M. C. E. Society's
Abeda Inamdar Senior College
Of Arts, Science and Commerce, Camp, Pune-1
(Autonomous) Affiliated to SavitribaiPhule Pune University
NAAC accredited 'A' Grade

Three Year B.Sc. Degree Program in Mathematics
(Faculty of Science & Technology)

Syllabus of

S.Y. B.Sc Mathematics

Choice Based Credit System Syllabus
To be implemented from the academic year 2024-2025

Title of the Course: B. Sc (Mathematics)

Preamble:

Department of Mathematics, Abeda Inamdar Senior College is implementing the first syllabus of B.Sc. under NEP from June 2022. Taking into consideration the rapid changes in Science and Technology and new approaches in different areas of Mathematics and related subjects, the Board of studies in Mathematics has prepared the syllabus of B.Sc Semester-III and Semester-IV (w.e.f. 2024-25) Mathematics course under the Choice Based Credit System (CBCS).

The model curriculum was developed by U.G.C. is used as a guideline for the present syllabus.

Aims:

Sr. No.	Aims
1.	Give the students a sufficient knowledge of fundamental principles, methods, and a clear perception of innumerous powers of mathematical ideas and tools and know-how to use them by modeling, solving, and interpreting.
2.	Reflecting the broad nature of the subject and developing mathematical tools for Continuing further study in various fields of science and technology.
3.	Enhancing student's overall development and equipping them with mathematical Modeling abilities, problem solving skills, creative talent, and power of communication necessary for various kinds of employment.
4.	Enabling students to develop a positive attitude towards mathematics as an interesting and valuable subject of study.

Objectives:

Sr. No.	Objectives
1.	A student should be able to recall basic facts about mathematics and should be able to display knowledge of conventions such as notations, terminology and recognize basic geometrical figures and graphical displays, state important facts resulting from their studies.
2.	A student should get a relational understanding of mathematical concepts and concerned structures and should be able to follow the patterns involved, mathematical reasoning.
3.	A student should get adequate exposure to global and local concerns that explore many aspects of Mathematical Sciences.
4.	A student should get adequate exposure to global and local concerns that explore Many aspects of Mathematical Sciences.
5.	A student should be able to apply their skills and knowledge that is, translate information presented verbally into mathematical form, select and use appropriate mathematical formulae ortechniques to process the information, and draw the relevant conclusion.
6.	A student should be made aware of the history of mathematics and hence of its past, present,and future role as part of our culture.

Course Outcome:

Sr. No.	Outcome
1.	The mathematical maturity of students in their current and future courses shall develop.
2.	The student develops theoretical, applied, and computational skills.
3.	The student gains confidence in proving theorems and solving problems.

Details of Syllabus:

Semester-III

Offered as	Major
Course/ Paper Title	Calculus of Several Variables
Course Code	23SBMT31MM
Semester	III
No. of Credits	2

Syllabus

Unit No	Title with Contents	No. of Lectures
Unit I	**Limits and Continuity**	**06**
	1.1 Functions of Several Variables :- Functions of two variables, Domain and Range, Graphs, Level Curves, Functions of Three or More Variables	03
	1.2 Limits and Continuity.	03
Unit II	**Partial Derivatives and Differentiability**	**10**
	2.1 Definition and examples.	02
	2.2 Higher Derivatives, Clairaut's Theorem (Statement Only), Partial Differential Equations, Wave equation.	02
	2.3 Differentiable function, Differentials	03
	2.4 Chain Rule, Homogeneous Functions, Euler's theorem	03
Unit III	**Extreme Values**	**08**
	3.1 Extreme values of functions of two variables.	02
	3.2 Necessary conditions for extreme values.	02
	3.3 Second Derivative Test (without proof).	02
	3.4 Lagrange Multipliers (with one constraints)	02
Unit IV	**Multiple Integrals**	**12**
	4.1 Iterated Integrals, Fubini's Theorem (Statement only)	02
	Integration for two variables.	

	4.3 Double integral in Polar coordinates. 4.4 Triple integrals, Evaluation of triple integrals. Triple integrals in spherical coordinates 4.5 Jacobians, Change of variables in multiple integrals. (Results without proofs)	02 03 03

Text book: Multivariable Calculus 7th Edition by James Stewart, Brooks/Cole, Cengage Learning, 2012, 2008.

Unit 1:- Chapter 14: Sec- 14.1, 14.2

Unit 2:- Chapter 14: Sec- 14.3(except the Cobb-Douglas production function), 4.4 (except Tangent Planes and Linear Approximations), Sec-14.5

Unit 3:- Chapter 14: Sec 14.7, 14.8 (except two constraints)

Unit 4:- Chapter 15: Sec 15.2, 15.3, 15.4, 15.7 (without Riemann sum and Application), 15.9, 15.10

Reference Books:

1. Basic Multivariable Calculus, J. E. Marsden, A. J. Tromba, A. Weinstein, Springer Verlag (Indian Edition).
2. Shanti Narayan, R.K. Mittal, A Text-book of Vector Calculus, S. Chand and Company.
3. D.V. Widder, Advanced Calculus (2nd Edition), Prentice Hall of India, New Delhi(1944).
4. T.M. Apostol, Calculus Vol. II (2nd Edition), John Wiley, New York, (1967).

Website:

1. https://www.youtube.com/watch?v=0ph5PU3Fsdc&list=PLFW6lRTa1g8174RC1q88PCU7VszfJWfg9
2. https://www.youtube.com/watch?v=XzaeYnZdK5o&list=PLtKWB-wrvn4nA2h8TFxzWL2zy8O9th_fy

Offered as	Major
Course/ Paper Title	Laplace Transform
Course Code	23SBMT32MM
Semester	III
No. of Credits	2

Syllabus

Unit No	Title with Contents	No. of Lectures
Unit I	**The Laplace Transform**	**18**
	1.1 Definition, Laplace Transform of some elementary functions.	03
	1.2 Some important properties of Laplace Transform.	03
	1.3 Laplace Transform of derivatives, Laplace Transform of Integrals.	04
	1.4 Methods of finding Laplace Transform, Evaluation of Integrals.	04
	1.5 The Gamma function, Unit step function and Dirac delta function.	04
Unit II	**The Inverse Laplace Transform**	**18**
	2.1 Definition, some inverse Laplace Transform.	04
	2.2 Some important properties of Inverse Laplace Transform.	04
	2.3 Inverse Laplace Transform of derivative, Inverse Laplace Transform of integrals.	05
	2.4 Convolution Theorem, Evaluation of Integrals.	05

Textbooks: 1.Schaum's Outline of Theory and Problems of Laplace Transform by Murray R. Spiegel.

Unit I: Chapter 1

Unit II: Chapter 2

Reference Books:

1. Joel L. Schiff: The Laplace Transforms - Theory and Applications, SpringerVerlag New York 1999.
2. Dyke: An Introduction to Laplace Transforms and Fourier Series, Springer International Edition, Indian Reprint 2005.

Website:

1. https://www.youtube.com/watch?v=EDVJotmT584&list=PLU6SqdYcYsfILCRFpIM3fQdVIzOo71snJ
2. https://www.youtube.com/watch?v=7Rg7WpCZr-g

Offered as	Major
Course/ Paper Title	History and Development of Mathematics in India
Course Code	23SBMT33MM
Semester	III
No. of Credits	2

Unit No	Title with Contents	No. of Lectures
Unit I	**Vedic Geometry**	**07**
	1. The Sulbhsutra.	1
	2. The Theorem of the Diagonal.	1
	3. Rectilinear Figures and their Transformations.	1
	4. Circle from square: The direct construction.	2
	5. The inverse formula: Square from Circle.	2
Unit II	**Decimal Numbers**	**06**
	1. Numbers and Based Numbers	2
	2. The Place –value Principle and its Realizations.	2
	3. The Choice of a Base.	2
Unit III	**The Mathematics of the Ganitapada**	**09**
	1. General survey.	1

	2. The linear Diophantine Equation- Kuttaka method. 3. The Invention of Trigonometry. 4. The making of Sine Table. 5. Aryabhata's Legacy.	2 2 2 2
Unit IV	**From Bramhagupta to Bhaskara -II**	**08**
	1. The Quadratic Diophantine Problem – Bhavana. 2. Methods of Solution: Cakravala. 3. Roots of Complex Numbers: The n^{th} roots of unity. 4. A Different Circle Geometry: Cyclic Quadrilaterals. 5. The Kerala School and its impact	2 2 2 1 1

Reference Books:

1. Ganitpada Of Aryabhata I
2. Lilavati of Bhaskaracharya A Treatise of Mathematics of Vedic Tradition Translated by Krishnaji Shankara Patwardhan, Somashekhara Amrita Naimpally, Shyam Lal Singh
3. Indian Mathematics Engaging the World from Ancient to Modern Times, George Gheverghese Joseph

Website:

https://vigyanprasar.gov.in/digital-repository/posters/maths-indian-heritage/

Offered as	Major Practical
Course/ Paper Title	Numerical Analysis and Software Maxima
Course Code	23SBMT34MM
Semester	III
No. of Credits	2

Syllabus

Unit No	Title with Contents	No. of Practicals
Unit I	**Solution of Algebraic and Transcendental Equations**	**02**

	1.1 Errors and their computations 1.2 Bisection method. 1.3 The method of False position 1.4 Newton- Raphson method	
Unit II	**Interpolation**	**03**
	2.1 Finite Difference Operators and their relations (Forward, Backward difference and Shift operator). 2.2 Differences of a polynomial 2.3 Newton's Interpolation Formulae (Forward and Backward) 2.4 Lagrange's Interpolation Formula.	
Unit III	**Numerical Differentiation and Integration**	**03**
	3.1 Numerical Differentiation (Derivatives using Newton's forward difference formula) 3.2 Numerical Integration, General quadrature formula. 3.3 Trapezoidal rule. 3.4 Simpsons's 1/3rd rule. 3.5 Simpsons's 3/8th rule.	
Unit IV	**Practical based on Maxima software**	**04**

Text book: 1. S.S. Sastry, Introductory Methods of Numerical Analysis, 5th edition, Prentice Hall of India.

Unit I: Chapter 1: section 1.3, Chapter 2: section 2.2, 2.3, 2.5

Unit II: Chapter 3: section 3.3, 3.5, 3.6, 3.9(3.9.1 only)
Unit III: Chapter 4: section 6.2 (excluding 6.2.1 to 6.2.3), 6.4

Reference Books:

1. C.F. Gerald and O.P. Wheatley, Applied Numerical Analysis, Addison Wesley; 7th edition (2003).
2. K.E. Atkinson; An Introduction to Numerical Analysis, Wiley Publications.
3. T. Sauer, Numerical analysis, 3rd edition, Pearson.
4. M. K. Jain, SRK Iyengar and R.K. Jain, Numerical Methods For Scientific & Engg 5e, New Age International (P) Ltd (2008).

Website:

1. https://www.youtube.com/watch?v=zT83sJ5IrEE&list=PLyqSpQzTE6M- QT7PvEBHV0iNMvZk9mocO

Offered as	Field Project
Course/ Paper Title	Field Project in Mathematics
Course Code	23SBMT3FP
Semester	III
No. of Credits	2

List of Possible Field Projects in Mathematics

Sr.No.	Project
1	Examining the causes of mathematics anxiety in students and identifying strategies for reducing math anxiety in the classroom.
2	Investigating the use of technology in math education, such as online simulations and virtual manipulatives, and evaluating their effectiveness in promoting student learning.
3	Examining the effectiveness of problem-based learning approaches in mathematics education, and developing examples of problem-based activities that can be used in the classroom.
4	Investigating the impact of socio-economic factors on student math achievement, and identifying potential ways to mitigate these effects.
5	Examining the effectiveness of interventions designed to increase the representation of underrepresented groups in mathematics-related fields, such as women or minority groups.
6	Analyzing the effectiveness of different assessment and evaluation methods in math education, such as formative and summative assessments, and identifying best practices for assessment and evaluation in math.
7	Examining the impact of parental involvement on student mathematics achievement, and identifying ways to increase parental engagement in math education.
8	Test mathematical games or puzzles designed to improve students' problem-solving abilities and mathematical understanding.
9	Application of Mathematics in various streams.
10	Any other relevant Field Project

Semester-IV

Offered As	Major
Course/ Paper Title	Linear Algebra
Course Code	23SBMT41MM
Semester	IV
No. of Credits	2

Syllabus

Unit No	Title with Contents	No. of Lectures
Unit I	**Linear Equations**	**12**
	1.1 Fields	02
	1.2 System of Linear Equations	02
	1.3 Matrices and Elementary Row Operations	02
	1.4 Row- Reduced Echelon Matrices	02
	1.5 Matrix Multiplication	02
	1.6 Invertible Matrices	02
Unit II	**Vector Spaces**	**12**
	2.1 Vector Spaces	02
	2.2 Subspaces	02
	2.3 Bases and Dimension	02
	2.4 Coordinates	02
	2.5 Summary of Row –Equivalence	02
	2.6 Computation of Concerning Subspaces	02
Unit III	**Linear Transformations**	**12**
	3.1 Linear Transformation	03
	3.2 The Algebra of Linear Transformation	03
	3.3 Isomorphism	03
	3.4 Representation of Transformation by Matrices	03

Text Book:

K. Hoffman and R. Kunze, Linear Algebra, 2nd edition(2014), Prentice Hall of India, New Delhi

Unit I: Chapter-1: Sec. 1.1 to 1.6.

Unit II: Chapter-2: Sec. 2.1 to 2.6

Unit III: Chapter-3: Sec. 3.1 to 3.4

Reference Books:

1. Howard Anton, Chris Rorres, Elementary Linear Algebra, Application Version, Ninth Edition, Wiley, 11th edition.
2. Steven J. Leon, Linear Algebra with Applications, 4th edition(1994), Prentice Hall of India. New Delhi
3. Vivek Sahai, Vikas Bist, Linear Algebra, 4th Reprint 2017, Narosa Publishing House, New Delhi
4. Promode Kumar Saikia, Linear Algebra, 2009, Pearson, Delhi
5. S. Lang, Introduction to Linear Algebra, 2nd edition,1986, Springer-Verlag, New York, Inc.

Website:

1. https://www.youtube.com/watch?v=LJLoJhbBA4&list=PLbMVogVj5nJQ2vsW_hmyvVfO4GYWaaPp7
2. https://www.youtube.com/watch?v=JnTa9XtvmfI

Offered As	Major
Course/ Paper Title	Vector Calculus
Course Code	21SBMT42MM
Semester	IV
No. of Credits	2

Syllabus

Unit No	Title with Contents	No. of Lectures
Unit I	**Vector-Valued Functions**	**08**
	1.1 Curves in Space, Limits and Continuity, Derivatives and Motion, Differentiation Rules for Vector Function, Vector Functions of Constant Length.	02
	1.2 Integrals of Vector Functions.	02
	1.3 Arc Length along a Space Curve, Speed on a Smooth Curve, Unit Tangent Vector.	02
	1.4 Curvature of a Plane Curve, Circle of Curvature for Plane Curves, Curvature and Normal Vectors for a Space Curve.	02
Unit II	**Integrals**	**12**
	2.1 Line Integral of Scalar Functions, Additivity, Line integral in the Plane.	02
	2.2 Vector Fields, Gradient Fields, Line Integral of Vector Fields, Line Integrals with respect to dx, dy, dz .	02
	2.3 Work done by a Force over a Curve in Space, Flow Integrals and Circulation for Velocity Fields, Flow across the Simple Closed Plane Curve.	02
	2.4 Path Independence, Conservative and Potential Functions.	03
	2.5 Divergence, Two forms for Green's Theorem, Green's Theorem in the Plane (Proof for special regions)	03
Unit III	**Surface Integrals**	**08**
	3.1 Parameterizations of Surfaces, Implicit surfaces.	02
	3.2 Surface integrals, Orientation of Surfaces.	03
	3.3 Surface Integrals of Vector Fields.	03
Unit IV	**Applications of Integrals**	**08**
	4.1 The Curl Vector Field, Stokes' Theorem (without proof), Conservative Fields and Stokes' Theorem.	02
	4.2 Divergence in three Dimensions, Divergence Theorem (without proof).	03
	4.3 Unifying the Integral Theorems.	03

Text Book: Thomas' Calculus (14th Edition) by Hass, Heil, Weir, Pearson Indian Education Services Pvt. Ltd.

Unit I: Chapter 13: Sec- 13.1, 13.2, 13.3, 13.4

Unit II: Chapter 16: Sec-16.1, 16.2, 16.3, 16.4

Unit III: Chapter 16: Sec- 16.5, 16.6

Unit IV: Chapter 16: Sec- 16.7, 16.8

Reference books:

1. Basic Multivariable Calculus by J.E.Mardson, A.J.Tromba, A. Weinstein, Sppriger Verlag (Indian Edition)
2. Advanced Calculus by M.R. Spiegel, Schaum Series.
3. Advanced Calculus (IInd Edition) byD.V. Widder, Prentice Hall of India, New Delhi(1944).
4. Advanced Calculus by John M. H. Olmsted, Eurasia Publishing House, New Delhi(1970)
5. Calculus Vol. II (IInd Edition) by T.M. Apostol, John Wiley, New York (1967).

Website:

1. https://www.youtube.com/watch?v=ma1QmE1SH3I

2. https://www.youtube.com/watch?v=ma1QmE1SH3I&list=RDCMUC640y4UvDAlya_WOj5U4pfA&start_radio=1&rv=ma1QmE1SH3I&t=

Offered as	Major Practical
Course/ Paper Title	Ordinary Differential Equation and Software Maxima
Course Code	21SBMT43MM
Semester	IV
No. of Credits	2

Syllabus

Unit No	Title with Contents	No. of Practicals
Unit I	**Review of First Order Linear Differential Equation**	**02**
	1. Separable equations. 2. First-order linear equations. 3. Exact equations. 4. Homogeneous equations, Integrating factors.	

Unit II	**What is a differential equation**	**01**
	1. Orthogonal trajectories and families of curves 2. Reduction of order: (1) dependent variable missing, (2) Independent variable missing.	
Unit III	**Second-Order Linear Equations:**	**03**
	1. Second-order linear equations with constant coefficients. 2. The method of undetermined coefficients. 3. The method of variation of parameters. 4. The use of a known solution to find another.	
Unit IV	**Power Series Solutions and Special Functions:**	**02**
	1. Introduction and review of power series 2. Series solutions of first-order differential equations 3. Second-order linear equations	
Unit V	**Practical based on Maxima Software**	**04**

Textbook:

1. Differential Equations by George F. Simmons, Steven G. Krantz, Tata McGraw-Hill.

Unit I: Chapter 1: Sec.1.3 to 1.5, 1.7, 1.8.

Unit II: Chapter 1: Sec.1.6, 1.9.

Unit III: Chapter 2: Sec. 2.1 to 2.4.

Unit IV: Chapter4: Sec. 4.1 to 4.3.

Reference Books:

1. W.R. Derrick and S.I. Grossman, A First Course in Differential Equations with Applications.

CBS Publishers and distributors, Delhi-110 032. Third Edition.

2. Rainville, Bedient: Differential Equations.

Website:

1.https://www.youtube.com/watch?v=NBcGLLU90fM&list=PLbMVogVj5nJSGlf9sluucwobyr_z z6glD

2.https://www.youtube.com/watch?v=Kk5SEzASkZU&list=PL9m2Lkh6odgKbfY03TFRhwjOq W79UdzK8

Offered as	Major Practical
Course/ Paper Title	Programming in Python
Course Code	23SBMT44MM
Semester	IV
No. of Credits	2

Syllabus

Unit No	Title with Contents	No. of Lectures
Unit I	**Introduction to Python**	**06**
	1.1 Installation of Python. 1.2 Values and types: int, float and str, The Print Function: Print basics. 1.3 Variables: assignment statements, printing variable values, types of variables. 1.4 Mathematical Operators, operands and precedence: +, -, /, *, **, % PEMDAS (Rules of precedence), String operations: +: Concatenation, *: Repetition. 1.5 Boolean operator: 1.5.1 Comparison operators: ==, ! =, >, =, <= 1.5.2 Logical operators: and, or, not. 1.6 Mathematical functions from math, cmath modules, random module, Keyboard input: input() statement 1.7 Calculus: Differentiation, Integration, Limit and Series	1 1 1 1 1 1
Unit II	**Strings, Lists, Tuples**	**06**
	2.1 Strings: 2.1.1 Length (Len function). 2.1.2 String traversal: Using while statement, Using for statement. 2.1.3 String slice 2.1.4 Comparison operators (>, <, =) 2.2 Lists: 2.2.1 List operations.	2 2

	2.2.2 Use of range function. 2.2.3 Accessing list elements. 2.2.4 List membership and for loop. 2.2.5 List operations. 2.2.6 Updating list: addition, removal or updating of elements of a list. 2.3 Tuples: 2.3.1 Defining a tuple. 2.3.2 Index operator. 2.3.3 Slice operator. 2.3.4 Tuple assignment. 2.3.5 Tuple as a return value.	2
Unit III	**Iterations and Conditional statements**	**08**
	3.1 Conditional and alternative statements, Chained and Nested Conditionals: if, if-else, if-elif-else, nested if, nested if-else. 3.2 Looping statements such as while, for etc, Tables using while. 3.3 Functions: 3.3.1 Calling functions: type, id. 3.3.2 Type conversion: int, float, str. 3.3.3 Composition of functions, Returning values from functions. 3.3.4 User defined functions, Parameters and arguments.	3 2 3
Unit IV	**Linear Algebra**	**06**
	4.1 Matrix construction, eye(n), zeros(n,m) matrices 4.2 Addition, Subtraction, Multiplication of matrices, powers and invers of a matrix. 4.3 Accessing Rows and Columns, Deleting and Inserting Rows and Columns 4.4 Determinant, reduced row echelon form, null space, column space, Rank. 4.5 Solving systems of linear equations (Gauss Elimination Method, Gauss Jordan Method, LU-	1 1 1 1 1

	decomposition Method). 4.6 Eigenvalues, Eigenvectors, and Diagonalization.	 1
Unit V	**Numerical methods in Python**	**05**
	5.1 Roots of equations 5.2 Root finding method: Bisection method, Regula Falsi Method, Newton Raphson method. 5.3 Numerical integration: Trapezoidal Rule, Simpson's $1/3^{rd}$ rule, Simpson's $3/8^{th}$ rule.	1 2 2
Unit VI	**2D and 3D Graphs**	**05**
	6.1 Installation of numpy, matplotlib packages. 6.2 Graphs plotting of functions. 6.3 Different formats of graphs, PyDotPlus (Scalable Vector Graphics), PyGraph viz. Decorate Graphs with Plot Styles and Types, Polar charts: Navigation Toolbar with polar plots, Control radial and angular grids. 6.4 Three-dimensional Points and Lines. 6.5 Three-dimensional Contour Plots, Wireframes and Surface Plots.	1 1 1 1 1

Text books:

1. Think Python, How to Think Like a Computer Scientist, Allen Downey, Green Tea Press Needham,

Massachusetts, 2015.

Unit-I: Chapter-1: Sec. 1.1-1.5, Chapter-2: Sec. 2.1-2.6, Chapter-3: Sec. 3.1-3.6, Chapter-5: Sec. 5.1-5.3.

Unit-II: Chapter-8: Sec. 8.1-8.5, Chapter-10: Sec. 10.12, Chapter-12: Sec.12.1.- 12.6.

Unit-III: Chapter 5: Sec. 5.4 -5.7, Chapter 7: Sec. 7.1-7-7.5.

2. Introduction to Scientific Computing in Python, Robert Johansson, 2016.

Unit-I: Chapter-6: Sec. 6.5-6.8

Unit- IV: Chapter-4: Sec. 4.6 (4.6.1 - 4.6.6), Chapter-6: Sec. 6.9-6.10,

Unit-V: Chapter-4: Sec. 4.8, Unit-VI: Chapter-5.

3. Python for Scientific Engineering, Hans-Petter Halvorsen, 2020.

Unit-V: Chapter-31

Reference books:

1. Fundamentals of Python - First Programs, Lambert K. A. Cengage Learning India, 2015.
2. Introduction to Computing and Programming in Python, Guzdial, M. J., Pearson India.
3. Introduction to Scientific Computing Using Python, Application Development Focus, Ljobomir Perkovic, Second Edition, Wiley Publication.
4. Python: Notes for Professionals, Goalkicker.com, Free Programming books.

Website:

1. https://www.math.purdue.edu/~bradfor3/ProgrammingFundamentals/Python/

Practical number	Title	No. of Practical
Practicals based on 23SBMT44M		
I	Introduction to Python, Python Data Types-I (Unit I)	1
II	Python Data Types- II (Unit II)	1
III	Control statements in Python-I (Unit III)	1
IV	Control statements in Python-II (Unit III)	1
V	Application: Matrices (Unit IV)	1
VI	Application: Determinants, System of Linear Equations (Unit IV)	1
VII	Application: System of Equations (Unit IV)	1
VIII	Application: System of Equations (Unit IV)	1
IX	Application: Eigenvalues, Eigenvectors (Unit IV)	1
X	Application: Roots of Equations (Unit V)	1
XI	Application: Numerical Integration (Unit V)	1
XII	Graph plotting (Unit VI)	1

Course/ Paper Title	Community Engagement Program
Course Code	23SBMT4CEP
Semester	IV
No. of Credits	2

List of Possible Community Engagement Program in Mathematics

Sr.No.	Activity
1	Remedial Coaching for school students.
2	Organising Mathematics Enrichment Activities for school Students
3	Preparing ‘Math Lab’ for school
4	Organising ‘Mathematics Camp’ for school students
5	Organising Abacus Camp for School students
6	Delivering lectures on Ancient Indian Mathematics