As Per NEP 2020

University of Mumbai

Syllabus for Major Vertical – 1 & 4		
Name of the Programme – B.Sc. (Information Technology)		
Faulty of Science and Technology		
Board of Studies in Information Technology		
U.G. Second Year Programme	**Exit Degree**	**U.G. Diploma in Information Technology**
Semester		**III & IV**
From the Academic Year		**2025-26**

University of Mumbai

(As per NEP 2020)

Sr. No.	Heading	Particulars
1	**Title of program** **O:**_____	**B.Sc. (Information Technology)**
2	**Exit Degree**	**U.G. Diploma in Information Technology**
3	**Scheme of Examination** **R: _____**	NEP 40% Internal 60% External, Semester End Examination Individual Passing in Internal and External Examination
4	**Standards of Passing** **R: _____**	**40%**
5	**Credit Structure** **R. SU-510C** **R. SU-510D**	**Attached herewith**
6	**Semesters**	**Sem. III & IV**
7	**Program Academic Level**	**5.00**
8	**Pattern**	**Semester**
9	**Status**	**New**
10	**To be implemented from Academic Year**	**2025-26**

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Sd/-

Sign of the BOS Chairman
Dr. Srivaramangai R
BOS in Information Technology

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Sign of the
Offg. Associate Dean
Dr. Madhav R. Rajwade
Faculty of Science & Technology

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Sign of the Offg. Dean
Prof. Shivram S. Garje
Faculty of Science & Technology

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Under Graduate Diploma in Information Technology

Credit Structure (Sem. III & IV)

(B. Sc.)- Major & Minor

Level	Semester	Major		Minor	OE	VSC, SEC (VSEC)	AEC, VEC, IKS	OJT, FP, CEP, CC,RP	Cum. Cr. / Sem.	Degree/ Cum. Cr.
		R. SU-510C								
		Mandatory	Electives							
5.0	III	8 Python Programming DATA STRUCTURES Operating System Major Practical 3	…	4	2	VSC:2, APPLIED MATHEMATICS	AEC:2	FP: 2 CC:2	22	UG Diploma 88
		R. SU-510D								
	IV	8 Core Java Software Engineering Computer Networks Major Practical 4	…	4	2	SEC:2 Computer Graphics OR Mobile Programming	AEC:2	CEP: 2 CC:2	22	
	Cum Cr.	28		10	12	6+6	8+4+2	8+2+2	88	

Exit option; Award of UG Diploma in Major and Minor with 88 credits and an additional 4 credits core NSQF course/ Internship OR Continue with Major and Minor

[Abbreviation - OE – Open Electives, VSC – Vocation Skill Course, SEC – Skill Enhancement Course, (VSEC), AEC – Ability Enhancement Course, VEC – Value Education Course, IKS – Indian Knowledge System, OJT – on Job Training, FP – Field Project, CEP – Continuing Education Program, CC – Co-Curricular, RP – Research Project]

Sem. - III

Vertical – 1 Major

Syllabus
B.Sc. (Information Technology)
(Sem.- III)

Title of Paper: Python Programming

Sr.No.	Heading	Particulars
1	**Description the course: Including but not limited to:**	**Introduction to Programming with Python** course is designed to help beginners learn Python, a versatile and beginner-friendly language known for its simplicity and readability. Python is an excellent choice for newcomers to programming due to its clear syntax and broad applications in fields like web development, data analysis, and artificial intelligence. In today's technology-driven world, programming skills are increasingly essential, and Python's popularity has surged due to its ease of use and extensive support community. Python is also a gateway language, allowing learners to transition easily into more advanced topics such as machine learning, data science, and web development. As an interpreted, high-level language, Python is particularly relevant across industries like technology, healthcare, finance, and academia, making Python proficiency a highly sought-after skill. The course focuses on core programming concepts like syntax, data structures, and control flow, ensuring that learners can write efficient and functional code. The course also encourages further learning, serving as a stepping stone for advanced Python courses or specialized areas like machine learning and web development. Python's beginner-friendly nature and expansive libraries make it an enjoyable language to learn, fostering both interest and engagement. By combining theory with hands-on projects, the course aims to spark curiosity and provide learners with tangible results from their efforts. As learners gain proficiency in Python, they will have the tools to tackle more complex programming challenges, making this course an invaluable starting point for anyone interested in programming or pursuing a career in tech. **Demand in the Industry:** Python's popularity in the industry is soaring. Professionals proficient in Python are in high demand across various sectors, including technology, finance, healthcare, and academia. Completion of this Course opens doors to entry-level positions in software development, quality assurance, data analysis, and scripting.
2	**Vertical:**	Major
3	**Type:**	Theory
4	**Credits:**	2 credits (1 credit = 15 Hours for Theory in a semester, Total 30 hours)
5	**Hours Allotted:**	30 Hours
6	**Marks Allotted:**	50

7	**Course Objectives (CO):**

CO 1.Master the core features of Python, including its execution model and a wide range of data types.

CO 2. Develop proficiency in control flow by working with conditional statements, loops and other control structures.

CO 3.   Work efficiently with arrays, strings, and complex data structures, leveraging Python's capabilities for data manipulation.

CO 4. Apply functions, modules, and string operations to solve real-world programming problems with flexibility and ease.

CO 5. Manage file operations, utilize regular expressions, and handle date and time functions for comprehensive Python programming tasks.

8	**Course Outcomes (OC):**

OC 1. Demonstrate mastery of Python features to tackle a wide range of programming challenges.

OC 2. Utilize control flow statements to ensure accurate and logical program execution.

OC 3.   Efficiently manipulate arrays, strings, and data structures to enhance. data handling and problem-solving.

OC 4. Design modular, efficient programs by leveraging functions, modules, and string operations.

OC 5. Manage file operations, employ regular expressions, and manipulate date and time data to improve program functionality and performance.

9	**Module 1:**	15 Hrs

Basic Elements of Python Programming:

Features of Python, Execution of a Python Program, Python Interpreter, Comments, IDLE, Data types, Dictionary, Sets, Mapping, Basic Elements of Python, Variables, Input Function, Output Statements, Command Line Arguments. Operators, Precedence of Operators, Associativity of Operators

Control Statements:

The if statement, The if … else Statement, The if … elif … else Statement, Loop Statement- while loop, for loop, Infinite loop, Nested loop, The else suite, break statement, continue statement, pass statement, assert statement, return statement.

Arrays:

Creating Arrays, Indexing and Slicing of Arrays, Basic Array Operations, Arrays Processing, Mathematical Operations on Array, Aliasing Arrays, Slicing and Indexing in NumPy Arrays, Basic slicing, Advanced Indexing, Dimensions and Attributes of an Array

Functions:

Function definition and call, Returning Results, Returning Multiple Values from a Function, Built-in Functions, Difference between a Function and a Method, Pass Value by Object Reference, Parameters and Arguments, Recursive Functions, Anonymous or Lambda Functions. Modules in Python. Strings: Creating Strings, Functions of Strings, Working with Strings, Formatting Strings, Finding the Number of Characters and Words, Inserting Substrings into a String.

	Module 2:	
	List: Exploring List, Tuples and Dictionaries: Lists, List Functions and Methods, List Operations, List Slices, Nested Lists, Tuples, Functions in Tuple. **Working with Dictionaries:** Creating a Dictionary, Operators in Dictionary, Dictionary Methods, Using for Loop with Dictionaries, Operations on Dictionaries **Files in Python:** Opening and Closing a File, Working with Text Files, , Working with Binary Files, The 'with' statement, Pickle in Python, The seek() and tell() Methods, Random Accessing of Binary Files, Zipping and Unzipping Files, Working with Directories **Regular Expressions:** Introduction, Sequence Characters in Regular Expressions, Special Characters in Regular Expressions, Using Regular Expression on Files, Retrieving Information from an HTML File **Date And Time in Python:** Time, Date, Date and Time Now, combining date and times, formatting date and time, Finding and comparing dates, Sorting dates, Knowing the Time taken by a Program, Working with Calendar Module	15 Hrs
10	**Books and References:** **Textbooks** 1. Learning Python, Fourth Edition by Mark Lutz Copyright © 2009 Mark Lutz. Published by O'Reilly Media, Inc. 2. Python Basics: A Practical Introduction to Python 3 Revised and Updated 4th Edition David Amos, Dan Bader, Joanna Jablonski, Fletcher Heisler **Reference Books** 1. Let Us Python, Yashwant. B. Kanetkar, BPB Publication, 2019 2. Python: The Complete Reference, Martin C. Brown, McGraw Hill, 2018 3. Beginning Python: From Novice to Professional, Magnus Lie Hetland, Apress, 2017	
12	**Internal Continuous Assessment: 40%**	**Semester End Examination: 60%**
13	**Continuous Evaluation through:** Class test of 1 of 15 marks Class test of 2 of 15 marks Average of the two: 15 marks Quizzes/ Presentations/ Assignments: 5 marks Total: 20 marks	Format of Question Paper: External Examination (30 Marks)– 1 hr duration
14	**Format of Question Paper: (Semester End Examination: 30 Marks. Duration:1 hour)** Q1: Attempt any two (out of four) from Module 1 (15 marks) Q2: Attempt any two (out of four) from Module 2 (15 marks) Or Q1: Attempt any three (out of five) from Module 1 (15 marks) Q2: Attempt any three (out of five) from Module 2 (15 marks)	

Title of Paper: DATA STRUCTURES

Sr.No.	Heading	Particulars	
1	**Description the course:** **Including but Not limited to:**	Data Structures is a fundamental subject that focuses on the organization, storage, and manipulation of data. It provides the tools and techniques to efficiently manage and process data, forming the backbone of algorithms and software development.	
2	**Vertical:**	Major	
3	**Type:**	Theory	
4	**Credits:**	2 credits (1 credit = 15 Hours for Theory in a semester, Total 30 hours)	
5	**Hours Allotted:**	30 Hours	
6	**Marks Allotted:**	50 Marks	
7	**Course Objectives (CO):** 1. To understand the fundamental concepts of data structures and their applications. 2. To analyze the efficiency of algorithms and operations on data structures. 3. To provide practical exposure to implementing data structures in programming. 4. To understand the properties and applications of arrays, linked lists, stacks, and queues. 5. To translate data structure concepts into working code using a programming language. 6. To apply data structures to solve real-world problems like searching and sorting. 7. To grasp the structure and traversal methods of binary trees and binary search trees.		
8	**Course Outcomes (OC):** **Students will be able to:** OC 1. Demonstrate knowledge of core data structures and their operations OC 2. Analyze the time and space complexity of algorithms and choose the most efficient solution for a given problem. OC 3. Translate algorithmic solutions into correctly functioning code using their chosen programming language. OC 4. Implement and traverse binary trees and binary search trees, demonstrating their understanding of these structures.		
9	**Module 1:**		
	1. Introduction Basic terminology: data, information, data structure, abstract data type (ADT) Classification of data structures: linear, non-linear Algorithm analysis: time complexity, Big O notation **2. Arrays and Linked Lists** Array representation and operations (traversal, insertion, deletion, searching) Linked lists: singly linked lists (representation, insertion, deletion, traversal) Comparison of arrays and linked lists, advantages and disadvantages. **3. Stacks and Queues** Stack ADT: push, pop, peek operations Array implementation of stacks Applications of stacks: expression evaluation (infix to postfix conversion) Queue ADT: enqueue, dequeue, peek operations Array implementation of queues Applications of queues: basic scheduling scenarios **4. Recursion** Concept of recursion, base case, recursive step Examples: factorial, Fibonacci sequence		15 Hrs

		Module 2:	
		1.Trees Binary trees: representation, traversal (inorder, preorder, post order) Binary search trees: insertion, deletion, search Applications of trees: basic hierarchical data representation **2.Hashing** Hash functions and hash tables Collision handling: separate chaining Applications of hashing: dictionaries **3. Sorting and Searching** Sorting algorithms: bubble sort, insertion sort, selection sort Searching algorithms: linear search, binary search	**15 Hrs.**
10	**Books and References:** 1. Data Structures and Algorithms made Easy: Data Structures and Algorithmic Puzzles, Narasimha Karumanchi ,5th Edition 2017 2. A Simplified Approach to Data Structures, Lalit Goyal, Vishal Goyal, Pawan Kumar SPD,1st 2014 3. Problem Solving in Data Structures & Algorithms Using C by Hemant Jain ,1st Edition, BPB Publications, 2018 **4.** Introduction to Algorithms, Thomas H. Cormen, Charles E. Leiserson, Ronald L. Rivest, Clifford Stein, 4th Edition, MIT Press,2022		
12	**Internal Continuous Assessment: 40%**		**Semester End Examination: 60%**
13	**Continuous Evaluation through:** Class test of 1 of 15 marks Class test of 2 of 15 marks Average of the two: 15 marks Quizzes/ Presentations/ Assignments: 5 marks Total: 20 marks		**Format of Question Paper: External Examination (30 Marks)– 1 Hr. duration**
14	**Format of Question Paper: (Semester End Examination: 30 Marks. Duration:1 hour)** Q1: Attempt any two (out of four) from Module 1 (15 marks) Q2: Attempt any two (out of four) from Module 2 (15 marks) Or Q1: Attempt any three (out of five) from Module 1 (15 marks) Q2: Attempt any three (out of five) from Module 2 (15 marks)		

Title of Paper: Operating System

Sr.No.	Heading	Particulars
1	**Description the course :** **Including but Not limited to:**	Introduce operating system concepts (i.e., processes, threads, scheduling, synchronization, deadlocks, memory management, file systems and protection) Introduce the issues to be considered in the design and development of operating system (memory, file and disk).
2	**Vertical :**	**Major**
3	**Type :**	Theory
4	**Credits :**	2 credits (1 credit = 15 Hours for Theory in a semester, Total 30 hours)
5	**Hours Allotted :**	30
6	**Marks Allotted:**	30
7	**Course Objectives(CO):** 1. Understand basic knowledge of computer operating system 2. structures and functioning. 3. Understand the process management mechanism 4. CO 3. Ability to apply CPU scheduling algorithms to manage tasks. 5. CO 4. Discuss methods of prevention and recovery from system deadlock 6. CO 5. Understand the implementation of file systems and directories	
8	**Course Outcomes (OC):** 1. Outline the basic concept of operating systems 2. Analyze the working of operating system 3. Examine the working of various scheduling approaches 4. Apply the concepts of synchronization and deadlock 5. Apply the file access mechanisms	
9	**Modules:-** **Module 1:**	

Operating System Overview: Basics of operating systems: Generations, Types, Structure, Services, System Calls, System Boot, System Programs, Protection and Security. **Process Management**: Process Concepts, Process States, Process Control Block, Scheduling-Criteria, Scheduling Algorithms and their Evaluation, Threads, Threading Issues. **Process Synchronization:** Background, Critical-Section Problem, Peterson's Solution. Synchronization Hardware, Semaphores, Classic Problems of Synchronization.		**15 Hrs**
Module 2:		
Memory Management: Main Memory, Swapping, Contiguous Memory Allocation, Paging, Structure of Page Table, Segmentation, Virtual Memory, Demand Paging, Page Replacement Algorithms, Allocation of Frames, Thrashing. **Deadlock:** System Model, Deadlock Characterization, Deadlock Prevention, Detection and Avoidance, Recovery from Deadlock. **File System Interface:** File Concept, Access Methods, Directory Structure, and File System Structure.	**15 Hrs**	

10	Books and Reference:
	1. Operating Systems – Internals and Design Principles William Stallings, Pearson 9th , 2009
	2. Operating System Concepts, Abraham Silberschatz, Wiley, 8th Edition
	3. Operating Systems, Godbole and Kahate, Godbole and Kahate, 3rd Edition.
12	**Internal Continuous Assessment: 40%**	**Semester End Examination: 60%**
13	**Continuous Evaluation through:** Class test of 1 of 15 marks Class test of 2 of 15 marks Average of the two: 15 marks Quizzes/ Presentations/ Assignments: 5 marks Total: 20 marks	**Format of Question Paper: External Examination (30 Marks)– 1 hr duration**
14	**Format of Question Paper: (Semester End Examination : 30 Marks. Duration:1 hour)** Q1: Attempt any two (out of four) from Module 1 (15 marks) Q2: Attempt any two (out of four) from Module 2 (15 marks) Or Q1: Attempt any three (out of five) from Module 1 (15 marks) Q2: Attempt any three (out of five) from Module 2 (15 marks)

Title of Paper: Major Practical 3

Sr.No.	Heading	Particulars
1	**Description the course: Including but not limited to:**	This course offers a comprehensive exploration of advanced Python programming concepts, designed to equip students with the tools to tackle real-world problems efficiently. It covers a range of topics, including text processing with regular expressions to identify patterns and extract meaningful data, as well as file handling techniques for both text and binary files. Students will also gain expertise in manipulating and comparing dates using Python's built-in date and time modules, along with performing calendar-based operations. The course emphasizes performance optimization by teaching students how to measure and improve program execution time. Additionally, students will learn how to extract structured data, such as hyperlinks from HTML files, and apply these techniques in practical scenarios. By the end of the course, students will be adept at solving complex problems, optimizing their Python solutions, and utilizing advanced programming concepts to handle diverse data processing tasks.
2	**Vertical:**	Major
3	**Type:**	Practical
4	**Credits:**	2 credits (30 Hours of Practical work in a semester)
5	**Hours Allotted:**	30 Hours
6	**Marks Allotted:**	50 Marks
7	**Course Objectives (CO):**	1. Understand fundamental programming concepts in Python, including input/output operations, conditional statements, and loops. 2. Understand and apply array operations, indexing, slicing, and mathematical functions using NumPy. 3. Develop problem-solving skills by using functions, recursive logic, lambda expressions, and modular programming. 4. Use data structures like lists and dictionaries and perform file operations. 5. Work with text processing, file handling, date manipulation, and performance analysis using advanced Python programming concepts 6. To provide hands-on experience in implementing fundamental data structures like arrays, linked lists, stacks, queues, trees, and graphs. 7. To develop skills in algorithm design and analysis for solving computational problems using data structures. 8. To enable students to choose appropriate data structures for different applications and justify their choices. 9. To enhance understanding of dynamic memory allocation and efficient data management techniques. 10. To equip students with the ability to debug and optimize code for data structure operations.
8	**Course Outcomes (OC):**	. OC 1. Apply Python programming concepts like input/output, conditional statements, and loops, to solve fundamental problems effectively. . OC 2. Demonstrate proficiency in performing basic operations, indexing, slicing, and analyzing attributes of arrays using NumPy. . OC 3. Apply functions, recursion, and lambda expressions to solve computational problems, and implement modular programming for reusable and efficient code design.

		. OC 4. Implement lists and dictionaries, perform file operations, and use functions to solve real-world problems effectively.	

. OC 4. Implement lists and dictionaries, perform file operations, and use functions to solve real-world problems effectively.

. OC 5. Process text, extract information, handle dates, and measure execution time for solving complex real-world problems.

. OC 6. Ability to implement and manipulate basic and advanced data structures to solve real-world problems.

. OC7   Proficiency in writing efficient algorithms using suitable data structures for operations like searching, sorting, and traversal.

. OC8   Capability to analyze the time and space complexity of algorithms for various data structures.

. OC9   Enhanced problem-solving skills by applying data structures in different domains such as databases, networks, and operating systems

9	**Module 1**	30 Hrs

1. Write programs for the following:
   a. Write a program that asks the user to enter their name and their age. Print out a message addressed to them that tells them the year that they will turn 100 years old.
   b. Write a program to accept a number from the user and depending on whether the number is even or odd, print out an appropriate message to the user.
   c. Write a program to accept the SGPI from the user and print corresponding grade based on the following:
   d. SGPI   Grade
   e. 9.00 – 10.00   O
   f. 8.00 – 8.99   A+
   g. 7.00 – 7.99   A
   h. 6.00 – 6.99   B+
   i. 5.50 – 5.99   B
   j. 5.00 – 5.49   C
   k. 4.00 – 4.99   P
   l. Below 4   F

2. Write programs for the following:
   a. d. Write a program to generate the Fibonacci series.
   b. e. Write a program to accept a number from the user display sum of its digits.

3. Write programs for the following:
   a. Write a program to perform basic operations, indexing and slicing on arrays.
   b. Write a program to implement mathematical functions on arrays.
   c. Write a program to perform array aliasing and copying.

4. Write programs for the following:
   a. Write a program to perform slicing, basic and advanced indexing on
   b. NumPy arrays.
   c. e.Write a program to analyze dimensions and attributes of arrays

5. Write programs for the following:
   a. Write a function to check the input value is Armstrong and also write the function for Palindrome.
   b. Write a recursive function to print the factorial for a given number.
   c. Write a lambda function that checks whether a given string starts with a specific character.

6. Write programs for the following:
   a. Write a program to compute number of characters and words in a string.

b. Create a file geometry.py to calculate base areas for shapes square and circle. In another file, write a function pointyShapeVolume(x, y, squareBase) that calculates the volume of a square pyramid if squareBase is True and of a right circular cone if squareBase is False. x is the length of an edge on a square if squareBase is True and the radius of a circle when squareBase is False. y is the height of the object. First use squareBase to distinguish the cases. Use the circleArea and squareArea from the geometry module to calculate the base areas.

7. Write programs for the following:
    a. Write a program that takes two lists and returns True if they have at least one common member.
    b. Write a Python script to sort (ascending and descending) a dictionary by value.

8. Write programs for the following:
    a. Write a program to accept and pass radius to a function that returns area and circumference (using tuple).
    b. Write a program to perform basic file operations on text files and binary files.
    c. Write a Python program to read last n lines of a file.

9. Write programs for the following:
    a. a.Write a program to count the occurrences of a specific word in a file using regular expressions.
    b. b.Write a program to extract all hyperlinks (<a href="...">) from an HTML file.

10. Write programs for the following:
    a. Write a program that compares two dates (in DD/MM/YYYY format) and prints which one is earlier.
    b. Write a program to measure program execution time.
    c. Write a program using the calendar module to print the weekday of the first day of a given month and year.

Module 2	30 Hrs

1. Array Operations: Write a program to implement basic array operations:
    a. Insert an element at a specific position in an array.
    b. Delete an element from a specific position in an array.
    c. Search for an element in an array (linear search).

2. Linked List Manipulation: Write a program to:
    a. Create a singly linked list.
    b. Insert a node at the beginning, end, and at a given position in a linked list.
    c. Delete a node from a given position in a linked list.

3. Stack Application: Write a program to:
    a. Implement a stack using an array.
    b. Convert an infix expression to postfix notation using a stack.

4. Queue Application: Write a program to:
    a. Implement a queue using an array.
    b. Simulate a simple queuing system (e.g., customer service queue).

5.Binary Search Tree: Write a program to:
    a. Create a binary search tree.
    b. Insert nodes into a binary search tree.
    c. Search for a node in a binary search tree.

6. Tree Traversal: Write a program to:
    a. Implement pre-order,
    b. in-order,

	c. Post-order traversal of a binary tree.
	 7.Hash Table: Write a program to:
	    a. Implement a hash table with separate chaining for collision handling.
	    b. Store and retrieve data from the hash table.
	 8.Sorting Algorithms: Write programs to implement and compare the following sorting algorithms:
	    a. Bubble sort
	    b. Insertion sort
	    c. Selection sort
	 9.Searching Algorithms: Write programs to implement and compare:
	    a. Linear search
	    b. Binary search (on a sorted array)
	 10.Combined Application
	    a. Design a simple program that uses multiple data structures .	

10	**Text Books:**
	   1. Learning Python, Fourth Edition by Mark Lutz Copyright © 2009 Mark Lutz. Published by O'Reilly Media, Inc.
	   2. Python Basics: A Practical Introduction to Python 3 Revised and Updated 4th Edition David Amos, Dan Bader, Joanna Jablonski, Fletcher Heisler
	   3. Data Structures and Algorithms made Easy: Data Structures and Algorithmic Puzzles, Narasimha Karumanchi ,5th Edition 2017	

11	**Reference Books:**
	   1. Let Us Python, Yashwant. B. Kanetkar, BPB Publication, 2019
	   2. Python: The Complete Reference, Martin C. Brown, McGraw Hill, 2018
	   3. Beginning Python: From Novice to Professional, Magnus Lie Hetland, Apress, 2017
	   4. A Simplified Approach to Data Structures, Lalit Goyal, Vishal Goyal, Pawan Kumar SPD,1st 2014
	   5. Problem Solving in Data Structures & Algorithms Using C by Hemant Jain ,1st Edition, BPB Publications, 2018
	   6. Introduction to Algorithms, Thomas H. Cormen, Charles E. Leiserson, Ronald L. Rivest, Clifford Stein, 4th Edition, MIT Press,2022	

12	**Internal Continuous Assessment: 40%**	**Semester End Examination: 60%**
13	**Continuous Evaluation through:** Students are expected to attend each practical and submit the written practical of the previous session. Performing Practical and writeup submission will be continuous internal evaluation. 2.5 marks can be awarded for each practical performance and writeup submission totaling to 50 marks and can be converted to 20 marks.	30 marks practical exam of 2 hours duration
14	**Format of Question Paper: Duration 2 hours. Certified copy of Journal is compulsory to appear for the practical examination** Practical Slip: Q1. From Module 1 13 marks Q2. From Module 2 12marks Q3. Journal and Viva 05 marks	

Vertical - 4

VSC

Syllabus
B. Sc. (nformation Technology)
(Sem.- III)

Title of Paper APPLIED MATHEMATICS

Sr.No.	Heading	Particulars
1	**Description the course :** **Including but Not limited to:**	This course is designed for developing competency of the students in the applications of various mathematical concepts. It is equipped with Complex numbers, Laplace transform, Inverse Laplace transform, Differential equations of first order with first degree and higher degree. This course introduces basic concepts of Algebra and prepares students to study further courses in linear and abstract algebra.
2	**Vertical :**	Vocational Skill Course
3	**Type :**	Theory
4	**Credits :**	2 credits (1 credit = 15 Hours for Theory in a semester, Total 30 hours)
5	**Hours Allotted :**	30 Hours
6	**Marks Allotted:**	50 Marks
7	**Course Objectives(CO):** CO1: Ability to interpret the mathematical results in physical or practical terms for complex numbers. CO2: Know and to understand various types of methods to solve Laplace transform. CO3: Apply the knowledge of Laplace Transforms to solve the problems. CO4: Know and to understand various types of methods to solve differential equation. CO5: Apply the knowledge of differential equations to solve the problems. CO6: Inculcate the habit of Mathematical Thinking through Indeterminate forms.	
8	**Course Outcomes (OC):** OC 1. Familiar with the various forms and operations of a complex number. OC 2: Find the Laplace transform of a function of using definition. OC 3: Find the Inverse Laplace transform of a function of using definition. OC 4: Solve Differential equations of first degree and first order. OC 5: Solve Differential equations of first degree and higher order.	
9	**Modules:-** **Module 1:**	
	1.1 **Complex Numbers**: Complex number, Equality of complex numbers, Graphical representation of complex number (Argand's Diagram), Polar form of complex numbers. Polar form of x+iy for different signs of x.y, Exponential form of complex numbers, Mathematical operation with complex numbers and their representation on Argand's Diagram, Circular functions of complex angles, Definition of hyperbolic function. Relations between circular and hyperbolic functions, Inverse hyperbolic functions. 1.2 **The Laplace Transform**: Introduction. Definition of the Laplace Transform, Table of Elementary Laplace Transforms. Theorems on Important Properties of	**15 Hrs**

	Laplace Transformation, First Shifting Theorem, Second Shifting Theorem, Convolution Theorem, Laplace Transform of Derivatives. 1.3 **Inverse Laplace Transform**: Shifting Theorem, Partial fractions Methods, Use of Convolution Theorem, Solution of Ordinary Linear Differential Equations with Constant Coefficients, Laplace Transformation of Special Function, Periodic Functions, Heaviside Unit Step Function, Dirac-delta Function (Unit Impulse Function).	
	Module 2:	
	2.1 **Equation of the first order and of the first degree**: Separation of variables, Equations homogeneous in x and y, Non-homogeneous linear equations, Exact differential Equation, Integrating Factor, Linear Equation and equation reducible to this form, Method of substitution. 2.2 **Differential equation of the first order of a degree higher than the first**: Introduction, Solvable for p (or the method of factors), Solve for y, Solve for x, Clairaut's form of the equation, Method of Substitution. 2.3 **Linear Differential Equations with Constant Coefficients**: Introduction, The Differential Operator, Linear Differential Equation $f(D)\ y = 0$, Different cases depending on the nature of the root of the equation $f(D) = 0$, Linear differential equation $f(D)\ y = X$, The complimentary Function, The inverse operator $1/f(D)$ and the symbolic expression for the particular integral,	**15 Hrs**
10	**Books and References:** 1. A text book of Applied Mathematies Vol I, P. N. Wartikar and J. N.Wartikar, Pune Vidyathi Griha,7* ,1995 2. A text book of Applied Mathematies Vol II , P. N. Wartikar and J. N. Wartikar, Pune Vidyathi Griha,7" .1995 3. Higher Engineering Mathematies, Dr. B. S.Grewal, Khanna Publications.	
12	**Internal Continuous Assessment: 40%**	**Semester End Examination: 60%**
13	**Continuous Evaluation through:** Class test of 1 of 15 marks Class test of 2 of 15 marks Average of the two: 15 marks Quizzes/ Presentations/ Assignments: 5 marks Total: 20 marks	**Format of Question Paper: External Examination (30 Marks)– 1 hr duration**
14	**Format of Question Paper: (Semester End Examination : 30 Marks. Duration:1 hour)** Q1: Attempt any two (out of four) from Module 1 (15 marks) Q2: Attempt any two (out of four) from Module 2 (15 marks) Or Q1: Attempt any three (out of five) from Module 1 (15 marks) Q2: Attempt any three (out of five) from Module 2 (15 marks)	

As Per NEP 2020

University of Mumbai

Syllabus for Minor Vertical 2 (Scheme-III)		
Faculty of Science.		
Board of Studies in Statistics.		
B.A. Second Year Programme Minor - Statistics		
Semester		**III & IV**
Title of Paper	**Sem.**	**Total Credits 4**
I) **Statistical Methods-I**	**III**	**2**
II) **Practical based on statistical Methods-I**		**2**
Title of Paper		**Credits**
I) **Statistical Methods-II**	**IV**	**2**
II) **Practical based on Statistical Methods-II**		**2**
From the Academic Year		**2025-26**

Sr. No.	Heading	Particulars
1	**Description the course :** **Including but Not limited to :**	**Introduction:** Statistical Methods-I paper covers basic concept of probability and probability distribution which is useful to gain in-depth knowledge of probability and standard discrete distributions of other than statistics students of same faculty.
2	**Vertical :**	Minor
3	**Type :**	Theory
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**:	50 Marks

Credit:2	**MINOR SUBJECT** **STATISTICAL METHODS-I**	No. of Hours: 30
	CO2: Students will be able to, 1. Understand the concept of probability and its applications. 2. Differentiate between random and non-random experiment. 3. Understand the meaning of continuous and discrete random variable. 4. Understand discrete distributions and their properties. 5. Solve the examples of probability **OC2: On successful completion of this course Students Should be able to,** 1. Calculate probabilities and conditional probabilities. 2. Identify the types of events. 3. Compute the expectation of the univariate discrete random variable. 4. Write probability mass functions (pmf) of various discrete distribution and their real-life applications. 5. Apply the concept of probability in real-life situations.	
Unit	**Elementary Probability Theory**	**Lectures**

	I	• Definitions: Trial, random experiment, sample point and sample space.
		• Definition of an event and different types of events: compound event, complementary event, equally likely events, certain event, impossible event, mutually exclusive and exhaustive events.
		• Different definitions of Probability: Classical (Mathematical), Empirical(Statistical) and Axiomatic definitions of Probability. Properties of probability
		• Conditional probability.
		• Independence of events, pairwise and mutual independence of three events.
		• Theorems (with proof)and their applications:
		   i. Addition theorem on probability for two and three events
		   ii. Multiplication theorem on probability for two events.
		   iii. Bayes' theorem.
			10

Unit		**Discrete random variables**	**Lectures**
	II	• Random variable: discrete and continuous random variables. Definition and properties of probability mass function . cumulative distribution function. • Raw and Central moments (definition only) and their relationship. (up toorder four). • Concepts of Skewness and Kurtosis and their uses for random variables. • Expectation and variance of a random variable. Theorems and properties on Expectation and variance of random variables with proof. • Joint probability mass function of two discrete random variables. • Marginal and conditional distributions. • Covariance and Coefficient of Correlation. Independence of two random variables.	**10**
Unit		**Standard Discrete Probability Distributions**	**Lectures**
	III	1. Definition and derivation of mean and variance of the followingdistributions: 2. Discrete Uniform distribution 3. Bernoulli and Binomial distributions 4. Poisson distribution 5. Hypergeometric distribution 6. Geometric distribution.	10

| | 7. Recurrence relation for probabilities of Binomial and Poisson distributions. | |
| | 8. Poisson approximation to Binomial distribution (only statement) and its applications. | |

Reference Books

1. David S. : Elementary Probability, Cambridge University Press.
2. Hoel P.G. : Introduction to Mathematical Statistics, Asia Publishing House.
3. Hogg R.V. and Tannis E.P. : Probability and Statistical Inference.McMillan Publishing   Co. Inc.
4. Pitan Jim : Probability, Narosa Publishing House.
5. Goon A.M., Gupta M.K., Dasgupta B. : Fundamentals of Statistics, Volume II :The World Press Private Limited, Calcutta.
6. Mukhopadhyay P. An Introduction to the Theory of Probability, World Scientific Publishing Company, 2011.
7. Grewal P. S, Methods of Statistical Analysis, Sterling Publishers, 1990
8. S.C. Gupta and V.K. Kapoor, Fundamentals of Mathematical Statistics, Sultan Chand and Sons

Format of Question Paper:
Internal Continuous Assessment: (20 marks)

5Assignment/viva Quizzes, Class Tests, presentation, project, assignment etc	Class Test	Total
05	15	20

Semester End Examination: (30 marks)

Semester End Examination will be of 30 marks of 01 hour duration covering entire syllabus of the semester. Examiners should frame sub questions for Q.1, Q2 and Q3. Each question carrying 15 marks. Attempt any two out of three questions.

Theory Question Paper Pattern:

Q 1	Max. marks: 15	Attempts any two questions out of Three.
Q 2	Max. marks: 15	
Q 3	Max. marks: 15	

Semester-III

Minor-I

Name of the course: Practical based on Statistical Methods -I

Sr. No.	Heading	Particulars
1	**Description the course :** **Including but Not limited to :**	**Introduction:** Statistical Methods-I paper covers basic concept of probability and probability distribution which is useful to gain in-depth knowledge of probability and standard discrete distributions of other than statistics students of same faculty.
2	**Vertical :**	Minor
3	**Type :**	Practical
4	**Credit**:	2 credits (1 credit = 15 Hours for Theory or 30 Hours of Practical work in a semester)
5	**Hours Allotted :**	60 Hours
6	**Marks Allotted**:	50 Marks

Credit: 2	**Minor Practical Paper- I**	No. of Hours: 60
	List of Practical on **Statistical Methods-I**	
	1. Probability 1 2. Probability 2 3.Univariate Discrete random variable 4. Bivariate Discrete random variable 5. Binomial Distribution 6. Poisson Distribution 7. Hypergeometric Distribution 8. Geometric distribution. Practicals using EXCEL	

Refrence Books

1. Medhi J. : Statistical Methods, An Introductory Text, Second Edition,New Age International Ltd.
2. Agarwal B.L. : Basic Statistics, New Age International Ltd.
3. Spiegel M.R. : Theory and Problems of Statistics, Schaum' s Publications series. Tata McGraw-Hill.
4. Kothari C.R. : Research Methodology, Wiley Eastern Limited.
5. David S. : Elementary Probability, Cambridge University Press.
6. Hoel P.G. : Introduction to Mathematical Statistics, Asia Publishing House.
7. Hogg R.V. and Tannis E.P. : Probability and Statistical Inference.McMillan PublishingCo. Inc.
8. Pitan Jim : Probability, Narosa Publishing House.
9. Goon A.M., Gupta M.K., Dasgupta B. : Fundamentals of Statistics, Volume II :The World Press Private Limited, Calcutta.
10. Elhance D. N, Elhance V, Aggarwal B. M, Fundamentals of Statistics, Kitab Mahal Daryaganaj New Delhi, 2018.
11. Mukhopadhyay P. An Introduction to the Theory of Probability, World Scientific Publishing Company, 2011.
12. Grewal P. S, Methods of Statistical Analysis, Sterling Publishers, 1990
13. S.C. Gupta and V.K. Kapoor, Fundamentals of Mathematical Statistics, Sultan Chand and Sons.
14. Schaum Series book in O.R. Richard Broson. 2nd edition Tata Mcgraw Hill Publishing Company Ltd.
15. Operations Research: Methods and Problems: Maurice Sasieni, Arthur Yaspan and Lawrence Friedman,(1959), John Wiley & Sons.
16. Mathematical Models in Operations Research : J K Sharma, (1989), Tata McGraw Hill Publishing Company Ltd.
17. Principles of Operations Research with Applications to Management Decisions: Harvey M. Wagner, 2nd Edition, Prentice Hall of India Ltd.
18. Operations Research: S.D.Sharma.11th edition, KedarNath Ram Nath& Company.
19. Operations Research: H. A.Taha.6th edition, Prentice

Format of Practical Question Paper:
Internal Practical Continuous Assessment: (20 marks)

Journal	Assignment/Viva	Total
05	15	20

Semester End Practical Examination: (30 marks)

Semester End practical Examination will be of 30 marks of 01 hour duration covering all practical listed above of the semester. Examiners should frame questions for Q.1, Q.2 and Q.3. Each question carrying 10 marks. All questions are compulsory to solve.

Practical Question Paper Pattern:

Q 1	Max. marks: 10	All questions are compulsory.
Q 2	Max. marks: 10	
Q 3	Max. marks: 10	

A student must have a certified journal before appearing for the practical examination.

In case a student does not possess a certified journal, he/she is not qualified for journal 5 marks
For each paper minimum 75% of the practical must be completed to the journal certified.

As Per NEP 2020

University of Mumbai

Syllabus for Basket of OE Vertical 3	
Faculty of Commerce & Management	
Board of Studies in Business Management	
Second Year Programme	
Semester	**III**
Title of Paper (OE)	**Credits**
I) Financial Literacy	**2**
From the Academic Year	**2025-26**

Title of Paper: Financial Literacy (OE)

Sr. No.	Heading	Particulars
1	**Description the course:** **Including but not limited to:**	A) Introduction: Financial literacy is the ability to understand and use various financial skills, including budgeting, saving, investing, and managing debt. It empowers individuals to make informed financial decisions, achieve financial security, and build wealth over time. B) Relevance: Financial literacy is crucial for making informed and effective financial decisions. It helps individuals manage their money wisely, avoid debt traps, build wealth, and achieve financial security. C) Usefulness: Financial literacy is essential because it empowers individuals to make informed financial decisions, build wealth, and achieve financial security. D) Application: Financial literacy is the ability to understand and manage personal finances effectively. Its application is crucial in various aspects of life, including: Budgeting, Saving & Investing, Debt Management, Wealth Building, Risk Management, Tax Planning, Retirement Planning. E) Interest: Financial literacy is a great skill to develop. F) Connection with other courses: Financial literacy is essential for individuals to make informed decisions about personal finance, investments, and economic participation. Integrating financial literacy into various educational subjects enhances students' understanding and application of financial concepts across different contexts. G) Demand in the industry: The demand for financial literacy is growing rapidly across multiple industries due to increasing financial complexity, regulatory changes, and economic uncertainties. Here are some key trends driving this demand: Corporate Sector, Banking & Financial Services, Education & Training, Government & Policy Making, Entrepreneurship & Startups.

		H) Job prospects: Financial literacy is a growing field with strong job prospects, especially as individuals and organizations recognize the importance of financial education. Here are some career opportunities in financial literacy: Financial Educator, Financial Advisor/Planner, Financial Coach, Personal Finance Writer/Content Creator, Corporate Financial Wellness Consultant, Financial Analyst, Nonprofit Financial Literacy Program Coordinator, Banking and Credit Counselor
2	**Vertical:**	Open Elective
3	**Type:**	Theory
4	**Credit**:	2 credits (1 credit = 15 Hours for Theory in a semester)
5	**Hours Allotted:**	30 Hours
6	**Marks Allotted**:	50 Marks
7	**Course Objectives**: 1)Familiarity with different aspects of financial literacy such as savings, investment, taxation, and insurance. 2)Understand the relevance and process of financial planning. 3)To Promote financial well-being.	
8	**Course Outcomes**: 1) Learners will develop proficiency for personal and family financial planning. 2) Learners will develop the ability to analyse banking and insurance products. 3) Learners will Apply the concept of investment planning.	
9	**Modules**: -	

Module No.	Content	No. of Hours
1	Financial Planning and Financial Products	15
2	Investment Planning and Management	15
		30

	Module 1: Financial Planning and Financial Products
	A) Introduction to Saving, Time value of money, Management of spending and financial discipline, B) Banking products and services, Digitization of financial transactions: Debit Cards {ATM Cards) and Credit Cards., Net banking and UPI, C) Digital wallets, Security and precautions against Ponzi schemes and online frauds.
	Module 2: Investment Planning and Management
	A) Investment opportunity and financial products. B) Insurance Planning: Life and non-life including medical insurance schemes. C) Introduction to basic Tax Structure in India for personal taxation, Aspects of Personal tax planning.
10	**Reference Books:** • Introduction to Financial Planning (4th Edition 2017)- Indian Institute of Banking & Finance. • Bhasham, A.L, Wonder that was India: A Survey of the Culture of the Indian Subcontinent Before the Coming of the Muslims. London, Sidgwick and Jackson, 1954' • Sinha, Madhu. Financial Planning: A Ready Reckoner July 2017, McGraw Hill. • Halan, Monika, Lets Talk Money: You've Worked Hard for It, Now Make It Work for You, July 2018 Harper Business. • Pandit, Amar The Only Financial Planning Book that You Will Ever Need, Network 18 Publications Ltd.

11	**Internal Continuous Assessment: 40%**	**External, Semester End Examination 60% Individual Passing in Internal and External Examination**
12	**Continuous Evaluation through:** Quizzes, Class Tests, presentation, project, role play, creative writing, assignment etc.(at least 3)	

QUESTION PAPER PATTERN
(External and Internal)
For 2 Credits paper of 50 Marks

PAPER PATTERN- EXTERNAL

Time: 1 hr   Total Marks: 30

Any 2 out of 3 Questions

Q. No	Questions	Total
Q1	a. b.	15
Q2	a. b.	15
Q3	a. b.	15

Note

A) Questions can be set from any module

B) Equal weightage is to be given to all the modules.

PAPER PATTERN- INTERNAL

Continuous Evaluation: Internal (20 marks)

	Assessment/ Evaluation	Marks
1	Class Test during the lectures. (Physical/ Online mode) (Short notes/ MCQ's/ Match the Pairs/ Answer in one sentence/ Puzzles)	10
2	Participation and paper presentation in Workshop/ Conference/Seminar, Assignment	5
3	field visit, case study, group discussion, presentation, Certificate Course	5

Sd/-
Sign of the BOS Chairman
Dr. Megha Somani
Board of Studies in Business Management

Sd/-
Sign of the Offg. Associate Dean
Prin. Kishori Bhagat
Faculty of Commerce & Management

Sd/-
Sign of the Offg. Associate Dean
Prof. Kavita Laghate
Faculty of Commerce & Management

Sd/-
Sign of the Offg. Dean
Prin. Ravindra Bambardekar
Faculty of Commerce & Management

As Per NEP 2020

University of Mumbai

Syllabus for Marathi - AEC	
Board of Studies in Marathi	
UG Second Year Programme	
Semester	III
Title of Paper	लेखन कौशल्ये -२ (महाजालावरील लेखन)
Credits	2
From the Academic Year	2025-26

Syllabus
B.A. (Marathi AEC)
(Semester - III)

Title of Paper : लेखन कौशल्ये - २ (महाजालावरील लेखन)

Sr. No.	Heading	Particulars
1.	अभ्यासक्रमाचे वर्णन : (Description of the Course)	राष्ट्रीय शैक्षणिक धोरण - २०२० विद्यार्थ्यांच्या सर्वांगीण विकासावर (Wholistic Development) भर देते. या धोरणात सर्वांगीण विकासाचा भाग म्हणून **क्षमता वर्धन अभ्यासक्रम (Ability Enhancement Course)** या स्तंभांतर्गत भाषिक कौशल्य अभ्यासक्रमाचा समावेश करण्यात आला आहे. कला, वाणिज्य व विज्ञान या विद्याशाखांमध्ये अध्ययन करणाऱ्या विद्यार्थ्यांना तिसऱ्या सत्रामध्ये 'आधुनिक भारतीय भाषां'चे अध्ययन अनिवार्य करण्यात आले आहे. सदर **क्षमता वर्धन अभ्यासक्रमा**चे स्वरूप प्रामुख्याने भाषाकेंद्री असावे, असेही राष्ट्रीय शैक्षणिक धोरणात नमूद करण्यात आले आहे. विद्यार्थ्यांना विविध प्रकारच्या भाषिक कौशल्यांचा तपशीलवार परिचय करून देणे, तसेच ती कौशल्ये आत्मसात करण्याची संधी विद्यार्थ्यांना उपलब्ध करून देणे, ही या अभ्यासक्रमाची महत्त्वाची उद्दिष्टे आहेत. ही उद्दिष्टे लक्षात घेऊन **'लेखन कौशल्ये - २ (महाजालावरील लेखन)' (श्रेयांकने २)** या अभ्यासपत्रिकेची आखणी करण्यात आली आहे. आंतरमहाजाल हे एकविसाव्या शतकातील अत्यंत प्रभावी साधन आहे. जगभरातील संगणक एकमेकांशी जोडले जाऊन त्यांचे जाळे तयार झाले आहे. विविध सामाजिक माध्यमस्थळांवर स्वतःचे खाते (अकाउंट) तयार करणे आणि त्यावर मराठी भाषा व देवनागरी लिपीतून लिहिणे, ही समकालीन संपर्क व्यवहारातील आवश्यक बाब झाली आहे. यास अनुसरून आपल्या अभिव्यक्तीला व्यासपीठ मिळवून देणारी अनुदिनी (ब्लॉग) तयार करणे, विकिपीडियावर भोवतालातील भाषा, साहित्य, संस्कृतीशी निगडित माहितीपर व विश्लेषणात्मक नोंदी लिहिणे, सामाजिक माध्यमस्थळांवरील आपल्या खात्यावर सातत्याने अभ्यासपूर्ण लेखन करणे, स्वक्षमतेशी निगडित समाजगट / आभासी कट्टे (कम्युनिटी ग्रुप) तयार करणे, या बाबींसाठी आवश्यक सामाजिक माध्यमस्थळ साक्षरता आणि मराठी भाषा व देवनागरी लिपीतून लिहिण्याची क्षमता **'लेखन कौशल्ये - २ (महाजालावरील लेखन)' (श्रेयांकने २)** या अभ्यासपत्रिकेच्या अध्ययनातून विद्यार्थ्यांमध्ये निर्माण होईल.

2.	**Vertical**	Ability Enhancement Course
3.	**Type**	Theory
4.	**Credit**	2 Credits (1 Credit = 15 Hours for Theory or 30 Hours of Practical Work in a Semester)
5.	**Hours Allotted**	30 Hours (AEC या स्तंभांतर्गत शिकविल्या जाणाऱ्या अभ्यासपत्रिकांच्या कार्यभारासंबंधी मुंबई विद्यापीठाच्या दिनांक २३ जुलै, २०२४ च्या NO.AAMS_UGS/ICC/2024-25/19 या परिपत्रकाचा आधार घ्यावा.)
6.	**Marks Allotted**	50 Marks
7.	**अभ्यासक्रम उद्दिष्टे (Course Objectives) :** १. महाजालावरील लेखन कौशल्याचे स्वरूप समजावून सांगणे. २. महाजालावर प्रभावी लेखन करण्यासाठी आवश्यक असणाऱ्या तंत्रांचा परिचय करून देणे. ३. नेहमीच्या पठडीतील लेखन व महाजालावरील लेखन यांमधील साम्य-भेद स्पष्ट करणे. ४. विविध सामाजिक माध्यमस्थळांवर लेखन करण्यासाठी आवश्यक कौशल्ये व क्षमता विकसित करणे.	
8.	**अभ्यासक्रम निष्पत्ती (Course Outcomes) :** १. विद्यार्थ्यांना महाजालावरील लेखन कौशल्याचे स्वरूप समजेल. २. विद्यार्थ्यांना महाजालावर प्रभावी लेखन करण्यासाठी आवश्यक तंत्रांचा परिचय होईल. ३. विद्यार्थ्यांना नेहमीच्या पठडीतील लेखन व महाजालावरील लेखन यांमधील साम्य-भेद स्पष्ट होईल. ४. विद्यार्थ्यांमध्ये विविध सामाजिक माध्यमस्थळांवर लेखन करण्यासाठी आवश्यक कौशल्ये व क्षमता विकसित होतील.	
9.	**अभ्यासघटक (Module) :**	
	घटक - १ : सामाजिक माध्यमस्थळांवर मराठी भाषा व देवनागरीतून लेखन (भाग - १)	
	अ) अनुदिनी (ब्लॉग) लेखन आ) विकिपीडियावरील लेखन (६० मिनिटांच्या १५ तासिका, श्रेयांकन १) (सूचना : विद्यार्थ्यांमध्ये उपरोक्त सामाजिक माध्यमस्थळांवर लेखन करण्यासाठी आवश्यक कौशल्ये व क्षमता विकसित होतील या दृष्टीने शिक्षकांनी सराव करून घ्यावा.)	

	घटक -२ : सामाजिक माध्यमस्थळांवर मराठी भाषा व देवनागरीतून लेखन (भाग - २) अ) फेसबुक, इन्स्टाग्राम, एक्स यांवरील लेखन आ) समाज गट (कम्युनिटी ग्रुप), आभासी कट्टे यांवरील लेखन (६० मिनिटांच्या १५ तासिका, श्रेयांकन-१) (सूचना : विद्यार्थ्यांमध्ये उपरोक्त सामाजिक माध्यमस्थळांवर लेखन करण्यासाठी आवश्यक कौशल्ये व क्षमता विकसित होतील या दृष्टीने शिक्षकांनी सराव करून घ्यावा.)
10.	**पाठ्य ग्रंथ (Text books) :** N. A.
11.	**संदर्भ ग्रंथ (Reference Books) :** १. *मराठी व्याकरण आणि लेखन,* विनायक गंधे व मीरा जोशी, निराली प्रकाशन, पुणे, २०१२. २. *उपयोजित मराठी,* (संपा.) केतकी मोडक व अन्य, पद्मगंधा प्रकाशन, पुणे, २०१२. ३. *मराठी भाषिक कौशल्य विकास,* (संपा.) पृथ्वीराज तौर, अर्थव पब्लिकेशन्स, धुळे, २०१८. ४. व्यावहारिक मराठी, ल. रा. नसिराबादकर, भाषा विकास संशोधन संस्था, कोल्हापूर, २०२३. ५. *Aayushi International Interdisciplinary Research Journal* (ISSN 2349-638x) Peer Reviewed Journal www.aiirjournal.com
12.	**Internal Continuous Assessment : 40%**	**External, Semester End Examination : 60% Individual Passing in Internal and External Examination**
13.	**अंतर्गत सातत्यपूर्ण मूल्यांकन (Internal Continuous Assessment) : २० गुण** **अंतर्गत मूल्यांकनाचे स्वरूप (Format of Internal Assessment) :** चाचणी परीक्षा / मौखिक परीक्षा / प्रकल्पलेखन / नियतकार्य (Assignment) / सादरीकरण / प्रश्नमंजूषा यांपैकी कोणत्याही पद्धतींचा अवलंब करून अंतर्गत मूल्यमापन करता येईल. (प्रत्यक्ष उपस्थिती किंवा ऑनलाईन)

14.	बहिर्गत परीक्षा (External Examination) **:** ३० गुण (वेळ : एक तास)

बहिर्गत परीक्षेच्या प्रश्नपत्रिकेचे स्वरूप (**Format of Question Paper**) **:**

१. प्रत्येकी **१५** गुणांचे एकूण **तीन** प्रश्न विचारावेत. त्यांपैकी विद्यार्थ्यांनी कोणतेही **दोन** प्रश्न सोडवावेत.

२. पहिले **दोन** प्रश्न दीर्घोत्तरी स्वरूपाचे असावेत. दोन्ही घटकांवर आधारित **१५** गुणांचे अंतर्गत पर्याय असलेले **दोन** प्रश्न विचारावेत.

३. **तिसरा** प्रश्न हा घटक क्रमांक एक व दोनवर आधारित **१५** गुणांचा वस्तुनिष्ठ स्वरूपाचा असावा. प्रत्येक घटकावर दहा याप्रमाणे एकूण **वीस** प्रश्न विचारावेत. विद्यार्थ्यांनी कोणतेही **पंधरा** प्रश्न सोडवावेत.

	Sd /-	Sd/-	Sd/-	Sd/-
	Sign of the BOS Chairman	**Sign of the Offg. Associate Dean**	**Sign of the Offg. Associate Dean**	**Sign of the Offg. Dean**
	Prof. Dr. Satish Kamat	**Dr. Suchitra Naik**	**Prof. Manisha Karne**	**Prof. Anil Singh**
	Board of Studies in Marathi	**Faculty of Humanities**	**Faculty of Humanities**	**Faculty of Humanities**

As Per NEP 2020

University of Mumbai

Syllabus for Basket of AEC Vertical 5	
Faculty of- HUMANITIES	
Board of Studies in HINDI	
Second Year Programme	
Semester	**III**
Title of Paper	**Credits**
I) हिंदी भाषा : व्यावहारिक प्रयोग	**2**
From the Academic Year	**2025-26**

Title of Paper- हिंदी भाषा:व्यावहारिक प्रयोग

Sr. No.	Heading	Particulars
1	**Description of the course:**	भाषा का जीवन में सदैव महत्व रहा है। जीवन और भाषा का चोली-दामन का संबंध है। जब हमारी भाषा मधुर और सार्थक होती है तो श्रोता पर विशिष्ट प्रभाव पड़ता है। भाषा का यदि सही और सार्थक रूप से प्रयोग किया जाए तो मनुष्य जीवन में कहीं भी असफल नहीं हो सकता है। इसी भाषा के माध्यम से हम सभी को अपनी ओर आकर्षित भी करते हैं। वर्तमान युग में रोज़गार में बहुत से क्षेत्र भाषा से जुड़े हुए हैं, जिसके माध्यम से विद्यार्थी इनका लाभ ग्रहण कर सकते हैं। भाषाई क्षमता हमारे विचारों की संवाहक होती है। आज डिजिटल युग में अभिव्यक्ति के कई माध्यमों का प्रसार हुआ है, इन माध्यमों में भाषा ही सशक्त तत्व है जो आपकी अभिव्यक्ति को पूरे जगत को अवगत कराती है। भाषा का महत्व हर समय, हर माध्यम में रहा है, परंतु भाषा का सार्थक रूप का प्रयोग आज बहुत आवश्यक है। आज हिंदी अंतरराष्ट्रीय स्तर पर प्रयोग में लाई जा रही है, तकनीक, सूचना प्रौद्योगिकी सोशल मीडिया, राजनीति की भाषा हिंदी बन चुकी है। जीवन में कई क्षेत्रों में व्यावहारिक स्तर पर हमें अपनी भाषा के लिखित स्वरूप के कार्यों को करना होता हैऔर ऐसे में कार्य-दक्षता महत्व रखती है। हिंदी भाषा में व्यावहारिक प्रयोग को केंद्र में रखकर और इन्हीं पहलुओं को ध्यान में रखते हुए इस पाठ्यक्रम का गठन किया गया है। हम हिंदी भाषा को सही और शुद्ध रूप में प्रयोग कर अभिव्यक्ति को सफल बनाएं और बिना व्याकरण के यह संभव नहीं है। इस दृष्टि से पाठ्यक्रम सर्वाधिक लाभकारी सिद्ध होगा।
2	**Vertical:**	AEC
3	**Type:**	Theory
4	**Credit**:	2 credits (1 credit = 15 Hours for Theory)
5	**Hours Allotted:**	30 Hours
6	**Marks Allotted**:	50 Marks
7	**Course Objectives:** 1. विद्यार्थियों को राजभाषा हिंदी का विधिवत ज्ञान प्रदान करना।	

	2. विद्यार्थियों को राजभाषा हिंदी के व्याकरण से परिचय करवाना।
	3. विद्यार्थियों को संज्ञा आदि का ज्ञान प्रदान करना।
	4. विद्यार्थियों को कारकों, वाक्य रचना एवं भाषिक चिह्नों आदि का ज्ञान प्रदान करना।
8	**Course Outcomes:**
	1. विद्यार्थियों को राजभाषा हिंदी का ज्ञान प्राप्त होगा, एवं दक्षता प्राप्त होगी।
	2. विद्यार्थियों को राजभाषा हिंदी के व्याकरणिक प्रयोग की जानकारी प्राप्त होगी।
	3. विद्यार्थियों को हिंदी-संज्ञा आदि का ज्ञान प्राप्त होने के साथ भाषा के शुद्ध, व्यावहारिक रूप का ज्ञान होगा।
	4. विद्यार्थियों को कारकों, वाक्य रचना एवं भाषिक चिह्नों आदि का ज्ञान प्राप्त होगा।
9	Modules (Per credit one module can be created)

इकाई-1	व्याख्यान-15	क्रेडिट-01
1. हिंदी भाषा : सामान्य परिचय		
2. राजभाषा हिंदी : संवैधानिक महत्त्व		
3. वर्णमाला : स्वर एवं व्यंजन		
4. शब्द भेद : सामान्य परिचय (संज्ञा आदि)		
इकाई-2	**व्याख्यान-15**	**क्रेडिट-01**
1. वाक्य : सामान्य परिचय		
2. वर्तनी : शुद्धता का प्रयोग एवं सावधानियाँ		
3. कारक एवं विराम चिह्न		
4. पत्र लेखन : (बधाई, निमंत्रण, सुझाव, शिकायत, आभार, आवेदन, RTI लेखन)		

10	संदर्भ ग्रंथ-
	1. बाबूराम सक्सेना- सामान्य भाषा विज्ञान, हिंदी साहित्य सम्मेलन, प्रयाग
	2. कामताप्रसाद गुरु- हिंदी व्याकरण, लोकभारती प्रकाशन, इलाहाबाद
	3. आचार्य देवेंद्र नाथ शर्मा- भाषा विज्ञान की भूमिका, राधाकृष्ण प्रकाशन, दिल्ली
	4. भाषा विज्ञान एवं भाषाशास्त्र- कपिलदेव द्विवेदी, विश्वविद्यालय प्रकाशन, वाराणसी
	5. भोलानाथ तिवारी- भाषा विज्ञान, किताब महल, इलाहाबाद

11	**Internal Continuous Assessment :**	**External : Semester End Examination :**
	40%	**60%**
12	**Continuous Evaluation through:**	लिखित परीक्षा
		अंक : **30**
	● रचनात्मक कार्य/प्रकल्प इत्यादि- 10 अंक	**समयावधि : 01 घंटा**
	● प्रस्तुति/परिसंवाद सहभागिता इत्यादि- 05 अंक	
	● अकादमिक, व्यावसायिक एवं कौशल संवर्धन गतिविधियाँ- 05 अंक **कुल 20 अंक**	

13	**Format of Question Paper:** for the semester end examination	लिखित परीक्षा
	अंक : 30	समयावधि : 01 घंटा

निर्देश-

1. दोनों इकाइयों से प्रश्न पूछे जाएं।

2. तीन प्रश्न पूछे जाएं, किन्हीं दो प्रश्नों के उत्तर अपेक्षित हैं। 15x2 = **30 अंक**

कुलयोग- **30 अंक**

Sd/-   **Sd/-**   **Sd/-**   **Sd/-**

Sign of the BOS Chairman Prof. Dr. Santosh Motwani Board of Studies in Hindi

Sign of the Offg. Associate Dean Dr. Suchitra Naik Faculty of Humanities

Sign of the Offg. Associate Dean Prof. Manisha Karne Faculty of Humanities

Sign of the Offg. Dean Prof. Anil Singh Faculty of Humanities

As Per NEP 2020

University of Mumbai

Syllabus for CC		
Ad- hoc Board of Studies in N.C.C./N.S.S./Sports Co-Curricular		
UG First Year Programme – CC- Sports		
Semester	**III & IV**	
Title of Paper	**Sem**	**Credits**
Introduction to Sports Training & Tests and Measurement	**III**	**2**
Advanced Sports Training and Performance Evaluation	**IV**	**2**
From the Academic Year		**2025-26**

Course (Optional): Introduction to Sports, Physical Literacy, Health & Fitness and Yog

CBCS (Choice Based Credit System)

Second Year- Semester III
Course Structure

Semester	Paper	Title of Paper	No of lecture (Theory)	Internal Evaluation (IE)	End Semester Evaluation	Total Marks	Credits
Third	CC	Introduction to Sports Training & Tests and Measurement	30	20	30	50	02
Total	**-**	**-**	**30**	**20**	**30**	**50**	**02**

UNIVERSITY OF MUMBAI

Semester III

(w.e.f. June, 2025)

Sub:- Introduction to Sports Training & Tests and Measurement

Preamble:

Sports play a vital role in fostering physical fitness, mental resilience, and holistic well-being. Understanding the intricacies of sports training and the science of test and measurement is essential for optimizing athletic performance and personal growth. Sports training encompasses systematic methods to enhance physical capabilities, skill development, and strategic planning, while test and measurement provide the tools to evaluate fitness levels, track progress, and refine training protocols. Together, these disciplines empower individuals to achieve their full potential, making them indispensable components of modern sports science and athletic excellence.

Aims and Objectives
Sports Training
- To understand the foundation and principles of sports training.
- To study various training methods and their applications.
- To explore the process of designing personalized and professional training plans.
- To analyze the role of training in achieving peak performance.

Tests and Measurement in Sports
- To understand the significance of test and measurement in sports.
- To learn about various types of tests and their applications.
- To comprehend the criteria for good testing and measurement methods.
- To explore the use of test and measurement data for performance analysis and improvement.

Learning Outcomes
Sports Training
The course will enable the learner to:
- Understand and apply the principles of sports training.
- Identify and differentiate between various training methods.
- Develop effective exercise plans and training schedules.
- Evaluate the impact of training on performance enhancement.

Tests and Measurement in Sports
The course will enable the learner to:
- Identify and explain the importance of test and measurement in sports.
- Apply various skill, fitness, and psychological tests.
- Evaluate test results to assess fitness and performance levels.
- Utilize test data to design targeted training and rehabilitation programs

UNIVERSITY OF MUMBAI

Semester – III

(w.e.f. June, 2025)

Sub:- Introduction to Sports Training & Tests and Measurement

Credits: 02 **Lectures: 30** **Marks:50**

Module No.	Unit No	Title of the Unit	No. of Lectures	No. of Credits
1	I	***Introduction to Sports Training*** **Meaning, Definition, and Components/Elements of Sports Training** • Meaning • Definition • Components/Elements	2	1
	II	**Principles of Sport Training** • FITT Principle (Frequency, Intensity, Time, Type) • Specificity • Progression • Overload • Reversibility • Tedium	5	
	III	**Types of Training Methods** • Interval Training • Fartlek Training • Continuous Training • Weight Training • Circuit Training • Plyometric Training • Flexibility Training	5	
	IV	**Basic Guidelines for Designing Exercise Plans and Training Schedules** • Current Health Status • Medical History • Level of Fitness • Training Load • Periodisation • Holistic/Integrated Approach • Person-Centred Approach • Training Intensity	3	
		Total	**15**	**1**

Sub:- Introduction to Sports Training & Tests and Measurement

Credits: 02   **Lectures: 30**   **Marks:50**

Module No.	Unit No	Title of the Unit	No. of Lectures	No. of Credits
2		***Test and Measurement in Sports***		
	I	**Meaning and Importance of Test and Measurement in Sports** • Meaning & Importance	1	
	II	**Criteria of a Good Test** • Validity • Reliability • Objectivity • Feasibility	2	
	III	**Types of Tests** Skill Tests • Wall Volley Test • Basketball Free Throw Test • Badminton Short Serve Test Fitness Tests • Cooper's 12-Minute Run/Walk Test • Sit and Reach Flexibility Test • Push-Up Test Psychological Tests • Sport Motivation Scale (SMS) • Competitive State Anxiety Inventory (CSAI-2) • Mental Toughness Questionnaire (MTQ)	6	1
	IV	**Methods of Measurement** • Anthropometric Measurements • Motor Fitness Measurements • Physiological Measurements	3	
	V	**Applications of Test and Measurement in Sports** **Talent Identification** • Performance Analysis • Designing Training Programs • Injury Prevention and Rehabilitation	3	
		Total	**15**	**1**

Scheme of Evaluation -

The Scheme of Examination shall be of 50 marks. It will be divided into Internal Evaluation

(20 marks) and Semester End Examination (30 Marks).

Semester III (50 Marks - 2 Credits)
Internal Evaluation (20 Marks)

Sr. No.	Particulars	Marks
1	Presentation **OR** Project **OR** Assignment	15
2	Participation in Workshop / Conference / Seminar / Fitness or Sports Activity (as decided by the Sports Incharge) **OR** Participation in Online Workshop / Conference / Seminar / Fitness or Sports related course (as decided by the Sports Incharge) **OR** Field Visit / Sports Events **OR** Attendance of Sports Practice Sessions	5

Semester End Examination (30 Marks)

Question No.	Particulars	Marks
1 to 30	**Objective Type Questions (All Units)** **Each question will carry one mark**	30
Total		30

References –

1. "Science and Practice of Strength Training" - Vladimir M. Zatsiorsky and William J. Kraemer
2. "Essentials of Strength Training and Conditioning" - National Strength and Conditioning Association (NSCA)
3. "Principles and Practice of Resistance Training" - Michael H. Stone, Meg Stone, and William A. Sands
4. "Periodization Training for Sports" - Tudor O. Bompa and Carlo A. Buzzichelli
5. "High-Performance Training for Sports" - David Joyce and Daniel Lewindon
6. "Tests and Measurements in Sports and Physical Education" - Dr. A.K. Uppal and Dr. G.P. Gautam
7. "Measurement by the Physical Educator: Why and How" - David K. Miller and Harold M. Barrow
8. "Kinanthropometry and Exercise Physiology Laboratory Manual" - Roger Eston and Thomas Reilly
9. "Evaluation of Human Work" - John R. Wilson and NIGEL CORLETT
10. "Advanced Fitness Assessment and Exercise Prescription" - Vivian H. Heyward and Ann L. Gibson

As Per NEP 2020

University of Mumbai

Syllabus for CC

Ad- hoc Board of Studies in N.C.C./N.S.S./Sports Co-Curricular

UG First Year Programme – National Service Course

Semester	III & IV	
Title of Paper	**Sem**	**Credits**
Study of Indian Social Reformers	III	2
Youth and Disaster Management	IV	2
From the Academic Year		2025-26

UNIVERSITY OF MUMBAI

Semester III

(w.e.f. June, 2025)

Sub: - NSS- Study of Indian Social Reformers

Credits: 02   **Lectures: 30**   **Marks:50**

Unit Number	SEMESTER 3	No. of Lecture	No. of Credits
	Title of the Unit		
1	**History of Social work in India** Social Reformers: Definition, concept and Nature History of Indian Social Reformers Characteristics Indian Social Reformers - Pre-Post Independence **Skills for NSS volunteers:** **Soft Skills for NSS Volunteers –** Communication skills, Public speaking skills, Body Language, Content writing, Resume writing. **Life Skills –** problem solving, Empathy, coping with emotions, self- Awareness and inter personal skills.	15	1
2	**Contributions of Social Reformers** • Mahatma Gandhi • Swami Vivekanand • Sant Gadge Baba • Mahatma Jyotiba Phule • Rajshri Shahu Maharaj • Baba Amte • RajaRam Mohan Roy	15	1

References –

1) Fadake G. D., (Sampadak) – Mahatma FuleSamagraWangmaya.

2) Salunkhe P.B., (Sampadak) – Mahatma FuleGouravGranth.

3) NarkeHari,(Sampadak) -Mahatma Fule :ShodhachyaNavyaWata.

4) Bhosale S. S., (Sampadak) –KrantiSukte: RajarshiChhatrapatiShahu

5) PawarJaysingrao, (Sampadak) –RajarshiShahuSmarakGranth

6) Dr. BabasahebAmbedkarlekhanaaniBhashanekhand 18, Bhag –1,2,3.

7) ToksalePrajacta -VyavysaikSamajkarya

8) Dr. V.C. Dande : National Service Scheme Review

9) Joshi V.N.-BhartiyTatvdnyanachabruhadItihas, Khand10

10) YadiIndumati -BharatratnaShendgeDipak (Anuwad) -MadarTeressa.

11) Marathi Vishwakosh, Khanda12.

12) Bhagat R.T. - Swami VivekanandTeAcharyaVinoba.

13) ShethPurushottam, KhambeteJayashri, Mane ShailajaRashtriyaSevaYojna

14) MishrAnupam - AajBhikharehaiTalab(Hindi)

15) ThotePurushottam–SamajkaryachiMultatve

16) Bhide G.L.,MaharashtratilSamajSudharanechaItihaas

Evaluation Pattern
Internal Assessment

Assessment Criteria	Marks
Assignment / Project / Quiz/Presentations	10
Attendance, Class and Activity Participation	10
Total	**20**

External Assessment
Question Paper Pattern

Time: 1:00 Hours   **Total Marks: 30**

Introduction:-1. All questions are compulsory.
2. Figure to the Right indicates full marks.
3.Draw neat labeled drawings wherever necessary.

_____

Q.1) Rewrite the following by choosing the correct options given below
(with four alternatives) 6 Objectives question of 1 mark each   **06 marks**.

1. a)   b)   c)   d)
2. a)   b)   c)   d)

Q.2) Short Notes . (Any Two out of Four)   **06marks**
   1.
   2.
   3.
   4.

Q.3) Answer the following questions (Any Three out of Five)   **18 marks**
   1.
   2.
   3.
   4.
   5.

....

NSS Project Report Format
(For Projects in Adopted Area / Village)

➢ **Cover Page**
- Name of the Institution
- Title of the Project (e.g., "Cleanliness Drive in XYZ Village")
- Name(s) of Student Volunteer(s)
- Name of Programme Officer
- Duration of the Project
- Date of Submission

➢ **Certificate**
- Issued by the Programme Officer/NSS Coordinator certifying the successful completion of the project.

➢ **Acknowledgment**
- Brief section to thank authorities, community members, NSS coordinators, peers, etc.

➢ **Index**
- A table listing all sections with corresponding page numbers.

1. Introduction
2. Profile of the Adopted Area / Village
3. Objectives of the Project
4. Planning and Preparation
5. Implementation of Activities
6. Outcomes and Impact
7. Challenges Faced
8. Feedback
9. Conclusion and Suggestions

➢ **Annexures**
- Photographs (with captions)
- Survey forms or questionnaires used
- Newspaper clippings (if any)
- Charts, posters, or flyers prepared

Sd/-	Sd/-	Sd/-	Sd/-
Sign of the BOS Chairman **Dr. Sunil Patil** **Ad-hoc Board of Studies in N.C.C./N.S.S./Sports Co-Curricular**	**Sign of the Offg. Associate Dean** **Dr. C.A.Chakradeo** **Faculty of Interdisciplinary Studies**	**Sign of the Offg. Associate Dean** **Dr. Kunal Ingle Faculty of Interdisciplinary Studies**	**Sign of the Offg. Dean** **Prof. A. K. Singh** **Faculty of Interdisciplinary Studies**

As Per NEP 2020

University of Mumbai

Syllabus for CC		
Ad- hoc Board of Studies in N.C.C./N.S.S./Sports Co-Curricular		
UG First Year Programme - Co-Curricular Course		
Semester	**III & IV**	
Title of Paper	**Sem**	**Credits**
Indian Theatre: Classical Roots and Contemporary Expressions	**III**	**2**
Integrated Theatre Production: Stage Craft, Costume, Music and Technology	**IV**	**2**
From the Academic Year		**2025-26**

Indian Theatre: Classical Roots and Contemporary Expressions

Syllabus for Two Credits Programme

With effect from Academic Year 2025-2026

Aims and Objectives

- To understand the historical evolution of Indian theatre from Vedic to modern times.
- To analyze the core principles of Bharata's *Natyashastra* and their relevance in contemporary theatre.
- To examine major classical playwrights and evaluate the narrative and thematic aspects of their works.
- To explore and differentiate various streams of modern Indian theatre including commercial, experimental, and children's theatre.
- To develop a critical perspective on the sociopolitical role of street and one-act plays.
- To appreciate the interdisciplinary nature of performing arts by connecting theory with practical examples.

Learning Outcomes

The course will enable the learner to

- Describe the historical and cultural development of Indian theatre across different time periods.
- Interpret and apply the aesthetic principles from *Natyashastra* (such as Rasa and Abhinaya) in the analysis of theatrical performances.
- Critically evaluate classical Indian plays for their structure, themes, character development, and historical significance.
- Compare and contrast different forms of modern Indian theatre and assess their audience impact and staging methods.
- Demonstrate understanding of street theatre and one-act plays by creating outlines or performing excerpts reflecting real-world issues.
- Reflect on the role of performing arts in cultural preservation, education, and community engagement.

Modules at Glance
Semester III

Module No.	Unit	Content	No. of Hours
1	I	Indian Theatre: Historical Roots	07
	II	Bharata's *Natyashastra* and Theatrical Principles	08
2	III	Classical Playwrights and Dramatic Texts	07
	IV	Streams and Forms of Modern Indian Theatre	08
Total No. of Hours			**30**

Module No.	Unit	Content
1	I	**Indian Theatre: Historical Roots** • History of Indian Drama, Origins: Historical development: From Vedic rituals to Sanskrit drama, medieval folk forms, colonial influences, and post-independence trends. • Major periods: Ancient (Natyashastra era), Medieval (Bhakti and folk traditions), Modern (colonial and post-independence)
	II	**Bharata's *Natyashastra* and Theatrical Principles** • In-depth analysis of *Natyashastra*, the foundational treatise on Indian dramaturgy • Key concepts: • Natyagriha (Ancient theatre architecture) • Rasa Theory – the aesthetic experience and emotional flavors • Bhava, Abhinaya, and their relevance in classical performance • Influence of *Natyashastra* on later theatrical tradition
2	III	**Classical Playwrights and Dramatic Texts** • Critical study of major classical dramatists and their works: • **Kalidasa** – *Abhijnanasakuntalam, Malavikagnimitram* • **Bhasa**, **Sudraka**, **Bhavabhuti** – Key themes and innovations. • Analysis of plot structure, character portrayal, and cultural context in classical play.
	IV	**Streams and Forms of Modern Indian Theatre** • **Commercial Theatre**: Characteristics, audience engagement, and production values • **Experimental Theatre**: Alternative spaces, innovative storytelling, and non-linear narratives • **Amateur Theatre**: Community participation, regional theatre groups, and resourceful staging • **Children's Theatre**: Educational objectives, interactive methods, and imagination-centered content • **One-Act Plays**: Structure, brevity, and intensity of narrative • **Street Theatre (Nukkad Natak)**: Origin, purpose, and

		socio-political engagement	

Scheme of Evaluation

The Scheme of Examination shall be of 50 marks. It will be divided into Internal Evaluation (20 marks) and Semester End Examination (30 Marks).

Semester III (50 Marks - 2 Credits)

Internal Evaluation (20 Marks)

Sr. No.	Particulars	Marks
1	Presentation **OR** Project **OR** Assignment	15
2	Participation in Workshop / Conference / Seminar (as decided by the Teacher) **OR** Participation in Online Workshop / Conference / Seminar (as decided by the Teacher) **OR** Field Visit **OR** Attendance	5

Semester End Examination (30 Marks)

Question No.	Particulars	Marks
1	**Objective Type Questions (All Units)**	06
2	**Descriptive Question(s) on Unit I** The Question may be divided into sub questions: Attempt any 2 out of 4 (Each of 3 Marks)	06
3	**Descriptive Question(s) on Unit II** The Question may be divided into sub questions: Attempt any 2 out of 4 (Each of 3 Marks)	06
4	**Descriptive Question(s) on Unit III** The Question may be divided into sub questions: Attempt any 2 out of 4 (Each of 3 Marks)	06
5	**Descriptive Question(s) on Unit IV** The Question may be divided into sub questions: Attempt any 2 out of 4 (Each of 3 Marks)	06
	Total	30

Reference Books

- *Ankur, D. R. (2021). Doosare Natyashastra ki Khoj (in Hindi). Vani Prakashan. ISBN: 978-9350004302.*
- *Bhatia, N. (Ed.). (2009). Modern Indian theatre: A reader. Oxford University Press.*
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- *Dinkar, R. S. (1966). Sanskriti ke chaar adhyay (in Hindi). Udayachal. ISBN: 9788185341052.*
- *Dikshit, S. N. (2009). Bharat aur Bhartiya Natyakala (in Hindi). Rashtriya Sanskrit Sansthan.*
- *Fischer-Lichte, E. (2008). The transformative power of performance: A new aesthetics. Routledge.*
- *Fischer-Lichte, E., & Majumdar, R. (Eds.). (2010). Theatres of India: A concise companion. Oxford University Press.*
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- *Ghosh, M. (Trans.). (1951). The Natyashastra of Bharatamuni (Vol. I & II). Asiatic Society of Bengal.*
- *Goswamy, B. N. (2004). The theory of rasa in Sanskrit drama. [Publisher not listed].*
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- *Mason, D. (Ed.). (2006). Performance traditions in India. Oxford University Press.*
- *Mathur, J. C. (2006). Paramparasheel natya (in Hindi). National School of Drama. ISBN-13: 9788181970756.*
- *Macdonell, A. A. (1900). A history of Sanskrit literature. D. Appleton and Company.*
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- *Shukla, B. (2009). Natyashastra (in Hindi). Chaukhamba Sanskrit Sansthan. ISBN: 978-81-208-2248-1.*
- *Sircar, B. (2009). Three plays: Evam Indrajit, Pagla Ghoda, and Bhoma. Oxford University Press.*
- *Solomon, R. H. (2004). New directions in Indian theatre. Seagull Books.*
- *Tendulkar, V. (2004). Collected plays in translation (Vol. 1). Oxford University Press.*
- *Tanvir, H. (2007). Charandas Chor and other plays. Seagull Books.*
- *Vatsyayan, K. (1980). Traditional Indian theatre: Multiple streams. National Book Trust.*
- *Vatsyayan, K. (1996). Indian poetics and Natyashastra. [Publisher not listed].*
- *Varadpande, M. L. (1987). A history of Indian theatre (Vols. 1–3). Abhinav Publications.*
- *Wales, H. W. (2010). Bharat ka pracheen natak: Vishwa sahitya aur theatre ke liye mulyon ka adhyayan (in Hindi). Motilal Banarsidass Publishing House. ISBN: 978-8120824522.*
- *Wilson, E., & Alvin, G. (2001). Theatre: The lively art (6th ed.). McGraw-Hill.*

Semester End Examination (30 Marks)

Question No.	Particulars	Marks
1	**Objective Type Questions (All Units)**	06
2	**Descriptive Question(s) on Unit I** The Question may be divided into sub questions: Attempt any 2 out of 4 (Each of 3 Marks)	06
3	**Descriptive Question(s) on Unit II** The Question may be divided into sub questions: Attempt any 2 out of 4 (Each of 3 Marks)	06
4	**Descriptive Question(s) on Unit III** The Question may be divided into sub questions: Attempt any 2 out of 4 (Each of 3 Marks)	06
5	**Descriptive Question(s) on Unit IV** The Question may be divided into sub questions: Attempt any 2 out of 4 (Each of 3 Marks)	06
Total		30

Reference Books

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o Malvil, H. (n.d.). *Magic of makeup for stage*.

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