



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



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. in Data Science SEM - I.

It is hereby communicated that the recommendations of the syllabus made by the Ad-hoc Board of Studies in Data Science coordinated by the Dean, Faculty of Applied Sciences in the meeting of Academic Council held on 23rd May, 2025 vide item No. 2.4, 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
(Data 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

The Bachelor of Science in Data Science is an interdisciplinary program designed to prepare students for a data-driven world. It provides a strong foundation in mathematics, statistics, and programming enabling students to analyze and interpret data effectively. The curriculum includes core machine learning techniques, big data technologies, and real-world applications through capstone projects and internships. Ethical data use and privacy are emphasized, alongside the societal impact of data science. Students build communication skills, particularly in data visualization and explaining insights to non-technical audiences. The program aims to develop analytical, computational, and problem-solving abilities, as well as adaptability to emerging tools and trends. Graduates will be proficient in data analysis, machine learning, and big data tools, with strong ethical awareness, collaboration skills, and leadership potential—ready to contribute across diverse sectors such as healthcare, finance, and marketing.

PROGRAMME SPECIFIC OUTCOMES (PSOs)

PSO1: Graduates will develop strong analytical skills, including the ability to collect, clean, analyze, and interpret data using statistical methods, programming languages, and machine learning techniques.

PSO2: Graduates will demonstrate proficiency in machine learning and big data technologies enabling them to build predictive models and process large datasets efficiently.

PSO3: The program will foster critical thinking and problem-solving skills, allowing graduates to approach complex challenges analytically and develop innovative, data-driven solutions across various sectors.

PSO4: Graduates will effectively communicate insights using data visualization and written/oral skills, while upholding ethical standards and collaborating successfully in multidisciplinary teams.

PSO5: Graduates will embrace continuous learning, adapt to emerging technologies and trends in data science, and exhibit leadership qualities to make strategic, data-informed decisions in professional environments.

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

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

Semester- I

Title: Python Programming

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

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

Title: Python Programming

Course Code: CHMDSI1

Sr. No.	Heading	Particulars
1	Description of the Course:	Python programming is widely valued for its simplicity, versatility, and readability, making it a cornerstone in today's tech industry. Its adaptability spans sectors like web development, data science, automation, IoT and blockchain. With powerful libraries such as Django, NumPy and Pandas, Python supports efficient development and problem-solving. Its user-friendliness and interdisciplinary relevance make it a popular choice in academic courses and professional settings alike. The demand for Python skills continues to grow, leading to strong job prospects in roles such as web developers, data analysts, and machine learning engineers.
2	Vertical 1	Major
3	Type & Teaching Method	Theory + Practicum (Lectures / Problem Solving / Discussion / Presentation / Case Study / Demonstration etc.)
4	Credit	2 Credits
5	Hours allotted	30 Hours
6	Marks allotted	50 Marks
7	Course Objectives: 1. To understand the concept of data types and other basic elements in Python. 2. To learn control statements and operators in Python. 3. To understand the concept of lists, tuples and dictionaries in Python. 4. To apply Python programming concepts including functions, string operations, and built-in modules for managing date, time, and calendar. 5. To learn file handling in Python.	

8	Learning Outcomes: Student will be able to: LO1: Use variables with different data types and input output functions. LO2: Ability to use control statements and operators in programming. LO3: Acquire knowledge of lists, tuples and dictionaries. LO4: Use Python functions, string operations and date-time handling. LO5: Perform file handling tasks proficiently.
9	Syllabus UNIT I: • Introduction to Python Language: Overview, Features of Python, Execution of a Python Program, Python Interpreter, Comparison of Python with C and Java. • Data Types, Variables and Other Basic Elements: Comments, Docstrings, Data types-Numeric, Compound, Boolean, Dictionary, Sets, Mapping, Basic Elements of Python, Variables. • Input and Output Operations: Input Function, Output Statements, Command Line Arguments • Control Statements: Control Statements- Loop Statement, The else Suite, break Statement, continue Statement, pass Statement, assert Statement, return Statement. • Functions: Defining & Calling a Function, Returning Results, Returning Multiple Values, Built in Functions, Parameters and Arguments, Recursive Functions, Anonymous or Lambda Functions. UNIT II: • Operators: Arithmetic operator, Assignment operators, Unary minus operator, Relational operators, Logical operators, Bitwise operators, Membership operators, Identity operators, Precedence of Operators, Associativity of Operators. • Date and Time in Python: Date and Time, Date and Time Now, Combining Date and Time, Formatting Dates and Times, Finding Durations using “timedelta”, Comparing Two Dates, Sorting Dates, Stopping Execution Temporarily, Knowing the Time taken by a Program, Working with Calendar Module. • Strings: Creating Strings, Functions of Strings, Working with Strings, Length of a String, Indexing & Slicing, Repeating& Concatenation of Strings, Checking Membership, Comparing Strings, Removing Spaces, Finding Substrings, Counting Substrings, Strings are Immutable, Splitting and Joining Strings, Changing Case, Checking Starting and Ending of a String, Sorting & Searching in the Strings, Formatting the Strings, Working with Characters. • Lists and Tuples: Lists, List Functions and Methods, List Operations, Tuples. • Dictionaries: Creating a Dictionary, Operators in Dictionary, Dictionary Methods, Using for Loop with Dictionaries, Operations on Dictionaries, Ordered Dictionaries. • File Handling: Introduction to files, Types of Files, Opening and Closing of files, Reading from and writing to files, Working with CSV files.

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	Based On	Options	Marks
Q1	Unit 1	Any 2 out of 4	10
Q2	Unit 2	Any 2 out of 4	10
Q3	Unit 1 & 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.	Project, Self-Learning Evaluation, Presentation, etc.	10
		Total 20

11

REFERENCES:

1. Programming through Python M. T. Savaliya, R.K Maurya, G.M Magar, Staredu Solutions, 1st edition (2018)
2. Python DataScience Handbook, Jake VanderPlas, O'Reilly Media, 1st edition (2016)
3. Let Us Python, Yashwant Kanetkar, BPB publication , 1st edition (2019)
4. Programming in Python3, Mark Summerfield, Pearson Education, 2nd edition (2018)
5. Learning Python, LutzM, O'Reilly- Shroff, 5th edition, 2013
6. Beginning Python, Magnus LieHetland, Apress, 2nd edition, 2009
7. Star Python, Star Certification, Star Certification, 1st, 2018
8. <https://docs.python.org/3/tutorial/index.html>
9. <https://www.freecodecamp.org/learn/scientific-computing-with-python/>

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

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

Semester- I

Title: Descriptive Statistics

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

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

Title: Descriptive Statistics**Course Code: CHMDSI2**

Sr. No.	Heading	Particulars
1	Description of the Course:	Descriptive Statistics is a foundational tool in data analysis, helping transform complex data into clear, actionable insights through measures like mean, median, and data visualizations. It plays a vital role across various sectors aiding informed decision-making. Its visual and analytical appeal makes it engaging for students and serves as a bridge to more advanced topics like inferential statistics and machine learning. With the growing importance of data in industry, professionals skilled in Descriptive Statistics are in high demand for roles such as data analysts, business analysts, and statistical consultants.
2	Vertical 1	Major
3	Type & Teaching Method	Theory + Practicum (Lectures / Problem Solving / Discussion / Presentation / Case Study / Demonstration etc.)
4	Credit	2 Credits
5	Hours allotted	30 Hours
6	Marks allotted	50 Marks
7	Course Objectives: 1. To introduce the fundamental concepts and applications of statistics for organizing and interpreting data. 2. To enable students to compute and interpret key measures of central tendency and dispersion in both grouped and ungrouped datasets. 3. To develop students' ability to analyze relationships between variables using correlation and regression methods. 4. To provide students with the tools to visualize and summarize data effectively using various graphical techniques. 5. To introduce the concepts of skewness and kurtosis for understanding data.	

8	Learning Outcomes: Student will be able to: LO1: Explain the basic concepts of statistics, different data types, and appropriate methods of data classification and presentation. LO2: Compute and interpret various measures of central tendency and dispersion. LO3: Construct and interpret graphical representations such as histograms, pie charts, and box plots for univariate data. LO4: Analyze and interpret the strength and direction of relationships between variables using correlation techniques. LO5: Able to understand forecasting techniques and to find cause and effect relationship between variable through regression analysis.
9	Syllabus UNIT I: • Introduction of Statistics: Meaning of Statistics, Importance of Statistics, Types of Characteristics, Types of data: Quantitative and Qualitative data, Discrete and Continuous Data, Population and Sample, Different types of Scales: Nominal, Ordinal, Interval and ratio. Univariate frequency distribution of discrete and continuous variables and Cumulative frequency distribution. Data Presentation: Frequency Distribution, Histogram, Pie Graph, Box Plot. • Measures of Central Tendencies: Concept of Central Tendency, characteristics of good measures of Central Tendency, Mathematical Averages: Arithmetic Mean, Introduction to Geometric Mean and Harmonic Mean, Positional Averages: Median, Mode, Partition values: Quartiles, Deciles and Percentiles -examples of ungrouped and grouped data, Practical Problems based on Missing Frequency & Word Problems. • Measures of Dispersion: Concept of Dispersion, Requirements of good measures of Dispersion, Absolute and Relative measures of Dispersion, Introduction to various means of dispersion, Standard Deviation, Combined Standard Deviation-examples of ungrouped and grouped data, Coefficient of Variation. UNIT II: • Concept of Correlation, types and interpretation, Scatter Diagram, Product Moment Correlation Coefficient, and its properties. • Spearman's Rank Correlation (with and without ties). • Concept of Linear Regression, Principle of Least Square, Fitting a straight line by method of least square. • Relation between Correlation and Regression Coefficients (Only Statement), Practical Applications of Correlation and Regression. • Raw and Central Moments, Relation between Raw and Central moments, Concept of Skewness and Kurtosis.

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	Based On	Options	Marks
Q1	Unit 1	<i>Any 2 out of 4</i>	10
Q2	Unit 2	<i>Any 2 out of 4</i>	10
Q3	Unit 1 & 2	<i>Any 2 out of 4</i>	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.	Project, Self-Learning Evaluation, Presentation, etc.	10
		Total 20

11

REFERENCES:

1. Sarma, K. V. S. (2001). Statistics Made it Simple: Do it yourself on PC. Prentce Hall of India, NewDelhi.
2. Agarwal, B. L. (2003). Programmed Statistics, Second Edition, New Age International Publishers, NewDelhi.
3. Purohit, S. G., Gore S. D., Deshmukh S. R. (2008). Statistics Using R, Narosa Publishing House, NewDelhi.
4. Schaum's Outline Of Theory And Problems Of Beginning Statistics, Larry J. Stephens, Schaum's Outline Series McGraw-Hill
5. Gupta, S.C. and Kapoor, V.K. (1987): Fundamentals of Mathematical Statistics, S. Chand and Sons, New Delhi
6. Goon AM, Gupta MK, Das Gupta B: Fundamentals of Statistics, Vol-I, the World Press Pt. Ltd, Kolkata
7. Shah R.J: Descriptive Statistics: Seth Publication, Eight Edition
8. Spiegel M.R: Theory and Problems of Statistics, Schaum's Publishing Series, Tata McGraw-Hill, First Edition
9. Basic Statistics: Agarwal B.L: New Age International Ltd
10. <https://onlinestatbook.com/2/>

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

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

Semester- I

Title: Major Practical 1

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

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

Title: Major Practical 1
Course Code: CHMDSI3

Sr. No.	Heading	Particulars
1	Description of the Course:	Basic Python programming practical modules provide foundational knowledge essential for implementing Python code across a wide range of applications. These modules enable learners to understand and effectively work with various data types, utilize control structures such as conditionals and loops, and apply logical flow in program execution. Additionally, they offer hands-on experience in handling strings and arrays, which are crucial for data manipulation and processing tasks. The modules also emphasize the use of functions, promoting code reusability, modularity, and clarity. Through practical exercises and examples, learners gain the skills necessary to build efficient and structured Python programs suitable for solving real-world problems.
2	Vertical 1	Major
3	Type	Practical
4	Credit	2 Credits
5	Hours allotted	60 Hours
6	Marks allotted	50 Marks
7	Course Objectives: 1. To implement various data types. 2. To implement different functions. 3. To implement lists, tuples and strings. 4. To plot graphs and charts. 5. To develop ability to analyze statistical data.	

8	Learning Outcomes: Student will be able to: LO1: Use all data types in different ways. LO2: Acquire knowledge to implement user defined, built in and lambda functions. LO3: Make a use of arrays and strings in python programming. LO4: Understand data analysis through programming. LO5: Study the relationship between variables using techniques of correlation and regression.
9	Syllabus UNIT I: Practical No. 1 - Write a Python program to use various datatypes. - Write a python code to define the values of various data types and check their data types. - Write a Python program to perform Input and Output Operations. - Write a code in python to accept message from user and display it. Practical No. 2 - Write a Python program to convert Celsius to Fahrenheit. - Write a python program to convert Kilometers to Miles. - Write a Python program to make a simple calculator. - Write a Python program to solve Quadratic Equation. - Write a python program to add two numbers. - Write a Python program to calculate the area of a triangle. Practical No. 3 - Write a Python program to check whether entered number is Armstrong or not using while loop. - Write a python program to print first n natural numbers. - Write a python program to demonstrate looping in python and use of break statement and continue statement. - Write a python code to find factorial of given number. Practical No.4 - Write a Python program to check whether entered number is even or odd. - Write a Python program to demonstrate function with keyword arguments and default arguments. - Write a python program to merge Mails. - Write a python program to find the largest among three numbers. Practical No. 5 - Write a Python program to Find HCF or GCD. - Write a Python program to convert Decimal to Binary, Octal and Hexadecimal. - Write a Python code to find the size (Resolution) of an image. - Write a program to check leap year.

- e. Write a Python program to swap Two Variables.

Practical No. 6

- a. Write a Python program to demonstrate the use of Built-in Functions.
- b. Write a Python Program to implement Lambda Functions.
- c. Write a recursive Python function to compute the factorial of a number.
Import the math module to verify the result using the built-in math.factorial() function.
- d. Create a Python program that uses a lambda function to square every element in a list.
Use the map() function along with lambda to apply the transformation.

Practical No. 7

- a. Write a Python program that takes a list of integers from the user, removes all duplicates, sorts the list in descending order, and prints the updated list.
- b. Create a program that accepts a list of student names and performs the following operations:
 - a) Add a new student to the list
 - b) Remove a student by name
 - c) Display the number of students
 - d) Print the updated list
- c. Write a program that stores a tuple containing employee names and their corresponding departments (as nested tuples). Then allow the user to input a department name and print the names of all employees in that department.
- d. Write a program to display the current date and time in the following format: Day, DD Month YYYY HH:MM:SS (e.g., Saturday, 03 May 2025 14:32:10)
- e. Write a Python program that accepts two dates in YYYY-MM-DD format and calculates the number of days between them using timedelta.
- f. Write a program that prints the calendar for the current month and measures how long the program takes to execute using the time module.

Practical No. 8

- a. Write a Python Program to demonstrate that python string is immutable and also demonstrate to use multiline string.
- b. Write a python program to compare two strings.
- c. Write a python program to concat two strings.
- d. Write a Python program to find ASCII value of character.

Practical No. 9

- a. Write a python code to remove punctuation from a string.
- b. Write a python code to check whether a string is palindrome or Not.
- c. Write a Python program to count the number of each vowel.
- d. Write a Python program to sort words in Alphabetic Order.

Practical No. 10

- a. Write a Python program to shuffle Deck of Cards.
- b. Write a Python program to create , open and read a file.

- c. Write a Python program to read specific lines in a file.
- d. Write a Python function that accepts a list of numbers and returns the average. Use a separate function to input the list and another to calculate and return the average.

UNIT II:

Practical No. 1-Introduction to Excel

- a. Understanding Data Tools.
- b. Understanding Formula Tools, insert functional library using insert function.
- c. Add-Ins Analysis tool packs
- d. Formula writing, Functions, using Cell reference, Sort, Filter and Advance Filter

Practical No. 2- Data Entry and Manipulation

- a. Tools for data entry and accuracy: Quick Access toolbar customization, form tool
- b. Data Transposition to fit Excel (as an Array)
- c. Data Conversion with the Logical If, VLOOKUP, Pivot table, Pivot chart.
- d. Data conversion to Text from Non-Excel Sources. Using text to Column

Practical No. 3- Data Validation

- a. Specifying a valid range of values for a cell.
- b. Specifying a list of valid values for a cell
- c. Specifying custom validation based on formula for a cell.

Practical No. 4- Diagrams and Graphs

- a. Write a Python/ R/Excel program to plot Histogram.
- b. Write a Python/ R/ Excel program to plot Bar Graphs.
- c. Write a Python/ R/ Excel program to plot Pie chart.
- d. Boxplot and multiple Boxplots

Practical No 5- Measures of Central Tendency

- a. Write a Python/ R/Excel program to find Mean.
- b. Write a Python/ R/Excel program to find Median.
- c. Write a Python/ R/Excel program to find Mode

Practical No. 6- Measures of Dispersion

- a. Write a Python/R/ Excel program to find Range, Interquartile Range
- b. Write a Python/R/ Excel program to find Variance.
- c. Write a Python/ R/Excel program to find Standard Deviation.
- d. Write a Python/ R/Excel program to find Skewness and Kurtosis.

Practical No. 7-Correlation

- a. Write a Python/ R/Excel program to find Positive Correlation.
- b. Write a Python/ R/Excel program to find Negative Correlation.
- c. Write a Python/R/ Excel program to find Zero Correlation.

Practical No. 8-Regression-1

- a. Write a Python/ R/Excel program to perform linear regression for prediction.
- b. Write a Python/R/ Excel program to perform polynomial regression for prediction

Practical No. 9-Regression – 2

- a. Write a Python/R/ Excel program to perform multiple linear regression for prediction.
- b. Write a Python/R/ Excel program to perform logistic regression for prediction.

Practical No. 10

- a. Design a survey form, get primary data and analyse it. (given case study)

10**Scheme of Examination and Assessment Pattern****Paper – 50 Marks****External Examination: Semester End External - 30 marks Time: 2:00 hour****Format of Question Paper**

Question	Based On	Marks
Q1	Unit 1	15
Q2	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 essential component of the evaluation process.

Internal Examination: Continuous Evaluation - 20 marks

	Assessment / Evaluation	Marks
1.	The internal evaluation will be determined by the completion of practical tasks and the submission of corresponding write-ups for each session. Each practical exercise holds a maximum value of 5 marks. The total evaluation, out of 100 marks, should be scaled down to a final score of 10 marks .	10
2.	Viva/ Case Study/ MCQs/ Mini-Projects/ Complete the code block/ Develop the incomplete portion of the code etc.	10
		Total: 20

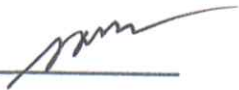
REFERENCES:

1. Programming through Python M. T. Savaliya, R.K Maurya, G.M Magar, Staredu Solutions, 1st edition (2018)
2. Python DataScience Handbook, Jake VanderPlas, O'Reilly Media, 1st edition (2016)
3. Let Us Python, Yashwant Kanetkar, BPB publication , 1st edition (2019)
4. Programming in Python3, Mark Summerfield, Pearson Education, 2nd edition (2018)
5. Learning Python, LutzM, O'Reilly- Shroff, 5th edition, 2013.
6. Beginning Python, Magnus LieHetland, Apress, 2nd edition, 2009
7. Purohit, S. G., Gore S. D., Deshmukh S. R. (2008). Statistics Using R, Narosa Publishing House, NewDelhi.
8. Schaum"s Outline Of Theory And Problems Of Beginning Statistics, Larry J. Stephens, Schaum"s Outline Series McGraw-Hill
9. <https://docs.python.org/3/tutorial/index.html>
10. <https://r4ds.hadley.nz/>
11. <https://support.microsoft.com/en-us/excel>

Department of B.Sc. (Data Science):

Sr No	Name of the Faculty	Designation and College	Signature
1.	Dr. Shiji Johnson	Assistant Professor, Smt. CHM College, Ulhasnagar	
2.	Ms. Amita Gaikwad	Assistant Professor, Smt. CHM College, Ulhasnagar	

Name & Signature of the Ad-hoc BoS Chairperson: Dr. SHIJI JOHNSON 

Name & Signature of the Dean: Ms. Ritika Sachdev 



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

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

Semester- I

Title: Excel for Business

**Vertical - 4
Vocational Skill Course (VSC) - 2 Credits**

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

Title: Excel for Business
Course Code: CHMDSI5

Sr. No.	Heading	Particulars
1	Description of the Course:	Excel for Business is a course aimed at equipping professionals with the skills to use Microsoft Excel for financial analysis, data management, and informed decision-making. Highly relevant in today's data-driven business environment, it emphasizes real-world applications such as budgeting, forecasting, and risk analysis. The course complements finance, accounting, and business analytics programs by bridging theoretical concepts with hands-on modelling. With Excel proficiency in high demand across industries, this course enhances career prospects in roles like financial analyst, business analyst, and management accountant.
2	Vertical 4	Vocational Skill Course (VSC)
3	Type & Teaching Method	Theory + Practicum (Lectures / Problem Solving / Discussion / Presentation / Case Study / Demonstration etc.)
4	Credit	2 Credits
5	Hours allotted	30 Hours
6	Marks allotted	50 Marks
7	Course Objectives: 1. Understand the basics of spreadsheets and financial models, and learn about different types and their uses. 2. Learn how to choose the right tools and techniques to build effective financial models. 3. Design well-structured, accurate financial models using good layout practices and flowcharts. 4. Use Excel, including advanced functions, to create, manage, and present financial models. 5. Plan financial modelling projects, manage data requests, and use tools to clearly display model results.	

8	Learning Outcomes: Student will be able to: LO1: Understand spreadsheet basics and the key components of financial models. LO2: Select suitable financial models and tools for different business needs. LO3: Design clear, accurate, and well-organized financial models using best layout and visualization practices. LO4: Use Excel features, including functions, shortcuts, and data handling tools, for financial modelling tasks effectively. LO5: Apply advanced Excel techniques like aggregation, lookup, regression, PivotTables, and formatting to analyze and present financial data.
9	Syllabus UNIT I: • Financial Modelling: Spreadsheet and a Financial Model, Types and Purposes of Financial Models, Tool Selection, Model Design, Design Issues, The Workbook Anatomy of a Model, Steps to Building a Model, Workbook Layout and Best Practices. • Modular worksheet design: Input, Processing and Output Sheets. Importance of Version Control and Backups. • Using Excel in Financial Modelling: Formulas and Functions in Excel, Handy Excel Shortcuts, Cell Referencing, Named Ranges, Basic Excel Functions (SUM, AVERAGE, COUNT, MAX, MIN — for summarizing business data)., Logical Functions (IF, AND, OR, NOT), Error-Handling Functions (IFERROR, ISERROR, and ISNA). • Functions for Financial Modelling: Aggregation & LOOKUP Functions, Regression Analysis, Choose Function, Working with Dates, Financial Project Evaluation Functions, Loan Calculations. • Tools for Model Display and Financial Modelling: Basic Formatting, Conditional Formatting, Customising the Display Settings, Form Controls, Hiding Sections, Grouping, Array Formulas, Structured Reference Tables, PivotTables, Freezing Panes, Grouping, and Hiding. UNIT II: • Common Uses of Tools in Financial Modelling: Understanding Nominal and Effective (Real) Rates, Calculating a Cumulative Sum (Running Totals), How to Calculate a Payback Period, Modelling Depreciation Methods, Break-Even Analysis. • Stress Testing, Scenarios, and Sensitivity Analysis in Financial Modelling: What are the Differences Between Scenario, Sensitivity, and What-If Analyses? Overview of Scenario Analysis Tools and Methods, Advanced Conditional Formatting, Comparing Scenario Methods, Adding Probability to a Data Table. • Presenting Model Output: Preparing an Oral Presentation for Model Results, Preparing a Graphic or Written Presentation for Model Results, Chart Types, Working with Charts, Handy Charting Hints, Dynamic Named Ranges, Charting with Two Different Axes and Chart Types, Creating a Dynamic Chart, Waterfall Charts.

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	Based On	Options	Marks
Q1	Unit 1	<i>Any 2 out of 4</i>	10
Q2	Unit 2	<i>Any 2 out of 4</i>	10
Q3	Unit 1 & 2	<i>Any 2 out of 4</i>	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.	Project, Self-Learning Evaluation, Presentation, etc.	10
		Total 20

11

REFERENCES:

1. Using Excel for Business and Financial Modelling: A Practical Guide, by Danielle Stein Fairhurst, Wiley, 3rd Edition, 2019
2. Microsoft Excel Professional 2021 Guide: Complete Excel Reference, by CA Manmeet Singh Mehta, Paperback, 1st Edition, 2022
3. Microsoft Excel: Advanced Microsoft Excel Data Analysis for Business, by John Slavio, Hardcover, 1st Edition, 2019
4. Excel: Excel for Business, by Francesco Iannello, Createspace, 2016
5. <https://www.w3schools.com/excel/>
6. <https://support.microsoft.com/en-us/excel>
7. <https://exceljet.net/>

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

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

Semester- I

Title: Office Tools for Data Scientists

Vertical - 4

Skill Enhancement Course (SEC) - 2 Credits

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

Title: Office Tools for Data Scientists
Course Code: CHMDSI6

Sr. No.	Heading	Particulars
1	Description of the Course:	Office Tools for Data Scientists is a course designed to equip data professionals with essential skills in using popular office applications for data analysis, visualization, and communication. It covers data cleaning, collaborative work, interactive documentation, and effective reporting, enhancing the ability to extract and present insights from diverse datasets. The course complements core data science subjects by focusing on real-world applications and communication of results. With growing industry demand for data scientists who can manage and present data effectively, this course boosts employability for roles like Data Analyst and Business Intelligence Analyst. It also prepares participants for emerging trends such as AI-driven analytics and collaborative coding environments.
2	Vertical 4	Skill Enhancement Course (SEC)
3	Type & Teaching Method	Theory + Practicum (Lectures / Problem Solving / Discussion / Presentation / Case Study / Demonstration etc.)
4	Credit	2 Credits
5	Hours allotted	30 Hours
6	Marks allotted	50 Marks
7	Course Objectives: 1. Instruct participants on importing data using Excel, OpenOffice, and statistical environments. 2. Instruct participants on conducting Descriptive Statistics in Excel, OpenOffice, and statistical environments. 3. Instruct participants on conducting Correlation, Regression, Confidence Intervals, Random Sampling across multiple statistical tools. 4. Introduce participants to Power analysis, F-Test, Regression/Correlation analysis using R/RStudio/Rattle, Excel, KNIME. 5. Familiarize participants with additional data packages and the Analysis ToolPak.	

8	Learning Outcomes: Student will be able to: LO1: Acquire proficiency in importing data across various platforms. LO2: Generate descriptive statistics using a variety of tools. LO3: Apply correlation tests, Regression, Confidence Intervals, Random Sampling in Excel, OpenOffice, RStudio/Rattle, and KNIME. LO4: Master power analysis techniques, F-Test, and regression/correlation analysis using various statistical tools. LO5: Use additional data packages and the Analysis ToolPak for diverse analysis needs.
9	Syllabus UNIT I: • Introduction to Data Tools: Why Data Analysis (Data Science) at All? Where to Get Data, Characteristics of Modern Data Tools: Ease of Use, Cloud Availability and Accessibility, Regular Updates and Integration with AI. • Importing Data: Excel, Excel Analysis ToolPak, OpenOffice, Import into R and Rattle, Import into RStudio, Rattle Import, Import into KNIME, Stoplight Approach; Cloud Integration: Importing from Google Drive, OneDrive, Dropbox • Statistical Tests: Descriptive Statistics, Excel, OpenOffice, RStudio/Rattle, KNIME, Cumulative Probability Charts, Excel, OpenOffice, R/RStudio/Rattle, KNIME, Excel, OpenOffice, R/RStudio/Rattle, KNIME. UNIT II: • More Statistical Tests: Confidence Interval, Excel, OpenOffice, RStudio/Rattle, KNIME, Random Sampling, Excel, OpenOffice, RStudio/Rattle, KNIME. Lift Charts in KNIME. • Statistical Methods for Specific Tools: Power, R/RStudio/Rattle, F-Test, Excel, R/RStudio/Rattle, KNIME, Multiple Regression/Correlation, Excel, OpenOffice, R/RStudio/Rattle, KNIME, Benford's Law, Rattle, Lift, KNIME, Wordcloud, R/RStudio, KNIME, Filtering, Excel, OpenOffice, RStudio/Rattle, KNIME. Using ChatGPT and AI Tools for Summary, Insights, and Visualizations. • Additional Data: Packages, Analysis ToolPak.

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	Based On	Options	Marks
Q1	Unit 1	<i>Any 2 out of 4</i>	10
Q2	Unit 2	<i>Any 2 out of 4</i>	10
Q3	Unit 1 & 2	<i>Any 2 out of 4</i>	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.	Project, Self-Learning Evaluation, Presentation, etc.	10
		Total 20

11

REFERENCES:

1. Data Science Tools, by Christopher Greco, MERCURY LEARNING, 1st Edition, 2019
2. R for Data Science, by Hadley Wickham, Garrett Golemund, O'Reilly, 1st Edition, 2016
3. Data science with KNIME, by Dr Nickholas Anting, NASPSOFT, 1st Edition, 2022
4. Beginning OpenOffice Calc, by Jacek Artymiak, Apress, 2011
5. "Practical Statistics for Data Scientists" by Peter Bruce & Andrew Bruce, 3rd Edition, O'Reilly, 20
6. "Excel Data Analysis for Dummies" by Paul McFedries, Wiley, 2022
7. "Data Smart: Using Data Science to Transform Information into Insight" by John W. Foreman, Wiley
8. "Mastering KNIME" by Clemens Grelck, Packt Publishing, 2021
9. <https://www.w3schools.com/excel/>
10. <https://www.w3schools.com/r/>
11. <https://www.knime.com/>

Department of B.Sc. (Data Science):

Sr No	Name of the Faculty	Designation and College	Signature
1.	Dr. Shiji Johnson	Assistant Professor, Smt. CHM College, Ulhasnagar	
2.	Ms. Amita Gaikwad	Assistant Professor, Smt. CHM College, Ulhasnagar	

Name & Signature of the Ad-hoc BoS Chairperson: Dr. SHIJI JOHNSON 

Name & Signature of the Dean: Ms. Ritika Sachdev 



**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
- Sample readings will include excerpts from news articles, reports, editorials, and educational essays (200-250 words).*

C) Grammar and Vocabulary

- Subject-Verb Agreement
- Sentence Structures
- Punctuation and Capitalization
- Commonly Confused Words
- Editing and Proofreading Practice

A remedial and functional approach will be followed with contextual exercises.

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 Credits

**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) जिवानी राबतो, ii) गैर जिवानी 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>Komal</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								

**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 from 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. Nitin Arekar)



**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.	

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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.

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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