item No. 5.1, 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 Pure 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
(Physics)
(Aided Course)

Semester – I

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

PREAMBLE

The B.Sc. Physics program is designed to provide a comprehensive understanding of both theoretical and practical aspects of Physics at undergraduate level. This program is built upon the foundation laid in the first two years and introduces students to core concepts and principles that are fundamental for further studies in physics, engineering, and related fields.

The syllabus includes a variety of subjects such as **Mathematical Physics, Classical Mechanics, Atomic and Molecular Physics, Solid State Physics, Electrodynamics, Relativity, Electronics and Electronic Instrumentation**. These subjects aim to enhance students' understanding of physical phenomena, develop their problem-solving skills, and prepare them for research, industrial applications, or higher education.

Through rigorous coursework and practical experiments, the B. Sc. Physics program is designed to shape students into competent physicists with a broad and deep understanding of physical principles, making them well-equipped for various career opportunities and advanced academic pursuits.

PROGRAMME SPECIFIC OUTCOMES (PSOs)

PSO-1 Students will understand the significance of Newton's law of motion and its applications. Students will also be able to explain the concept of friction, work and energy and be able to solve problems using them. It will also help them to understand the concept of center of mass and rotational mechanics.

PSO-2 Students will understand physical characteristics of simple harmonic motion which has wide applications in mechanical engineering to analyze and design systems such as suspension systems in vehicles.

PSO-3 Expose students to the theoretical fundamental concepts of elasticity and fluid dynamics and inculcate knowledge of basic governing equations of elasticity and fluid dynamics.

PSO-4 Students will understand basic concepts of electronic devices such as resistors, capacitors, inductors, transformers and P-N junction diodes. And thereby be able to apply knowledge to develop circuits using electronic devices.

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

**First Year B. Sc.
(Physics)
Semester- I**

Title: Introduction to Mechanics

**Vertical - 1
Major Subject – 2 Credit**

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

Title: Introduction to Mechanics

Course Code: CHMPHI1

Sr. No.	Heading	Particulars
1	Description the Course:	This course provides a comprehensive introduction to classical mechanics, focusing on the fundamental principles that govern motion and the behaviour of matter. Students will explore Newton's laws of motion, frictional forces, work and energy, and the dynamics of systems such as damped and driven oscillators. The course also delves into simple harmonic motion, elasticity, and fluid dynamics, providing a strong conceptual and mathematical framework for understanding the physical world.
2	Vertical 1	Major
3	Type Teaching Methods	Theory Lecture/discussion/presentations
4	Credit	2 Credits
5	Hours allotted	30 Hours
6	Marks allotted	50 Marks
7	Course Objectives: 1. Explain Newton's laws of motion, friction, work, energy and able to solve problems using them. 2. Learn the mechanics of multi-particle system using concepts of center of mass and conservation laws. 3. Study the mechanics of undamped/ (simple harmonic motion, uniform circular motion) and damped oscillations (Forced oscillations, two body oscillation) 4. Describe qualitatively how undamped and damped oscillations are implemented in physical problems such as torsional, compound, and simple pendulums. 5. Study elasticity and applications of fluid mechanics 6. Demonstrate quantitative problem solving skills in all the topics covered in the syllabus	
8	Learning Outcomes: after successful completion of the course, learner will be able to LO1: Understand Newton's laws of motion, friction, work, energy and able to solve problems using them. LO2: Comprehend Work and Energy equivalence and its applications through suitable numerical. LO3: Understand mechanics of multi-particle system using concepts of center of mass and conservation laws. LO4: Understand how undamped and damped oscillations are implemented in physical problems LO5: Understand the concepts of elasticity and fluid mechanics LO6 Demonstrate quantitative problem solving skills in all the topics covered	

Syllabus

UNIT I:

- **Mathematical methods in Physics:** Units , dimensions, vectors and scalars, resolution of vectors, dot product and cross product of two vectors, Differential Calculus : $\frac{dy}{dx}$ as Rate Measurer, Maxima and Minima, Integral Calculus
- **Newton's Laws of Motion:** Newton's first, second and third laws of motion, interpretation and applications, pseudo forces, inertial and non-inertial frames of reference worked out examples (with friction present).
- **Friction:** Advantages & disadvantages of friction in daily life, Friction as the component of Contact force, Kinetic Friction, Static friction, laws of friction, Understanding friction at atomic level.
- **Work and Energy:** Kinetic Energy, Work and Work-energy theorem, Potential Energy, Conservative and Non-Conservative Forces, Definition of Potential Energy and Conservation of Mechanical Energy, worked out Examples.
- **Centre of mass and Linear momentum :** Centre of Mass, Centre of Mass of Continuous Bodies, Motion of the Centre of Mass, Linear Momentum and its Conservation Principle
- **Rotational Mechanics:** Rotation of a Rigid Body about a Given Fixed Line , Kinematics, Rotational Dynamics , Torque of a Force about the Axis of Rotation, Angular Momentum, conservation of Angular Momentum , Calculation of Moment of Inertia , Two Important Theorems on Moment of Inertia

UNIT II:

- **Oscillations:** The Simple Harmonic Oscillator, Simple Harmonic motion, Relation between Simple Harmonic Motion and Uniform Circular Motion, Damped Harmonic Motion, Forced Oscillations and Resonance
- **Applications of Simple Harmonic oscillations:** Simple Pendulum, Torsional Pendulum and Compound pendulum (Qualitative study)
- **Elasticity:** An introduction to Elasticity, Stress, Strain, Hooke's Law and Moduli of Elasticity
- **Fluid mechanics** (Qualitative study): An introduction to Viscosity, Poiseuille's Equation, Stokes' Law, Terminal velocity, Measurement of Coefficient of Viscosity using Stoke's method, Streamline and Turbulent flow, Equation of Continuity, Bernoulli's equation, Applications of Bernoulli's equation (Ventury tube, Aspirator pump).

Scheme of Examination and Assessment Pattern

Paper – 50 Marks

A. External Examination: Semester End External - 30 marks Time: 1hour
Format of Question Paper

Question No	Nature of Questions	Marks
Q1. (A)	Attempt any Two i) Theory ii) Theory	10

	iii) Theory iv) Theory	
Q1. (B)	Attempt any One i) Problem ii) Problem	05
Q2. (A)	Attempt any Two i) Theory ii) Theory iii) Theory iv) Theory	10
Q2. (B)	Attempt any One i) Problem ii) Problem	05
		Total 30

B. Internal Examination: Continuous Evaluation - 20 marks

	Assessment / evaluation	Marks
1.	Continuous Evaluation through: Quizzes, Class Tests, presentation, project, role play, creative writing, assignment etc.(at least 3)	20

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REFERENCE BOOKS:

- HCV: H.C. Verma, Concepts of Physics-Part I (Second Reprint of 2020) Bharati Bhavan Publishers and Distributers**
(HCV:1.3, 1.5, 2.1,2.6 to 2.11)
(HCV: 5.1 to 5.5)
(HCV: 6.1 to 6.5)
(HCV: 8.1, 8.2, 8.5, 8.6, 8.7)
(HCV: 9.1 to 9.4)
(HCV: 10.1 to 10.5, 10.8 to 10.10, 10.14,10.15)
(HCV: 14.2, 14.3, 14.4, 14.5)
- RH: Resnick and Halliday: Physics – I , 5th Edition.**
RH:17.2, 17.3,17.6, 17.7, 17.8
RH:17.5

Additional Reference Books

- Mechanics – H. S. Hans and S. P. Puri, Tata McGraw Hill (2nd ED.).**
- An introduction to mechanics - Daniel Kleppner and Robert Kolenkow**

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

**First Year B. Sc.
(Physics)**

Semester- I

Title: Major Practical

**Vertical - 1
Major Practical – 2 Credit**

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

Title: Major Practical
Course Code: CHMPHI2

Sr. No.	Heading	Particulars
1	Description the Course:	This practical session is designed to provide students with the opportunity to actively engage in hands-on experiments while learning essential scientific skills. The session includes the following key components. Students gain practical experience by working directly with the apparatus, helping them develop proficiency in handling equipment and executing experiments. Students apply the theoretical concepts learned in the classroom to real-world scenarios, reinforcing their understanding through practical application. Students are trained to identify errors in their experimental setups and results, as well as to estimate and quantify the impact of these errors on the final outcomes. The session fosters hands-on environment where students can freely explore, experiment, and learn from mistakes, enhancing their confidence in performing experiments and applying concepts. Practical sessions are essential for bridging the gap between theory and real-world scenario, ensuring that students develop a comprehensive understanding of the subject matter and are well-equipped to tackle real-world challenges.
2	Vertical 1	Major
3	Type Teaching Methods	Practical
4	Credit	2 Credits
5	Hours allotted	60 Hours
6	Marks allotted	50 Marks
7	Course Objectives: After successful completion of this course students will be able to: 1. learn the skills while performing experiments. 2. know how to use the apparatus without fear & hesitation. 3. learn the concepts of physics theory concepts and their practical application. 4. learn the errors and their estimation.	

8	Learning Outcome: after successful completion of the course, learner will be able to LO 1: understand & practice the skills while performing experiments. LO 2: understand the use of apparatus and their use without fear & hesitation. LO 3: correlate the physics theory concepts to practical application. LO 4: understand the concept of errors and their estimation.	
9	Syllabus	
	Sr. No	Name of experiment
		GROUP A
	1	Torsional Oscillation: To determine modulus of rigidity η of a material of wire by Torsional oscillations
	2	Moment of inertia of Flywheel
	3	Young's Modulus of a bar by method of vibrations
	4	Spectrometer: To determine of angle of Prism
		GROUP B
	5	Frequency of AC Mains: To determine frequency of AC mains (Sonometer wire)
	6	To study Thermistor characteristics: Resistance Vs Temperature
	7	To determine capacitance in AC circuits using R and C
	8	To determine Inductance in AC circuits using L and R
	9	LDR Characteristics: To study the dependence of LDR resistance on intensity of light
		GROUP C: Skill Experiment
	1	Use of Vernier Callipers, Micrometer Screw Gauge and Travelling Microscope
	2	Graph plotting (Plot BE/A verses A graph for 30 atoms, Plot Packing Fraction graph for 30 atoms)
	3	Spectrometer: Schuster's Method
	4	To determine the Resistance & Capacitance using Colour code/Number & verify using Multimeter (Analog/Digital).
	5	Use of digital multimeter
	6	Absolute and relative error calculation

Scheme of Examination and Assessment Pattern
Paper – 50 Marks
A. Semester End Practical Examination - 30 marks Time: 2hours

Assessment / evaluation	Marks
One Experiment (either from group A or group B)	20
Viva-voce	05
Journal	05
Total	30

B. Internal Examination: - 20 marks

Assessment / evaluation	Marks
One skill experiment	10
Viva-voce	05
Overall performance	05
Total	20

Note:

1. All the measurements and readings should be written with proper units in SI system only.
2. After completing all the required number of experiments in the semester and recording them in journal, student will have to get their journal certified and produce the certified journal at the time of practical examination.
3. While evaluating practical, weightage should be given to circuit/ray diagram, observations, tabular representation, experimental skills and procedure, graph, calculation and result.
4. Skill of doing the experiment and understanding physics concepts should be more important than the accuracy of final result.
5. Note: Exemption of two experiments from section A and / or B and / or C may be given if student carries out any one of the following activities.
 - Collect the information of at least five Physicists with their work or any three events on physics, report that in journal.
 - Execute a mini project to the satisfaction of teacher in-charge of practical.
 - Participate in a study tour or visit & submit a study tour report
 - For practical examinations, the learner will be examined in one experiment
 - Each experiment will be of two lecture hours' duration.
 - A Minimum 4 from each group and in all minimum 8 experiments must be reported in journal
 - 4 skill experiments are required to be completed compulsorily. Students are required to report all these experiments in the journal. Evaluation in viva voce will be based on regular experiments and skill experiments.

A learner will be allowed to appear for the semester and practical examination only if he submits a certified journal of Physics or a certificate that the learner has completed the practical course of Physics Semester I as per the minimum requirements

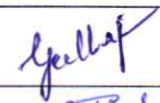
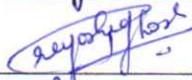
REFERENCE BOOKS:

1. Advanced course in Practical Physics D. Chattopadhyaya, P. C. Rakshit & B Saha. (6th Edition) Book and Allied Pvt. Ltd.
2. B. Sc. PRACTICAL Physics – Harnam Singh S. Chand & Co. Ltd. 2001
3. B.Sc. Practical Physics – C. L Arora (1st Edition) -2001 S. Chand and Co Ltd.

Additional Reference Books

1. A test book of advanced practical PHYSICS _ SAMIR Kumar Ghosh, New Central Book Agency (3rd edition)
2. Practical Physics CL Squires (3rd Edition) Cambridge University
3. University Practical Physics – DC Tayal. Himalaya Publication
4. Advanced Practical Physics – Worsnop & Flint.

Syllabus Committee:

Sr No	Name of the Faculty	Designation and College	Signature
1.	Dr. Kavita Harisinghani	Head of Department of Physics, Associate Professor, Smt. CHM College, Ulhasnagar	
2.	Dr. Rashmi Deshpande	Associate Professor, Smt. CHM College, Ulhasnagar	
3.	Mrs. Geetha Nair	Associate Professor, Smt. CHM College, Ulhasnagar	
4.	Dr. Preyoshi Bose	Assistant Professor, Smt. CHM College, Ulhasnagar	
5.	Dr. Smita Kale	Assistant Professor, Smt. CHM College, Ulhasnagar	
6.	Mr. Sarang Kavali	Assistant Professor, Smt. CHM College, Ulhasnagar	

Name & Signature of the BoS Chairperson: Dr. Kavita Harisinghani 

Name & Signature of the Dean: Dr. NEENA ANAND 



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

First Year B. Sc.

Semester- I

**Vertical - 2
Minor– Not applicable**

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

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

First Year B. Sc.

Semester- I

**Vertical - 3
Open Elective – 2 Credit**

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

OPEN ELECTIVES (OE)

For First Year B.Sc.

(Physics, Chemistry, Mathematics, Botany, Zoology, Microbiology)

Students are required to select any one 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 Readiness
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.
(Physics)**

Semester- I

Title: - Laboratory Equipment Maintenance

**Vertical - 4
Vocational Skill Course (VSC) – 2 Credit**

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

Title: - Laboratory Equipment Maintenance
Course Code: CHMPHI4

Sr. No.	Heading	Particulars
1	Description the Course:	This hands-on course is designed to provide students with foundational knowledge and practical skills in electronics and laboratory techniques. Students will learn to identify, understand, and measure various electronic components, including passive components like resistors, capacitors, and inductors. The course covers essential of soldering, de-soldering and mounting practices, for building and modifying basic circuits on printed circuit boards (PCBs). Additionally, students will explore AC and DC power supplies, gaining an understanding of their application in circuit design and testing. Practical sessions will also focus on the maintenance and safe handling of essential laboratory equipment. By the end of the course, students will have developed critical skills in circuit assembly, testing, and troubleshooting, laying the foundation for more advanced studies in electronics.
2	Vertical 4	VSC
3	Type Teaching Methods	Theory and Practical Lecture/discussion/presentations/Experiments
4	Credit	2 Credits
5	Hours allotted	60 Hours
6	Marks allotted	50 Marks
7	Course Objectives: 1. Learn to identify and understand electronic components. 2. Identify, measure and testing of various types passive components 3. Learn Soldering and de-soldering of components on PCB and mounting of basic circuits on PCB. 4. Learn about of A.C & D.C. power supply 5. Learn Maintenance of basic laboratory equipment's.	

8	Learning Outcome: after successful completion of the course, learner will be able to LO1: Gain knowledge of the different electronic components LO2: Understand to identify components and faults in it. LO3: Acquire skills of circuit Soldering and de-soldering of electronic components in a given circuit LO4: Understanding of basic building blocks of power supplies. LO5: Hands on experience in handling and maintaining laboratory, electronic equipment.
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Syllabus**Unit-I (15 Lectures)**

- Testing of Passive Electronic Components using Digital Multimeter (DMM)
- Introduction to Active and Passive components
- Passive components resistors and its types
- capacitors and its types
- inductors
- failures in fixed resistors
- testing of resistors
- variable resistors
- variable resistor as potentiometer
- measuring resistors using colour codes.

Active Components:

- Diode and its types
- bipolar junction transistors
- integrated circuit

Unit-II (15 Lectures)

- Testing of semiconductor devices, soldering and troubleshooting
- Testing of Semiconductor devices & understanding types of failures
- Basics of soldering:
- soldering alloy
- soldering iron
- soldering & de-soldering
- dry soldering and good contact.
- Types of Laboratory Power supplies and its maintenance.

List of Experiments (30 Lectures)

- To identify different types of Wires, power cables, probes, fuses used in the laboratory and check their continuity using DMM
- Identification of various types passive components - resistors, capacitors and inductors used in laboratory.
- Measurement of resistors using colour codes & DMM-
- Identification of various types of semiconductor devices: different types of diodes, bipolar junction transistors.
- Soldering and de-soldering of electronic components in a given circuit
- Mounting simple circuit on PCB.
- Study of a.c & d.c power supplies used in laboratory.

10

Scheme of Examination and Assessment Pattern

Paper – 50 Marks

A. External Examination: Semester End External - 30 marks Time: 1hour

Format of Question Paper

Question No	Nature of Questions	Marks
Q1.	Q:1 Attempt any Three (5 marks each) i) Theory ii) Theory iii) Theory iv) Theory v) Theory	15
Q2.	Q:1 Attempt any Three (5 marks each) i) Theory ii) Theory iii) Theory iv) Theory v) Theory	15
		Total 30

B. Internal Examination: - 20 marks Duration: 2hours

	Assessment / evaluation	Marks
	One Experiment	15
	Viva-voce	02
	Journal	03
	Total	20

11

REFERENCE BOOKS:

1. Text book of Electrical Technology, by B.L. Theraja and A.K. Theraja
2. Modern Electronic Equipment: Troubleshooting, Repair and Maintenance by Khandpur, TMH 2006
3. Electronic Instruments and Systems: Principles, Maintenance and Troubleshooting by R. G. Gupta Tata McGraw Hill Edition 2001
4. Student Reference Manual for Electronic Instrumentation Laboratories by Stanley Wolf, and Richard F. M. Smith, Prentice Hall of India Pvt. Ltd. New Delhi
5. Consumer Electronics by S. P. Bali, Pearson

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

**First Year B. Sc.
(Physics)**

Semester- I

**Title: - Basic Instrumentation Skills and
Basic Mathematical Skills for Physics**

**Vertical - 4
Skill Enhancement Course (SEC) – 2 Credit**

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

Title: - Basic Instrumentation Skills and Basic Mathematical Skills for Physics
Course Code: CHMPHI5

Sr. No.	Heading	Particulars
1	Description the Course:	This course provides a comprehensive introduction to the use of various laboratory instruments and measurement techniques commonly used in scientific and engineering practices. Students will develop a deep understanding of concepts such as accuracy, precision, resolution, range, and error analysis, which are essential for interpreting and validating experimental data. Practical experience in building simple electrical circuits on breadboards and Printed Circuit Boards (PCBs). Proficiency in using a scientific calculator for formula based mathematical calculations, including trigonometric, logarithmic. Development of key mathematical concepts that describe physical laws, with an emphasis on applying these principles to solve real-world problems.
2	Vertical 4	SEC
3	Type Teaching Methods	Practical Lecture/discussion/presentations/Experiments
4	Credit	2 Credits
5	Hours allotted	60 Hours
6	Marks allotted	50 Marks
7	Course Objectives: 1. Generate awareness among students about handling different laboratory instruments scientifically. 2. Develop concepts of accuracy precision, resolution, range and errors/uncertainty in measurement. 3. Understand PCB & Breadboard to construct simple circuits 4. Expose students to systematic of scientific calculator. 5. Illustrate necessary mathematical concepts to develop corresponding skills 6. Develop the problem solving skill	

8	Learning Outcome: after successful completion of the course, learner will be able to LO 1: Accomplish desired skills to handle different laboratory instruments scientifically. LO 2: Acquire knowledge about precision and accuracy in measurements LO 3: Develop basic electronic circuit using different techniques. LO 4: Develop confidence to use scientific calculator systematically. LO 5: Apply mathematical tools to understand theoretical concepts of physics. LO 6: Apply mathematical tools to understand theoretical concepts of physics.
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Syllabus

Unit 1: Basic Instrumentation skills

- Study and determination of Focal length of a convex lens.
- Use of Voltmeter, Ammeter & Digital Multi-meter.
- Use of CRO: Measurement of voltage (AC, DC), Frequency.
- Logic gate IC Testing.
- Introduction to PCB & Breadboard.
- Building Electronic Circuits using Breadboard
- Graph plotting - plotting of graphs and finding slope and intercept.
- Graph plotting - semi log graph paper.
- Theory of errors and calculating-Error for given data

Unit 2: Basic Mathematical Skills

- Use of scientific Calculator
- Basic trigonometry and its applications in physics
- Concept of logarithm and its application to Physics
- Concept of derivatives and its application to Physics
- Concept of integration and its application to Physics
- Concept of differential equations (1st order) and its application to Physics

10

Scheme of Examination and Assessment Pattern
Paper – 50 Marks

A. External Examination: Semester End External - 30 marks Time: 2hours

Assessment / evaluation	Marks
One Experiment	20
Viva-voce	05
Journal	05
Total	30

B. Internal Examination: - 20 marks

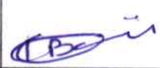
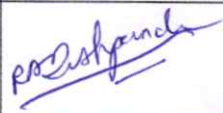
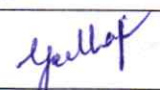
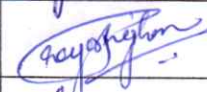
Assessment / evaluation	Marks
Assignment or Test on practical skill experiment	10
Viva-voce	05
Over all performance	05
Total	20

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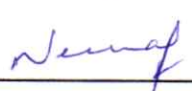
REFERENCE BOOKS:

1. Text book of Electrical Technology, by B.L. Theraja and A.K. Theraja
2. Modern Electronic Equipment: Troubleshooting, Repair and Maintenance by Khandpur, a. TMH 2006
3. Electronic Instruments and Systems: Principles, Maintenance and Troubleshooting by R. G. Gupta Tata McGraw Hill Edition 2001
4. Student Reference Manual for Electronic Instrumentation Laboratories by Stanley Wolf, and Richard F. M. Smith, Prentice Hall of India Pvt. Ltd. New Delhi
5. Consumer Electronics by S. P. Bali, Pearson

Syllabus Committee:

Sr No	Name of the Faculty	Designation and College	Signature
1.	Dr. Kavita Harisinghani	Head of Department of Physics, Associate Professor, Smt. CHM College, Ulhasnagar	
2.	Dr. Rashmi Deshpande	Associate Professor, Smt. CHM College, Ulhasnagar	
3.	Mrs. Geetha Nair	Associate Professor, Smt. CHM College, Ulhasnagar	
4.	Dr. Preyoshi Bose	Assistant Professor, Smt. CHM College, Ulhasnagar	
5.	Dr. Smita Kale	Assistant Professor, Smt. CHM College, Ulhasnagar	
6.	Mr. Sarang Kavali	Assistant Professor, Smt. CHM College, Ulhasnagar	

Name & Signature of the BoS Chairperson: Dr. Kavita Harisinghani 

Name & Signature of the Dean: Dr. Neena Anand 



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

**First Year B. Sc.
English
(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

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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

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1. Adler, Ronald B., et al. *Understanding Human Communication*. 15th ed., Oxford UP, 2021.
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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: CHMSINAEI**

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

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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

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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

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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.
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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):

[Signature]
Dr. Nitin Arekar



**Smt. Chandibai Himathmal Mansukhani College
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First Year B.Sc.

Semester- I

**Vertical - 6
CC – Not Applicable**