

University of Mumbai

वेबसाईट - mu.ac.in

ईमेल - आयडी - dr.aams@fort.mu.ac.in
aams3@mu.ac.in



विद्याविषयक प्राधिकरणे
सभा आणि सेवा विभाग (ए.ए.एम.एस)
रूम नं. १२८ एम.जी.रोड, फोर्ट,
मुंबई - ४०० ०३२
टेलिफोन नं. - ०२२ - ६८३२००३३

(नॅक पुनर्मूल्यांकनाद्वारे ३.६५ (सी.जी.पी.ए.) सह अ++ श्रेणी
विद्यापीठ अनुदान आयोगाद्वारे श्रेणी १ विद्यापीठ दर्जा)


क.वि.प्रा.स.से./आयसीडी/२०२५-२६/३७

दिनांक : २७ मे, २०२५

परिपत्रक:-

सर्व प्राचार्य/संचालक, संलग्नित महाविद्यालये/संस्था, विद्यापीठ शैक्षणिक विभागांचे संचालक/ विभाग प्रमुख यांना कळविण्यात येते की, राष्ट्रीय शैक्षणिक धोरण २०२० च्या अमंलबजावणीच्या अनुषंगाने शैक्षणिक वर्ष २०२५-२६ पासून पदवी व पदव्युत्तर अभ्यासक्रम विद्यापरिषदेच्या दिनांक २८ मार्च २०२५ व २० मे, २०२५ च्या बैठकीमध्ये मंजूर झालेले सर्व अभ्यासक्रम मुंबई विद्यापीठाच्या www.mu.ac.in या संकेत स्थळावर NEP २०२० या टॅब वर उपलब्ध करण्यात आलेले आहेत.

मुंबई - ४०० ०३२
२७ मे, २०२५


(डॉ. प्रसाद कारंडे)
कुलसचिव

Copy forwarded for information and necessary action to :-	
1	The Deputy Registrar, (Admissions, Enrolment, Eligibility and Migration Dept)(AEM), dr@eligi.mu.ac.in
2	The Deputy Registrar, Result unit, Vidyanagari drresults@exam.mu.ac.in
3	The Deputy Registrar, Marks and Certificate Unit,. Vidyanagari dr.verification@mu.ac.in
4	The Deputy Registrar, Appointment Unit, Vidyanagari dr.appointment@exam.mu.ac.in
5	The Deputy Registrar, CAP Unit, Vidyanagari cap.exam@mu.ac.in
6	The Deputy Registrar, College Affiliations & Development Department (CAD), deputyregistrar.uni@gmail.com
7	The Deputy Registrar, PRO, Fort, (Publication Section), Pro@mu.ac.in
8	The Deputy Registrar, Executive Authorities Section (EA) eau120@fort.mu.ac.in He is requested to treat this as action taken report on the concerned resolution adopted by the Academic Council referred to the above circular.
9	The Deputy Registrar, Research Administration & Promotion Cell (RAPC), rapc@mu.ac.in
10	The Deputy Registrar, Academic Appointments & Quality Assurance (AAQA) dy.registrar.tau.fort.mu.ac.in ar.tau@fort.mu.ac.in
11	The Deputy Registrar, College Teachers Approval Unit (CTA), concolsection@gmail.com
12	The Deputy Registrars, Finance & Accounts Section, fort draccounts@fort.mu.ac.in
13	The Deputy Registrar, Election Section, Fort drelection@election.mu.ac.in
14	The Assistant Registrar, Administrative Sub-Campus Thane, thanesubcampus@mu.ac.in
15	The Assistant Registrar, School of Engg. & Applied Sciences, Kalyan, ar.seask@mu.ac.in
16	The Assistant Registrar, Ratnagiri Sub-centre, Ratnagiri, ratnagirisubcentar@gmail.com
17	The Director, Centre for Distance and Online Education (CDOE), Vidyanagari, director@idol.mu.ac.in
18	Director, Innovation, Incubation and Linkages, Dr. Sachin Laddha pinkumanno@gmail.com
19	Director, Department of Lifelong Learning and Extension (DLLE), dlleuniversityofmumbai@gmail.com

Copy for information :-	
1	P.A to Hon'ble Vice-Chancellor, vice-chancellor@mu.ac.in
2	P.A to Pro-Vice-Chancellor pvc@fort.mu.ac.in
3	P.A to Registrar, registrar@fort.mu.ac.in
4	P.A to all Deans of all Faculties
5	P.A to Finance & Account Officers, (F & A.O), camu@accounts.mu.ac.in

To,

1	The Chairman, Board of Deans pvc@fort.mu.ac.in
2	<p>Faculty of Humanities,</p> <p>Offg. Dean</p> <p>1. Prof.Anil Singh Dranilsingh129@gmail.com</p> <p>Offg. Associate Dean</p> <p>2. Prof.Manisha Karne mkarne@economics.mu.ac.in</p> <p>3. Dr.Suchitra Naik Naiksuchitra27@gmail.com</p> <p>Faculty of Commerce & Management,</p> <p>Offg. Dean,</p> <p>1 Prin.Ravindra Bambardekar principal@model-college.edu.in</p> <p>Offg. Associate Dean</p> <p>2. Dr.Kavita Laghate kavitalaghate@jbims.mu.ac.in</p> <p>3. Dr.Ravikant Balkrishna Sangurde Ravikant.s.@somaiya.edu</p> <p>4. Prin.Kishori Bhagat kishoribhagat@rediffmail.com</p>

	<p>Faculty of Science & Technology</p> <p>Offg. Dean</p> <p>1. Prof. Shivram Garje ssgarje@chem.mu.ac.in</p> <p>Offg. Associate Dean</p> <p>2. Dr. Madhav R. Rajwade Madhavr64@gmail.com</p> <p>3. Prin. Deven Shah sir.deven@gmail.com</p>
	<p>Faculty of Inter-Disciplinary Studies,</p> <p>Offg. Dean</p> <p>1. Dr. Anil K. Singh aksingh@trcl.org.in</p> <p>Offg. Associate Dean</p> <p>2. Prin. Chadrashekhhar Ashok Chakradeo cachakradeo@gmail.com</p> <p>3. Dr. Kunal Ingle drkunalingle@gmail.com</p>
3	Chairman, Board of Studies,
4	The Director, Board of Examinations and Evaluation, dboee@exam.mu.ac.in
5	The Director, Board of Students Development, dsd@mu.ac.in DSW direcotr@dsw.mu.ac.in
6	The Director, Department of Information & Communication Technology, director.dict@mu.ac.in

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

Sd/-

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

Sd/-

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

Sd/-

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

Under Graduate Diploma in Information Technology

Credit Structure (Sem. III & IV)

(B. Sc.)- Major & Minor

R. SU-510C										
Level	Semester	Major		Minor	OE	VSC, SEC (VSEC)	AEC, VEC, IKS	OJT, FP, CEP, CC,RP	Cum. Cr. / Sem.	Degree/ Cum. Cr.
		Mandatory	Electives							
5.0	III	8	...	4	2	VSC:2, APPLIED MATHEM ATICS	AEC:2	FP: 2 CC:2	22	UG Diploma 88
		Python Programming								
		DATA STRUCTURES								
		Operating System								
		Major Practical 3								
R. SU-510D										
5.0	IV	8	...	4	2	SEC:2 Comput er Graphics OR Mobile Program ming	AEC:2	CEP: 2 CC:2	22	UG Diploma 88
		Core Java								
		Software Engineering								
		Computer Networks								
		Major Practical 4								
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:	<p>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.</p> <p>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.</p> <p>The course focuses on core programming concepts like syntax, data structures, and control flow, ensuring that learners can write efficient and functional code.</p> <p>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.</p> <p>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.</p> <p>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.</p>
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	<p>Course Objectives (CO):</p> <p>CO 1. Master the core features of Python, including its execution model and a wide range of data types.</p> <p>CO 2. Develop proficiency in control flow by working with conditional statements, loops and other control structures.</p> <p>CO 3. Work efficiently with arrays, strings, and complex data structures, leveraging Python's capabilities for data manipulation.</p> <p>CO 4. Apply functions, modules, and string operations to solve real-world programming problems with flexibility and ease.</p> <p>CO 5. Manage file operations, utilize regular expressions, and handle date and time functions for comprehensive Python programming tasks.</p>	
8	<p>Course Outcomes (OC):</p> <p>OC 1. Demonstrate mastery of Python features to tackle a wide range of programming challenges.</p> <p>OC 2. Utilize control flow statements to ensure accurate and logical program execution.</p> <p>OC 3. Efficiently manipulate arrays, strings, and data structures to enhance data handling and problem-solving.</p> <p>OC 4. Design modular, efficient programs by leveraging functions, modules, and string operations.</p> <p>OC 5. Manage file operations, employ regular expressions, and manipulate date and time data to improve program functionality and performance.</p>	
9	<p>Module 1:</p> <p>Basic Elements of Python Programming:</p> <p>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</p> <p>Control Statements:</p> <p>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.</p> <p>Arrays:</p> <p>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</p> <p>Functions:</p> <p>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.</p>	15 Hrs

	Module 2:	
	<p>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</p> <p>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</p> <p>Regular Expressions: Introduction, Sequence Characters in Regular Expressions, Special Characters in Regular Expressions, Using Regular Expression on Files, Retrieving Information from an HTML File</p> <p>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</p>	15 Hrs
10	<p>Books and References:</p> <p>Textbooks</p> <ol style="list-style-type: none"> 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 <p>Reference Books</p> <ol style="list-style-type: none"> 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	<p>Continuous Evaluation through:</p> <p>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</p>	Format of Question Paper: External Examination (30 Marks)– 1 hr duration
14	<p>Format of Question Paper: (Semester End Examination: 30 Marks. Duration:1 hour)</p> <p>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)</p>	

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:	
	<p>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</p> <p>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.</p> <p>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</p> <p>4. Recursion Concept of recursion, base case, recursive step Examples: factorial, Fibonacci sequence</p>	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: <ol style="list-style-type: none"> 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):	
	<ol style="list-style-type: none"> 1. Understand basic knowledge of computer operating system structures and functioning. 2. Understand the process management mechanism 3. CO 3. Ability to apply CPU scheduling algorithms to manage tasks. 4. CO 4. Discuss methods of prevention and recovery from system deadlock 5. CO 5. Understand the implementation of file systems and directories 	
8	Course Outcomes (OC):	
	<ol style="list-style-type: none"> 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:	
	<p>Operating System Overview: Basics of operating systems: Generations, Types, Structure, Services, System Calls, System Boot, System Programs, Protection and Security.</p> <p>Process Management: Process Concepts, Process States, Process Control Block, Scheduling-Criteria, Scheduling Algorithms and their Evaluation, Threads, Threading Issues.</p> <p>Process Synchronization: Background, Critical-Section Problem, Peterson's Solution. Synchronization Hardware, Semaphores, Classic Problems of Synchronization.</p>	15 Hrs
	Module 2:	
	<p>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.</p> <p>Deadlock: System Model, Deadlock Characterization, Deadlock Prevention, Detection and Avoidance, Recovery from Deadlock.</p> <p>File System Interface: File Concept, Access Methods, Directory Structure, and File System Structure.</p>	15 Hrs

10	Books and Reference: <ol style="list-style-type: none"> 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):	<ol style="list-style-type: none">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 concepts6. 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):	<ul style="list-style-type: none">. 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.

	<p>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.</p> <p>7. Write programs for the following:</p> <ol style="list-style-type: none"> Write a program that takes two lists and returns True if they have at least one common member. Write a Python script to sort (ascending and descending) a dictionary by value. <p>8. Write programs for the following:</p> <ol style="list-style-type: none"> Write a program to accept and pass radius to a function that returns area and circumference (using tuple). Write a program to perform basic file operations on text files and binary files. Write a Python program to read last n lines of a file. <p>9. Write programs for the following:</p> <ol style="list-style-type: none"> Write a program to count the occurrences of a specific word in a file using regular expressions. Write a program to extract all hyperlinks () from an HTML file. <p>10. Write programs for the following:</p> <ol style="list-style-type: none"> Write a program that compares two dates (in DD/MM/YYYY format) and prints which one is earlier. Write a program to measure program execution time. 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
	<ol style="list-style-type: none"> Array Operations: Write a program to implement basic array operations: <ol style="list-style-type: none"> Insert an element at a specific position in an array. Delete an element from a specific position in an array. Search for an element in an array (linear search). Linked List Manipulation: Write a program to: <ol style="list-style-type: none"> Create a singly linked list. Insert a node at the beginning, end, and at a given position in a linked list. Delete a node from a given position in a linked list. Stack Application: Write a program to: <ol style="list-style-type: none"> Implement a stack using an array. Convert an infix expression to postfix notation using a stack. Queue Application: Write a program to: <ol style="list-style-type: none"> Implement a queue using an array. Simulate a simple queuing system (e.g., customer service queue). Binary Search Tree: Write a program to: <ol style="list-style-type: none"> Create a binary search tree. Insert nodes into a binary search tree. Search for a node in a binary search tree. Tree Traversal: Write a program to: <ol style="list-style-type: none"> Implement pre-order, in-order, 	

	<p>c. Post-order traversal of a binary tree.</p> <p>7.Hash Table: Write a program to:</p> <p>a. Implement a hash table with separate chaining for collision handling.</p> <p>b. Store and retrieve data from the hash table.</p> <p>8.Sorting Algorithms: Write programs to implement and compare the following sorting algorithms:</p> <p>a. Bubble sort</p> <p>b. Insertion sort</p> <p>c. Selection sort</p> <p>9.Searching Algorithms: Write programs to implement and compare:</p> <p>a. Linear search</p> <p>b. Binary search (on a sorted array)</p> <p>10.Combined Application</p> <p>a. Design a simple program that uses multiple data structures .</p>	
10	<p>Text Books:</p> <ol style="list-style-type: none"> 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	<p>Reference Books:</p> <ol style="list-style-type: none"> 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	<p>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.</p>	30 marks practical exam of 2 hours duration
14	<p>Format of Question Paper: Duration 2 hours. Certified copy of Journal is compulsory to appear for the practical examination</p> <p>Practical Slip:</p> <p>Q1. From Module 1 13 marks</p> <p>Q2. From Module 2 12marks</p> <p>Q3. Journal and Viva 05 marks</p>	

Semester-III

Minor-I

Name of the course: 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 :	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
	<p>CO2: Students will be able to,</p> <ol style="list-style-type: none"> 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 <p>OC2: On successful completion of this course Students Should be able to,</p> <ol style="list-style-type: none"> 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	<ul style="list-style-type: none"> • 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: <ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> • 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 to order 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	<ol style="list-style-type: none"> 1. Definition and derivation of mean and variance of the following distributions: 2. Discrete Uniform distribution 3. Bernoulli and Binomial distributions 4. Poisson distribution 5. Hypergeometric distribution 6. Geometric distribution. 	10

	<ol style="list-style-type: none">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	

Title of Paper Scala for DS

Sr. No.	Heading	Particulars
1	Description of the course : Including but Not limited to :	This course provides hands-on experience with Scala and its ecosystem for data analysis and machine learning. Students will learn statistical methods, machine learning algorithms, and data processing techniques using Breeze and Apache Spark. The course also covers time-series analysis, feature engineering, and building scalable data pipelines. Through practical exercises, students will gain proficiency in implementing regression models and clustering while handling real-world datasets effectively.
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 :	30 Hours
6	Marks Allotted:	50 Marks
7	Course Objectives: CO1: To set up and configure Scala, SBT, and Apache Spark for programming, data analysis, and large-scale data processing. CO2: To perform statistical calculations, including correlation, frequency distribution, and moving averages using Scala and Breeze, and visualize data insights with Breeze-viz. CO3: To implement machine learning models such as linear regression, logistic regression, and k-means clustering, along with feature engineering for predictive modeling. CO4: To utilize the Breeze library for numerical computations, matrix operations, and time-series data analysis to extract meaningful insights.	
8	Course Outcomes: OC1: Students will set up a functional Scala development environment with SBT and execute basic programs for data analysis. OC2: Students will utilize Breeze for numerical operations, matrix manipulations, and statistical computations such as correlation and frequency distribution. OC3: Students will create data visualizations using Breeze-viz and implement machine learning models, including regression and clustering, using Breeze. OC4: Students will work with Apache Spark for large-scale data processing, machine learning pipelines, and time-series analysis to extract meaningful insights.	

Modules:-**Module 1:**

0. Set up Scala and SBT on your system.
1. Write a simple Scala program that prints a welcome message for data scientists.
2. Calculate mean, median, and mode of a list of numbers. Implement basic statistical calculations using Scala collections.
3. Generate a random dataset of 10 numbers and calculate its variance and standard deviation.
4. Create a dense vector using Breeze and calculate its sum, mean, and dot product with another vector.
5. Generate a random matrix using Breeze and compute its transpose and determinant.
6. Slice a Breeze matrix to extract a sub-matrix and calculate its row and column sums.
7. Write a program to perform element-wise addition, subtraction, multiplication, and division of two Breeze matrices.
8. Read a CSV file and calculate basic statistics for each numeric column. Use the scala-csv library or similar tools.
9. Handle missing values in a dataset. Replace missing values with the column mean.
10. Filter rows in a dataset where a specific column value exceeds a threshold.
11. Write a program to tokenize and count the frequency of words in a text file.
12. Implement one-hot encoding for a categorical column in a dataset.
13. Create a scatter plot of random data using Breeze-viz. Label the axes and customize the color of points.
14. Generate a histogram of a dataset using Breeze-viz. Experiment with different bin sizes.
15. Plot a line graph for a dataset showing a trend over time.
16. Combine two plots (e.g., scatter and line plot) in a single visualization using Breeze-viz.

Module 2:

1. Find the correlation between two lists of numbers. Implement the formula for Pearson correlation coefficient.
2. Calculate the moving average of a time series data using Scala collections.
3. Write a program to compute frequency distribution and cumulative frequency of a dataset.
4. Sort a dataset by a specific column and extract the top 5 rows.
5. Implement linear regression using Breeze. Fit a model to a small dataset and predict a value.
6. Perform logistic regression using Breeze. Classify a dataset with binary labels.
7. Compute the Euclidean distance between two Breeze vectors. Use it for nearest neighbor classification.
8. Cluster a dataset into two groups using k-means clustering in Breeze.
9. Set up Apache Spark locally and count the frequency of words in a text file.
10. Filter rows in a CSV file using Spark DataFrames where a numeric column exceeds a threshold.
11. Perform a group-by operation in Spark DataFrames to compute the average of each group.
12. Join two CSV files in Spark DataFrames based on a common column and write the output to a file.

	<p>13. Create a simple Spark MLlib pipeline to classify data. Use logistic regression or decision trees.</p> <p>14. Perform basic time series analysis in Scala. Generate synthetic time series data (e.g., daily sales over a month).</p> <p>15. Create polynomial features from a dataset. Given a list of numbers (e.g., [1, 2, 3]), generate polynomial features up to degree 3 (e.g., [1, 1², 1³, 2, 2², 2³, 3, 3², 3³]).</p>	
10	<p>Text Books:</p> <ol style="list-style-type: none"> 1. Scala for Data Science, by Pascal Bugnion, Packt Publishing, 1st edition (28 January 2016) 2. Mastering Scala by Dennis Alexander, Packt Publishing, 1st edition (2023) 3. Scala 3 Mastery by John Hunt, Apress, 1st edition (2023) 4. Mastering Scala 3 by John Hunt, Apress, 1st edition (2023) 	
11	<p>Reference Books:</p> <ol style="list-style-type: none"> 1. Programming Scala by Dean Wampler and Alex Payne, O'Reilly Media, 3rd edition (2021) 2. Scala Cookbook by Alvin Alexander, O'Reilly Media, 2nd edition (2021) 3. Functional Programming in Scala by Paul Chiusano and Rúnar Bjarnason, Manning Publications, 2nd edition (2023) 	
12	<p>Internal Continuous Assessment: 40%</p>	<p>External, Semester End Examination 60% Individual Passing in Internal and External Examination</p>
13	<p>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.</p>	

QUESTION PAPER PATTERN (External and Internal)

Design Practical Examination Slips

Q1. Based on Module 1 -- 15 marks
Q2. Based on Module 2 -- 15 marks

Sd/-

**Sign of the BOS
Chairman
Dr. Srivaramangai R
BOS in Data Science**

Sd/-

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

Sd/-

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

AC – 28/03/2025
Item No. – 7.8 (N) (8b)

As Per NEP 2020

University of Mumbai



Syllabus for Basket of OE Vertical 3

Faculty of Commerce & Management	
Board of Studies in Financial Markets	
Second Year Programme	
Semester	IV
Title of Paper	Credits
I) Financial Literacy	2
From the Academic Year	2025-26

Title of Paper: FINANCIAL LITERACY

Sr. No.	Heading	Particulars
1	Description the course : Including but Not limited to :	This course aims to enhance financial awareness and equip students with practical financial skills for personal money management. It covers essential topics such as banking, budgeting, credit management, investments, tax planning, and retirement savings. The course is designed to help students make informed financial decisions, irrespective of their academic background.
2	Vertical :	Open Elective
3	Type :	Theory
4	Credit:	2 credits
5	Hours Allotted :	30 Hours
6	Marks Allotted:	50 Marks
7	Course Objectives: 1. Understand the fundamentals of financial literacy, including budget, savings and expense management. 2. Gain knowledge of banking systems, digital payments, and cybersecurity in financial transactions. 3. Analyze credit management, loan types, debt repayment strategies, and credit scores. 4. Evaluate investment options such as fixed deposits, mutual funds, stocks, and tax-saving instruments. 5. Develop financial planning skills for tax management, wealth creation, and retirement planning.	

8

Course Outcomes:

By the end of this course, students will be able to:

1. Understand the fundamentals of personal finance, budgeting, and savings.
2. Demonstrate knowledge of banking systems, digital payments, and cybersecurity.
3. Analyze credit and debt management principles, including loans and credit scores.
4. Identify and evaluate different investment options like stocks, mutual funds, and fixed deposits.
5. Apply financial planning strategies for tax-saving and retirement planning.

9

Modules:-

Module 1: Essentials of Financial Literacy & Banking (15 Hours)

- Introduction to financial literacy-Concept and Importance of Financial Literacy- Components of Financial Literacy: Income, Expenses, Savings, Investments, and Credit - Understanding Financial Decision-Making- Real-life Examples of Financial Success & Failures.
- Banking System & Digital Transactions- Functions of Banks & Types of Bank Accounts (Savings, Current, FD, RD) -Understanding Banking Services: Cheques, ATM, Debit & Credit Cards - Online & Mobile Banking, UPI, NEFT, RTGS, IMPS Transactions - Cybersecurity in Digital Banking & Fraud Prevention
- Budgeting & Money Management-Preparing a Personal Budget: Fixed vs. Variable Expenses - The 50-30-20 Rule of Money Management - Smart Spending Habits & Strategies for Saving Money.
- Cybersecurity & Financial Frauds- Types of Financial Frauds: Phishing, Online Scams, ATM Fraud - Precautions while Using Digital Payment Platforms -How to Secure Online Transactions & Password Management.

Module 2: Credit, Investments & Financial Planning (15 Hours)

- Credit, Loans & Debt Management-Concept of Credit Score & Factors Affecting It - Types of Loans: Education, Home, Personal, and Business Loans- EMI Calculation & Loan Repayment Strategies- Debt Management & Avoiding Debt Traps
- Investment Basics & Wealth Creation- Introduction to Investment: Risk vs. Return - Understanding Fixed Deposits, Mutual Funds, Stocks, and Bonds - Systematic Investment Plans (SIP) & Compounding Benefits - Insurance & Retirement Planning (EPF, NPS, PPF)
- Tax Planning & Personal Finance- Basics of Income Tax in India: Slabs & Deductions - Tax-Saving Investments under Section 80C (PPF, ELSS, NPS) - GST & Its Impact on Daily Transactions.
- Financial Goal Setting & Planning-Setting Short-Term & Long-Term Financial Goals - Understanding Inflation & Its Impact on Savings- Role of Financial

	Advisors & Online Financial Planning Tools	
10	Text Books: Devinder K Anand : Finance for Everyone Matthew Collins : Personal Finance for Beginners	
11	Reference Books: Saha, P. – <i>Basics of Financial Literacy</i> . Prasad, V. – <i>Personal Finance for Beginners</i> . Taxmann’s Personal Finance – Simplified for All Taxmann’s Financial literacy RBI and SEBI Websites	
12	Internal Continuous Assessment: 40%	External, Semester End Examination 60% Individual Passing in Internal and External Examination
13	Continuous Evaluation through: Class Test, Assignment, Presentation, Group Discussion , Quiz , Case Study, Projects, Creative writing, Role play	Semester end examination (with practical questions)

**QUESTION PAPER PATTERN
(External and Internal)**

Total 50 Marks: 30 Marks External and 20 Marks Internal

30 Marks External

Duration : 1 Hour

Marks : 30 Marks

Note: Any 2 out of 3

Q.1 Answer the following (15 Marks)

- a)
- b)

Q.2 Answer the following (15 Marks)

- a)
- b)

Q.3 Answer the following (15 Marks)

- a)
- b)

20 Marks Internal

- | | |
|---------------------|-----------|
| 1. Class Test | (5 Marks) |
| 2. Assignment | (5 Marks) |
| 3. Presentation | (5 Marks) |
| 4. Group Discussion | (5 Marks) |
| 5. Quiz | (5 Marks) |
| 6. Case Study | (5 Marks) |
| 7. Projects | (5 Marks) |
| 8. Creative writing | (5 Marks) |
| 9. Role play | (5 Marks) |

Note: 1. Any Four out of the above can be taken for internal Assessment.

2. The internal Assessment shall be conducted throughout the semester

Sd/-

**Sign of the BOS
Chairman
Dr.V.N.Yadav
Board of Studies in
Financial Markets**

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**

VSC

Syllabus

B. Sc. (Information 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 Mathematics Vol I, P. N. Wartikar and J. N. Wartikar, Pune Vidyathi Griha, 7 th , 1995 2. A text book of Applied Mathematics Vol II, P. N. Wartikar and J. N. Wartikar, Pune Vidyathi Griha, 7 th , 1995 3. Higher Engineering Mathematics, 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 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 रोजगार 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 है और 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 देवेन्द्र 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 : 40%	External : Semester End Examination : 60%
12	Continuous Evaluation through: <ul style="list-style-type: none"> ● रचनात्मक कार्य/प्रकल्प इत्यादि- 10 अंक ● प्रस्तुति/परिसंवाद सहभागिता इत्यादि- 05 अंक ● अकादमिक, व्यावसायिक एवं कौशल संवर्धन गतिविधियाँ- 05 अंक कुल 20 अंक	लिखित परीक्षा अंक : 30 समयावधि : 01 घंटा

13	Format of Question Paper: for the semester end examination अंक : 30	लिखित परीक्षा 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

AC – 20/05/2025
Item No. – 5.45 (N) Sem-III 2(a)

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)	<p>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 अभ्यासक्रमाचे 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.</p> <p>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.</p>

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)	
<p>अ) फेसबुक, इन्स्टाग्राम, एक्स यांवरील लेखन आ) समाज गट (कम्युनिटी ग्रुप), आभासी कट्टे यांवरील लेखन (६० मिनिटांच्या १५ तासिका, श्रेयांकन-१)</p> <p>(सूचना : विद्यार्थ्यांमध्ये उपरोक्त सामाजिक माध्यमस्थळांवर लेखन करण्यासाठी आवश्यक कौशल्ये व क्षमता विकसित होतील या दृष्टीने शिक्षकांनी सराव करून घ्यावा.)</p>	
10.	पाठ्य ग्रंथ (Text books) : N. A.
11.	<p>संदर्भ ग्रंथ (Reference Books) :</p> <ol style="list-style-type: none"> 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, अथर्व पब्लिकेशन्स, धुळे, २०१८. ४. व्यावहारिक मराठी, ल. रा. नसिराबादकर, भाषा विकास संशोधन संस्था, कोल्हापूर, २०२३. ५. <i>Aayushi International Interdisciplinary Research Journal</i> (ISSN 2349-638x) Peer Reviewed Journal www.aiirjournal.com
12.	<p>Internal Continuous Assessment : 40%</p> <p>External, Semester End Examination : 60% Individual Passing in Internal and External Examination</p>
13.	<p>अंतर्गत सातत्यपूर्ण मूल्यांकन (Internal Continuous Assessment) : २० गुण</p> <p>अंतर्गत मूल्यांकनाचे स्वरूप (Format of Internal Assessment) :</p> <p>चाचणी परीक्षा / मौखिक परीक्षा / प्रकल्पलेखन / नियतकार्य (Assignment) / सादरीकरण / प्रश्नमंजूषा यांपैकी कोणत्याही पद्धतींचा अवलंब करून अंतर्गत मूल्यमापन करता येईल. (प्रत्यक्ष उपस्थिती किंवा ऑनलाईन)</p>

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

बहिरगत 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 /-

Sign of the BOS
Chairman
Prof. Dr. Satish
Kamat
Board of Studies in
Marathi

Sd/-

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

Sd/-

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

Sd/-

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

AC – 15/07/2025

Item No. – 5.3

As Per NEP 2020

University of Mumbai



Syllabus for Co- Curricular (CC)

Vertical - 6

Board of Studies in Extension Work	
UG Second Year Program – Co- Curricular Course	
Semester	III
Title of Paper	Extension Work
Credits	2
From the Academic Year	2025-26

Introduction

The National Education Policy (NEP) 2020 is a comprehensive framework introduced by the Government of India to revamp the country's education system. It has replaced the previous National Policy on Education, which has aim to ensure universal access to quality education from preschool to higher education, including vocational education. NEP 2020 emphasizes a more holistic, multidisciplinary, and flexible curriculum which lay emphasis on conceptual understanding rather than rote learning allowing students to choose subjects across disciplines without strict boundaries.

The National Education Policy (NEP) 2020 of India addresses the role of higher education institutions in fostering community engagement and extension work. It highlights the social responsibility of higher education institutions towards their communities. It encourages institutions to engage with local communities, address societal challenges, and contribute to sustainable development. The policy promotes the implementation of outreach programs by higher education institutions to disseminate knowledge, provide services, and support community development. These programs may include literacy campaigns, career development programs, social issues awareness programs, health and hygiene initiatives, skill development workshops, and technology-oriented activities. The policy suggests integrating extension work into the curriculum of higher education programs. This allows learners to gain practical experience, develop leadership skills, and contribute to community development while pursuing their studies. It recognizes incentives to encourage active engagement in community service and extension activities.

Overall, NEP 2020 recognizes the significant role of higher education institutions in promoting community engagement, social responsibility, and sustainable development through extension work. By integrating extension activities into their mission and operations, institutions can contribute to building inclusive and resilient societies.

Extension work in the context of education refers to the activities and programs conducted by educational institutions to engage with communities, address societal needs, and promote social development.

Aim of Extension Work under NEP:

- Extension work aims to identify and address the specific needs and challenges faced by communities. NEP 2020 encourages higher education institutions to engage with local

communities and contribute to their development by offering programs and services that address social needs, such as literacy programs, health awareness campaigns, and vocational training.

- Extension work aims to empower communities by providing them with the knowledge, skills, and resources they need to address their own requirements and improve their quality of life.

Key objectives of Extension Work under NEP:

- To ensure equal access to quality education and educational opportunities to aspirants.
- To support the government initiatives in achieving universal foundational literacy and numeracy as per sustainable development program.
- To organize remedial programs to address the learning breaches among the youth and provide unending education opportunities.
- To offer more holistic, multidisciplinary, and flexible curricular activities with an emphasis on conceptual understanding and personality development.
- To offer a wide range of activities & promote critical thinking, creativity, and innovation.
- To provide aspirants with multiple pathways for skill development and employment.
- To implement outreach programs to disseminate knowledge, provide services, and support community development.

Extension Work Activities:

Extension Work activities introduced by DLLE are a crucial aspect of the educational environment, offering multifaceted benefits that extend beyond academic learning. Many extension activities focus on social issues, sustainability, and environmental conservation. These activities educate the communities on sustainable practices which promote inclusivity and social justice. These activities focus especially on training women in various skills, including entrepreneurship and digital literacy through various vocational skill-oriented projects offered by the department. These activities have significantly contributed to skill development among community members, leading to improved employment opportunities and personality development. Learners participate in extension work activities as part of their curriculum, to gain practical experience and to contribute to community development. Thus, engaging in extension work fosters a sense of social responsibility and civic engagement among the learners and facilitators.

Given below are the activities / programs to be conducted by the colleges as a part of Extension Work as enlisted topics. The learner will focus on enlisted topics and participate in following activities during Semester III in this academic year.

ACTIVITIES FOR SEMESTER III = 2 Credits

Sr. No.	Unit	No. of Lectures
1.	<p><u>Organising & Participation in Training Session</u></p> <p>Every learner should attend the orientation / training session organised by their college for orientation of annual extension work program. Attendance is compulsory. In this session the learners will be oriented about the activities to be conducted during the semester followed by question-and-answer session. The learner must read resource material and guideline carefully and plan his / her activities for the semester during academic year.</p>	2 Lectures
2.	<p><u>Participation in Project /Activities</u> (as given below)</p> <p>In this session learners will be oriented about any 5 Topics selected by college (preferably which are not taken in Semester 1 and 2) for awareness under Extension Work. The college may select more than 5 topics if the enrolment of learners is more than 200. The learners will participate in activities based on these topics selected by college.)</p> <ol style="list-style-type: none"> 1. Election Literacy 2. Nasha Mukti 3. My Career. 4. Physical Education and Yoga. 5. Discipline and Civic Sense. 6. Sustainable Health Practices & Precautions. 7. Care for Senior Citizens 8. Palliative Care for patients. 9. Child Care 10. Stress Management 11. Positive Thinking. 	22 Lectures including guidance for practice session, preparations and actual conduct of program.

12. Communal Harmony
13. Book Reading Practices
14. Journalism and Media
15. Sustainable Natural Resources
16. Career Opportunities in NEP 2020
17. Indian Scientists and Their Contributions
18. Women Entrepreneurs & Leadership in India
19. Digital India and Technological Innovations
20. Stop Food Waste

Learners will be oriented and motivated to participate in minimum four activities given below based on above topics:

1. Seminar /conferences, discussion sessions, debate, rallies
2. Competitions (essay/creative writing, elocution, poster/ video/ rangoli making etc. – Minimum 2 competitions)
3. Extension Work group activities of other groups in the college.
4. Prepare your PPT, design your posters / charts.
5. Survey / short term academic courses / innovative programs.
6. Field visit / field work / case studies / developing innovative engineering models / projects
7. Participation in Street Plays
8. Event / hospitality / human resource management program /assignment
9. Novel formulation development (pharmacy),
10. Self-medication survey (pharmacy),

Learners are required to prepare short videos (duration 3-4 minutes) of the activity where the college will organize such competition.

The learners will be oriented about various career development opportunities in University of Mumbai, and schemes of student development by the Government.

Learners will be oriented and given an opportunity for:

- Script writing / Direction for street play.

	<ul style="list-style-type: none"> - Composing / Singing (Songs, Powada) - Playing Musical Instrument during the event. - Participation in various college and university level competitions. - Participate in Cultural Performance / Organising Committee for Festival / Programs / Event Management. 	
3	<p><u>Participation Video / Stage Performance / Assignment / Report Writing and submission</u></p> <ul style="list-style-type: none"> - Present your report / video during the college program. - All learners enrolled in Extension Work can make activity video or stage performance (3-4 minutes duration) creating awareness about any social issues / topics enlisted here followed by assignment / report writing as per format. - College will organise a program in the hall / classroom for all learners and give them an opportunity to present their assignment / report with PPT / video presentation followed by question answer session / test / interview by the college. 	6 Lectures including guidance for practice session, preparations and actual conduct of program.

Evaluation Pattern

Internal Assessment

Sr. No.	Assessment Criteria	Maximum Marks
1	Attendance, punctuality, completion of hours, participation in programs, presentations and feedback.	10
2	Proficiency in required skill sets, overall performance, submission of written report / assignments and expected development.	10
	Total	20 Marks

External Assessment

(Based on Extension Work guidelines and five enlisted topics chosen by the college.)

Question Paper Pattern

Time: 1.00 Hours

Total Marks 30

Instructions: 1. All questions are compulsory.

2. Figures to the right indicate maximum marks.

Q.1. Rewrite the following statement by choosing correct alternative given below. - 06 Marks
(6 statements. One mark each)

Q.2. Write short Notes On (Any Two out of Four) - 06 Marks

Q.3. Answer the following questions. (Any Three out of Five) - 18 Marks

References:

- Agricultural Extension: Principles and Methods" by "Ray V. Herren (2008)
- Agricultural Extension by G. S. R. Murthy (2010)
- Agricultural Extension in Developing Countries by R. W. Snapp (2012)
- 'Community Development: Theory and Practice' by Margaret Ledwith (2020)
- Extension Communication and Management by B. M. Panda (2016)
- Extension Education: Principles and Practice by Dahama and Bhatnagar (2017)
- Guidelines for Extension Work published by Department of Lifelong Learning and Extension, University of Mumbai.
- Introduction to Agricultural Extension by S. S. Acharya (2015)
- 'Innovation in India: Combining Economic Growth with Inclusive Development' edited by Sunil Mani and Henny Romijn.
- 'Participatory Extension Approaches for Sustainable Development' by Chambers and Guijt (2019)
- 'Rural Development and Extension Education' by Singh and Swanson (2018)
- 'Social Work and Community Development' by Pawar and Cox (2019)

Sd/-	Sd/-	Sd/-	Sd/-
Sign of the BOS Coordinator, Dr. Kunal Jadhav, Board of Studies in Extension work	Sign of the Offg. Associate Dean, Dr. Suchitra Naik Faculty of Humanities	Sign of the Offg. Associate Dean, Dr. Manisha Karne Faculty of Humanities	Sign of the Offg. Dean, Prof. Dr. 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 – 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 Title of the Unit	No. of Lecture	No. of Credits
1	History of Social work in India	15	1
	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.		
2	Contributions of Social Reformers	15	1
	• Mahatma Gandhi		
	• Swami Vivekanand		
	• Sant Gadge Baba		
	• Mahatma Jyotiba Phule		
	• Rajshri Shahu Maharaj		
	• Baba Amte		
• RajaRam Mohan Roy			

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) ToksalePrajecta -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/-

**Sign of the BOS
Chairman
Dr. Sunil Patil
Ad-hoc Board of
Studies in
N.C.C./N.S.S./Sports
Co-Curricular**

Sd/-

**Sign of the
Offg. Associate Dean
Dr. C.A.Chakradeo
Faculty of
Interdisciplinary
Studies**

Sd/-

**Sign of the
Offg. Associate Dean
Dr. Kunal Ingle Faculty
of Interdisciplinary
Studies**

Sd/-

**Sign of the
Offg. Dean
Prof. A. K. Singh
Faculty of
Interdisciplinary
Studies**

AC – 20/05/2025

Item No. 8.47 (N) Sem III/IV 1(c)

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

Semester III As per NEP 2020

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 <i>Natyashastra</i> 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	<p>Indian Theatre: Historical Roots</p> <ul style="list-style-type: none"> 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	<p>Bharata's <i>Natyashastra</i> and Theatrical Principles</p> <ul style="list-style-type: none"> In-depth analysis of <i>Natyashastra</i>, the foundational treatise on Indian dramaturgy Key concepts: <ul style="list-style-type: none"> Natyagriha (Ancient theatre architecture) Rasa Theory – the aesthetic experience and emotional flavors Bhava, Abhinaya, and their relevance in classical performance Influence of <i>Natyashastra</i> on later theatrical tradition
2	III	<p>Classical Playwrights and Dramatic Texts</p> <ul style="list-style-type: none"> Critical study of major classical dramatists and their works: <ul style="list-style-type: none"> Kalidasa – <i>Abhijnanasakuntalam</i>, <i>Malavikagnimitram</i> Bhasa, Sudraka, Bhavabhuti – Key themes and innovations. Analysis of plot structure, character portrayal, and cultural context in classical play.
	IV	<p>Streams and Forms of Modern Indian Theatre</p> <ul style="list-style-type: none"> 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.*
- *Brockett, O. G. (1991). History of the theatre (7th ed.). Allyn and Bacon.*
- *Brockett, O. G. (1987). Theatre: An introduction (5th ed.). Holt, Rinehart and Winston.*
- *Coulson, M. (Trans.). (2006). Plays of Kalidasa: Theatre of memory. Penguin Books.*
- *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.*
- *Gargi, B. (1991). Indian theatre. National Book Trust.*
- *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].*
- *Karnad, G. (1995). Three modern Indian plays: Tughlaq, Hayavadana, Nagamandala. Oxford University Press.*
- *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.*
- *Ranganathacharya, A. (1971). Indian drama. Sahitya Akademi.*
- *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.*

AC – 20/05/2025

Item No. – 8.47 (N) Sem III& IV 1(b)

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	<i>Introduction to Sports Training</i> Meaning, Definition, and Components/Elements of Sports Training <ul style="list-style-type: none">• Meaning• Definition• Components/Elements	2	1
	II	Principles of Sport Training <ul style="list-style-type: none">• FITT Principle (Frequency, Intensity, Time, Type)• Specificity• Progression• Overload• Reversibility• Tedium	5	
	III	Types of Training Methods <ul style="list-style-type: none">• 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 <ul style="list-style-type: none">• 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		<i>Test and Measurement in Sports</i>		
	I	Meaning and Importance of Test and Measurement in Sports <ul style="list-style-type: none"> • Meaning & Importance 	1	
	II	Criteria of a Good Test <ul style="list-style-type: none"> • Validity • Reliability • Objectivity • Feasibility 	2	
	III	Types of Tests Skill Tests <ul style="list-style-type: none"> • Wall Volley Test • Basketball Free Throw Test • Badminton Short Serve Test Fitness Tests <ul style="list-style-type: none"> • Cooper's 12-Minute Run/Walk Test • Sit and Reach Flexibility Test • Push-Up Test Psychological Tests <ul style="list-style-type: none"> • Sport Motivation Scale (SMS) • Competitive State Anxiety Inventory (CSAI-2) • Mental Toughness Questionnaire (MTQ) 	6	1
	IV	Methods of Measurement <ul style="list-style-type: none"> • Anthropometric Measurements • Motor Fitness Measurements • Physiological Measurements 	3	
	V	Applications of Test and Measurement in Sports Talent Identification <ul style="list-style-type: none"> • 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. Bompá 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

परिशिष्ट 'अ'

AC – 15/07/2025
Item No. – 6.10 (12)

As Per NEP 2020

University of Mumbai



Syllabus for Field Projects (FP)

Name of the Programme – B.Sc (Information Technology)	
Faulty of Science & Technology	
Board of Studies in Information Technology	
Semester	III
Duration	30 hrs (Field Work+ Survey) + 15hrs (Discussion + Report Writing) : Total - 45 hrs
From the Academic Year	2025-26

Name of Faculty:- Science and Technology

Name of Programme :- B.Sc. (Information Technology)

Duration :- 30 hrs (Field Work+ Survey) + 15hrs (Discussion + Report Writing) : Total - 45 hrs

Sr. No.	Name of the Topic
1	Impact of IT Infrastructure on Academic Institutions' Administration
2	Survey of Cloud Computing Adoption in Educational Institutes or Clinics
3	Assessment of IT Readiness in Local Government Offices (e-Governance Study)
4	Field Analysis of ERP Implementation in Medium-Scale Industries/academic Institutions
5	Impact of Recommendation Algorithms on User Decisions: A Consumer Survey
6	Use of AI in Local Healthcare: Benefits, Challenges, and Acceptance
7	Perception of AI-Based Surveillance in Urban vs. Rural Areas
8	Cyber Hygiene Practices Among College Students and Faculty
9	Field Study on Awareness of Data Privacy Among College Students
10	Field Study on Cybersecurity Policies in Educational Institutions
11	Awareness of Cyber Laws Among Small Business Owners
12	Impact of Two-Factor Authentication Adoption in Retail Outlets
13	Digital Payments Usage and Security Concerns in Local Kirana Stores
14	Field Study on Mobile App Usage Among Senior Citizens
15	Study of Tech-Based Learning Adoption in Rural Schools
16	Study on Remote Work Tools and Employee Productivity Post-COVID
17	Use of Project Management Tools in Small IT Startups
18	Use of Mobile Apps for Community Services (e.g., blood donation, garbage pickup)
19	Impact Assessment of Online Learning Platforms in Tier-2 Cities
20	Survey on IT Accessibility for Differently-Abled Individuals
21	Survey of IoT Device Use and Security Concerns in Urban Homes
22	Adoption of Chatbots in Customer Service: Field Interviews
23	Effectiveness of Online Proctoring Systems in University Exams
24	Student Perception of Learning Management Systems (LMS) in Higher Education
25	Impact of Gamified Learning Tools in IT Education

These field projects require students to:

- Design questionnaires or interview protocols
- Interact with real users or institutions
- Collect and analyze real-world data
- Draw insights or suggest improvements

The topics are indicative and the faculty members should allot Field Projects that are relevant and important as per core Subject. The Field Project may be taken individual or in a group up to 5 students with proper guidance from Faculty.

Evaluation Chart

(i) Internal Evaluation by Guide (Marks 20)

Criteria	Marks
Field visit completion, Attendance and interaction	10
Overall Report quality	10
Total	20

(ii) External Evaluation (Marks 30)

Criteria	Marks
Objectives, Literature Review , Methodology, Data Analysis, Conclusion and Recommendations	15
Overall Project Report Structure and Style	5
Presentation Skills & Communication	10
Total	30

Chairman
BoS in information Technology

Associate Dean

Dean



Re-accredited with A ++ Grade (CGPA 3.65) by NAAC
Category- I University Status awarded by UGC

No. AAMS_UGS/ICC/2024-25/213

Date: 18th January, 2025

CIRCULAR:-

Attention of all the Principals of the Affiliated Colleges, Directors of the Recognized Institutions and the Head, University Departments are hereby informed that the recommendations made by the Board of Deans at its meeting held on 30th November, 2024 subsequently approved by the Academic Council at its meeting held on 04th December, 2024 vide Item No. 6.39 and that in accordance therewith **Guidelines for Field Project for Under Graduate Students** are accepted as per appendix (NEP 2020) with effect from the academic year 2024-25.

(The said circular is available on the University's website www.mu.ac.in).

MUMBAI – 400 032
18th January, 2025


(Dr. Prasad Karande)
REGISTRAR

To,

The Principals of the Affiliated Colleges, Directors of the Recognized Institutions and the Head, University Departments.

AC/6.39/04/12/2024

Copy forwarded with Compliments for information to:-

- 1) The Chairman, Board of Deans,
- 2) The Deans, Faculties of Science & Technology, Commerce and Management, Humanities and Interdisciplinary Studies,
- 3) The Chairman, All Board of Studies,
- 4) The Director, Board of Examinations and Evaluation,
- 5) The Director, Department of Students Development,
- 6) The Director, Department of Information & Communication Technology,
- 7) The Director, Centre for Distance and Online Education (CDOE), Vidyanagari,
- 8) The Deputy Registrar, Admissions, Enrolment, Eligibility & Migration Department (AEM).

Copy forwarded for information and necessary action to :-	
1	The Deputy Registrar, (Admissions, Enrolment, Eligibility and Migration Dept)(AEM), dr@eligi.mu.ac.in
2	The Deputy Registrar, Result unit, Vidyanagari drresults@exam.mu.ac.in
3	The Deputy Registrar, Marks and Certificate Unit,. Vidyanagari dr.verification@mu.ac.in
4	The Deputy Registrar, Appointment Unit, Vidyanagari dr.appointment@exam.mu.ac.in
5	The Deputy Registrar, CAP Unit, Vidyanagari cap.exam@mu.ac.in
6	The Deputy Registrar, College Affiliations & Development Department (CAD), deputyregistrar.uni@gmail.com
7	The Deputy Registrar, PRO, Fort, (Publication Section), Pro@mu.ac.in
8	The Deputy Registrar, Executive Authorities Section (EA) eau120@fort.mu.ac.in He is requested to treat this as action taken report on the concerned resolution adopted by the Academic Council referred to the above circular.
9	The Deputy Registrar, Research Administration & Promotion Cell (RAPC), rapc@mu.ac.in
10	The Deputy Registrar, Academic Appointments & Quality Assurance (AAQA) dy.registrar.tau.fort.mu.ac.in ar.tau@fort.mu.ac.in
11	The Deputy Registrar, College Teachers Approval Unit (CTA), concolsection@gmail.com
12	The Deputy Registrars, Finance & Accounts Section, fort draccounts@fort.mu.ac.in
13	The Deputy Registrar, Election Section, Fort drelection@election.mu.ac.in
14	The Assistant Registrar, Administrative Sub-Campus Thane, thanesubcampus@mu.ac.in
15	The Assistant Registrar, School of Engg. & Applied Sciences, Kalyan, ar.seask@mu.ac.in
16	The Assistant Registrar, Ratnagiri Sub-centre, Ratnagiri, ratnagirisubcentre@gmail.com
17	The Director, Centre for Distance and Online Education (CDOE), Vidyanagari, director@idol.mu.ac.in
18	Director, Innovation, Incubation and Linkages, Dr. Sachin Laddha pinkumanno@gmail.com
19	Director, Department of Lifelong Learning and Extension (DLLE), Dlleuniversityofmumbai@gmail.com

Copy for information :-

1	P.A to Hon'ble Vice-Chancellor, vice-chancellor@mu.ac.in
2	P.A to Pro-Vice-Chancellor pvc@fort.mu.ac.in
3	P.A to Registrar, registrar@fort.mu.ac.in
4	P.A to all Deans of all Faculties
5	P.A to Finance & Account Officers, (F & A.O), camu@accounts.mu.ac.in

To,

1	The Chairman, Board of Deans pvc@fort.mu.ac.in
2	Faculty of Humanities, Dean 1. Prof.Anil Singh Dranilsingh129@gmail.com Associate Dean 2. Dr.Suchitra Naik Naiksuchitra27@gmail.com 3.Prof.Manisha Karne mkarne@economics.mu.ac.in
	Faculty of Commerce & Management, Dean 1. Dr.Kavita Laghate kavitalaghate@jbims.mu.ac.in Associate Dean 2. Dr.Ravikant Balkrishna Sangurde Ravikant.s.@somaiya.edu 3. Prin.Kishori Bhagat kishoribhagat@rediffmail.com

	<p>Faculty of Science & Technology</p> <p>Dean</p> <p>1. Prof. Shivram Garje ssgarje@chem.mu.ac.in</p> <p>Associate Dean</p> <p>2. Dr. Madhav R. Rajwade Madhavr64@gmail.com</p> <p>3. Prin. Deven Shah sir.deven@gmail.com</p>
	<p>Faculty of Inter-Disciplinary Studies,</p> <p>Dean</p> <p>1. Dr. Anil K. Singh aksingh@trcl.org.in</p> <p>Associate Dean</p> <p>2. Prin. Chadrashekhhar Ashok Chakradeo cachakradeo@gmail.com</p>
3	Chairman, Board of Studies,
4	The Director, Board of Examinations and Evaluation, dboee@exam.mu.ac.in
5	The Director, Board of Students Development, dsd@mu.ac.in@gmail.com DSW direcotr@dsw.mu.ac.in
6	The Director, Department of Information & Communication Technology, director.dict@mu.ac.in

AC – 04-12-2024

Item No. – 6.39

As Per NEP 2020

University of Mumbai



Guidelines for Field Project (FP)

for Under Graduate Students as per NEP 2020

(With effect from the academic year 2024-25)

Index

1. Introduction
2. Objectives
3. Outcomes
4. Indicative list of areas for FP
5. Roles-and responsibilities
6. The process of Implementation
7. Credits and Duration
8. Project (Dissertation) Report
9. Evaluation Pattern
10. Appendix I: Guide interaction diary Form
11. Appendix II: Main Page Format of Project Report
12. Appendix III: College/Institute/ Department Certificate format
13. Appendix IV: Proforma for student's Declaration
14. Appendix V: Students Feedback on Field project
15. FP Guidelines Draft Committee

1. Introduction:

One of the main objectives of NEP 2020 is to improve employability of students at the same time to nurture better understanding of socio-economic context. With introduction of NEP 2020, the higher education programs in India are gearing up to combine theoretical learning with practical application. NEP 2020 report emphasizes on giving exposure to students to understand development related issues in urban and rural areas. Field project work will provide students opportunity to visit and observe situation in rural and urban contexts, students are expected to observe and study actual field situations in socio economic contexts while doing their field work. It will improve opportunities to understand interconnect between theoretical knowledge and practical applications. Field project is expected to enhance their sensitivity to socio economic issues and improve their ability of problem solving as well as designing innovative solutions to the existing and emerging problems. Field project component will broaden the possibilities of deeper learning and enhancing research acumen of students. Field project broadens opportunities of social responsibility, environmental sustainability, nation building and peace.

2. Objectives

Field project program in general sets out to achieve objectives such as:

1. Align classroom learnings with awareness about socio-economic conditions.
2. Provide students with exposure to socio economic conditions and align their experiences with contemporary problems.
3. Integrating theoretical and practical modes blended learning under the guidance of their faculty.
4. Enhance research skills including knowledge discovery, analytical tools, methodologies, and ethical conduct.
5. Facilitate problem-solving, decision-making, teamwork, and collaboration.
6. Foster ability to work in team, develop social awareness and nurture human values among students.
7. Encourage collaboration between Higher Education Institutes (HEIs), social organization, Government and non-government institutes for better implementation of Field project.

3. Outcomes:

After the completion of the FP program, the student will be able to;

1. Apply concepts learned in classrooms to real-world socioeconomic conditions enhancing their understanding and skills.
2. Show insights into the challenges, opportunities and culture of socioeconomic diversity, preparing them for future role as responsible citizens.
3. Demonstrate evidence of research aptitude and skills of critical thinking, analytical skills, and ethical research conduct in field work.
4. Display problem-solving abilities in making informed decisions in complex scenarios through practical situations.
5. Work in teams and collaborate to achieve common goals in the work field environments through collaborative efforts.
6. Show integrity in their dealings with their work and the people that they interact with by upholding professional; principles and ethical standards.

4. Indicative list of areas for FP:

The areas of field work can be decided by the head of the institution in consultation with the faculty in respective subjects.

5. Role and responsibilities

Head of the Department (HOD):

1. Allotment of guides for the students for field project should be done by Head of the Department/Director/Principal of the institute as the case may apply.
2. While allocating the students under more than one guide- the principle of fairness in distribution should be followed.
3. In case the number of in- house guides are not adequate then students can be allotted to competent external experts.
4. To ensure that FP program aligns with departmental and academic objectives.
5. To provide resources and assistance to ensure effective supervision.

FP Coordinator:

1. To oversee the quality and effectiveness of the FP program.
2. To establish mechanisms for evaluating the program and making improvements.
3. To act as a liaison between the department, students, faculty mentors and FP supervisors

(Host institute/ organization).

Student Coordinators:

To help the FP coordinator in pre-, during and post-FP activities.

Faculty Mentor:

1. To give Guidelines for Students to meet the guide periodically to discuss the field project.
2. To assist in identifying FP opportunities.
3. To monitor student progress and provide guidance.
4. To review and approve FP plans and to take regular feedback on student's engagement.
5. To collect and review progress reports.
6. To evaluate FP documentation including reports, presentations, or other required deliverables (if applicable).

6. Process of FP implementation:

Flow chart

1. Formation of FP Committee
2. Appointment of Coordinators
3. Field project orientation by the FP committee
4. Allotment of students as per guidelines
5. Execution of FP
6. Evaluation
7. Student Feedback

Mechanism for the implementation of FP:

1. To facilitate effective implementation of the FP program, Colleges/Departments/Institutes are encouraged to establish FP committee responsible for overseeing its smooth functioning. It will consist of the following: Head of the department, FP Coordinator, Faculty Mentors and one/two student coordinators.
2. One teaching faculty member and one/two students from each undergraduate department will be nominated to serve as coordinators for the FP program. These coordinators will play

a crucial role in coordinating and implementing the program within their respective departments.

3. The teacher coordinator will take the lead in preparing an action plan for the implementation of the FP program.
4. To streamline the administrative process, the Department/Centre will provide necessary formats to students for documentation related to the program.
5. Each Department/Centre must ensure collaborations with 8-10 relevant organizations, industries, or research institutes. These collaborations will serve as crucial avenues for facilitating FP opportunities for students.
6. Effective communication is key to the success of the FP program. Regular communication with heads and coordinator of the department/centre/Institute and maintaining proper records is essential. This faculty mentor and individual student will also be responsible for maintaining relevant documents related to the program.
7. Before the commencement of the FP program, an orientation session will be conducted by the Head of Department. This session will serve to familiarize students with the purpose, process, and code of conduct associated with the program.
8. To ensure effective mentoring and support, an equal number of students will be allocated to each faculty member of the department. These faculty members will act as FP mentors and will be responsible for monitoring and evaluating the progress of the allotted students.
9. Throughout the FP period, students will maintain activity reports as per the provided format and get it validated by the supervisor.
10. Upon completion of the FP program, students must submit a completion certificate duly signed by the faculty supervisor.

7. Credits and duration:

1. FP will carry weightage of two credits.
2. Each student is required to complete minimum of 2-3 field visits.
3. The FP program is to be completed during Semester II. According to the guidelines outlined in the National Education Policy (NEP), undergraduate students are expected to fulfill this requirement either within the second semester of their UG program or during the semester break following the second semester.

8. Project (Dissertation) Report:

— Students are required to submit a report of the field project at the end of the semester in following

suggested format.

All projects should be typed on *A4 sheets, Font Size 12, Times New Roman, one and a half spacing on executive bond paper*. The project report shall have appropriate chapter scheme and be presented in minimum of 20 pages.

Report should be arranged in the following manner.

TitlePage

- Title of the Report (Font size 14)
- Name of the Student
- Roll number/Seat number
- Program Title
- Name of the Mentor
- Month of Submission

Certificate by the Institute

Certificate by Mentor

Student's Declaration

Acknowledgement

Abstract

A brief summary of the field visit, key observations, and main conclusions (200-300 words)

Table of contents

- Include headings and subheadings with page numbers.

List of Figures and Tables

- List all figures and tables included in the report with corresponding page numbers.

Chapter1: Introduction

- Purpose of the visit: Outline the objectives and expected outcome of the field visit.
- Background Information: Provide context about the site(s) visited, including historical and cultural significance.
- Scope of the Report: Define the boundaries of what the report will cover.

Chapter2: Literature Review

- Review relevant literature on the site(s) visited, focusing on previous studies, historical accounts, and critical analyses of the literary significance.

Chapter 3: Methodology

- Describe the approach and tools used for data collection during the visit (e.g., observational methods, interviews, archival research).
- Discuss the rationale behind the chosen methods.

Chapter 4: Field Work Descriptions, Observations and Analysis

- Provide detailed descriptions of each site visited/ Field work carried out.
- Include observations related to fieldwork: work's-relevance to topic selected.
- Use photographs, diagrams, and sketches, etc. to support the descriptions.
- Analyze the data collected in relation to the study objectives.

Chapter 5: Conclusion and Recommendations

- Discuss how the findings from the visit contribute to the understanding of subject area.
- Summarize the key findings and their significance.
- Offer recommendations based on the research findings for further study or preservation efforts.

References

- List all sources cited in the report in a consistent format.

Appendices

- Include additional data, interview transcripts, notes, or documents that are relevant to the report but not integral to its main text.

9. Evaluation Pattern

Evaluation during the FP program involves two key components: External Evaluation (40%) and Internal Evaluation (60%).

(i) Internal Evaluation by Guide (Marks 20)

Criteria	Marks
Field visit completion, Attendance and interaction	10
Overall Report quality	10
Total	20

(ii) External Evaluation (Marks 30)

Criteria	Marks
Objectives, Literature Review, Methodology, Data Analysis, Conclusion and Recommendations	15
Overall Project Report Structure and Style	5
Presentation Skills & Communication	10
Total	30

Appendix I
GUIDE INTERACTION DIARY FORM

I, the undersigned Ms /Mr. _____ Roll
No. _____ studying in the _____ Year of _____ Full-
time Course is doing my project work under the guidance of Dr./Ms./Mr.
_____, wish to state that I have met my Internal
guide on the following dates mentioned below for Project Guidance:-

Sr.No.	Date	Signature of the Internal Guide

Signature of the Candidate

Signature of Internal Guide

IMPORTANT: It is expected that student will be meeting their guide at least five times for the project work interaction. The candidate should retain the above stated 'Project Guide Interaction Certificate Form' and submit the same with required signatures of the guide while submitting the Project to the Institute.

THE PROJECT REPORT WILL NOT BE ACCEPTED WITHOUT THE DULY FILLED PROJECT GUIDE INTERACTION CERTIFICATE.

Appendix II

Main Page Format of Project Report

Title of the Project

Name of the Student

(Name of Academic Course and Academic Year Details)

Example: Masters in Management Studies

Under the Guidance of

Name of Guide

Name of the Department/College/Institute

Academic Year – 2024-25

Appendix III

Name of the Department/College/Institute

Certificate

I hereby certify that Mr./Ms. _____, Student of _____ Institute studying in _____, has completed a project titled _____ in the area of _____ specialization for the academic year 2024-2025. To the best of my knowledge the work of the student is original and the information included in the project is correct.

Internal Guide

Head of the Department

Principal

Annexure IV

Declaration

I, Mr./Ms. _____ Student of
_____ Institute studying in
_____, hereby declare that I have completed the field
project entitled _____ during the academic year
2024-2025.

The report work is original and the information/data included in the report is true emerging from the primary and/ secondary data gathered and analyzed as part of this project.

Due credit is extended on the work of Literature/Secondary Survey by endorsing it in the Bibliography as per prescribed format.

Signature of the Student with Date

Name of Student

Annexure V
Student Feedback on FP
(To be filled by Students after FP completion)

Student Name:

Seat No. /Roll No.:

Email:

Department:

Name of the Mentor:

Title/Heading of Field Project:

Brief description of FP carried out:

Dates of FP:

Was your internship experience related to your major area of study?

- Yes, to a large degree
- Yes, to a slight degree
- No, not related at all

Indicate the degree to which you agree or disagree with the following statements.

This experience has:	Strongly Agree	Agree	No opinion	Disagree	Strongly Disagree
Given me the opportunity to explore a career field					
Allowed me to apply classroom theory to practice					
Helped me develop my decision-making and problem-solving skills					
Expanded my knowledge about the work world before permanent employment					
Helped me develop my written and oral communication skills					
Provided a chance to use leadership skills (influence others, develop ideas with others, stimulate decision-making and action)					
Expanded my sensitivity to the ethical implications of the work involved					

Made it possible for me to be more confident in new situations					
Given me a chance to improve my interpersonal skills					
Helped me learn to handle responsibility and use my time wisely					
Helped me discover new aspects of myself that I didn't know existed before					
Helped me develop new interests and abilities					
Helped me clarify my career goals					
Allowed me to acquire information and/ or use equipment not available at my Institute					
Allowed me to realize socio-economic issues in the society					

- In the Institute FP program, faculty members are expected to be mentors for students. Do you feel that your faculty mentor served such a function? Why or why not?

- How well were you able to accomplish the initial goals, tasks and new skills that were set down in your learning contract? In what ways were you able to take a new direction or expand beyond your contract? Why were some goals not accomplished adequately?

- In what areas did you most develop and improve?

- What has been the most significant accomplishment or satisfying moment of your FP?

- What did you dislike about the FP?

- Considering your overall experience, how would you rate this FP? (Circle one). –
Satisfactory/ Good/ Excellent

- Give suggestions as to how your FP experience could have been improved. (Could you have handled added responsibility? Would you have liked more discussions with your professor concerning your FP? Was closer supervision needed? Was more of an orientation required?)

Signature of Student

Name

Date:

Under the Guidance of

Hon'ble Vice Chancellor
Prof. Dr. Ravindra Kulkarni

Hon'ble Pro-Vice Chancellor
(Prin.) Dr. Ajay Bhamare

FP Guidelines Draft Committee

Prof. Shivram S. Garje Convener
Off. Dean (Science and Technology)

Prof. Smita Shukla Member
Director, Alkesh Dinesh Mody Institute of Finance and Management Studies

Prof. Manisha A. Karne Member
Director, Department of Economics

Prof. Priya Vaidya Member
Head, Department of Philosophy

Dr. Suchitra Naik Member
Principal, K.G. Joshi College of Arts & N.G. Bedekar College of Commerce
