



Sanjivani Rural Education Society's  
**SANJIVANI ARTS, COMMERCE AND SCIENCE COLLEGE**  
At: Sahajanandnagar, Post: Shingnapur, Tal: Kopargaon,  
Dist: Ahmednagar (M.S.) Pin:423603  
Recognized by Govt. of Maharashtra, Affiliated to University of Pune, ID.No.PU/AN/ACS/130/2012



## Department of BSc. Mathematics

Program Outcomes (POs)	
PO-1	Scientific temper will be developed in Students.
PO-2	Students will acquire basic Practical skills & Technical knowledge along with domain knowledge of different subjects in the science stream.
PO-3	Students will become employable; they will be eligible for career opportunities in Industry, or will be able to opt for entrepreneurship.
PO-4	Students will possess basic subject knowledge required for higher studies, professional and applied courses like Management Studies, Law etc.
PO-5	Students will be aware of and able to develop solution oriented approach towards various Social and Environmental issues.

Program Specific Objectives (PSOs)	
PSO-1	Student should be able to recall basic facts about mathematics and should be able to display knowledge of conventions such as notations, terminology.
PSO-2	A student should get adequate exposure to global and local concerns that explore them many aspects of mathematical sciences.
PSO-3	Student is equipped with mathematical modeling ability, problem solving skills, creative talent and power of communication necessary for various kinds of employment.
PSO-4	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 or techniques in order to process the information and draw the relevant conclusion.
PSO-5	Enabling students to develop a positive attitude towards mathematics as an interesting and valuable subject of study.

  
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## Department of BSc. Mathematics

### Course Outcomes F.Y.B.Sc. (CBCS- 2019)

#### MT101:Algebra and Geometry

CO Number	Course Outcome
1.	CO1: To learn divisibility of integers and congruence relations.
2.	CO2: To learn operations on polynomials, finding GCD of two polynomials and roots of polynomials.
3.	CO3: To learn basic matrix algebra and method to find solutions to system of linear equations. Also to learn eigenvalues and eigenvectors of matrix.
4.	CO4: To learn analytical geometry of 2 and 3 dimensions which include study of conics, planes, lines, sphere, cone and cylinder

### Course Outcomes F.Y.B.Sc. (CBCS- 2019)

#### MT102: Calculus and Differential Equations

CO Number	Course Outcome
1.	CO1: To learn basic properties of real numbers and its subsets which is backbone of Real Analysis.
2.	CO2: To study functions in detail which is a fundamental structure in all sciences, and to be able to check continuity of a function.
3.	CO3: To apply notion of derivative in mean value theorem and also in higher order derivatives which arise in all applied sciences
4.	CO4: To be able to solve first order and first degree differential equations.

  
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**Course Outcomes**

**F.Y.B.Sc. (CBCS 2019)**

**MT103: Mathematics Practical**

<b>CO Number</b>	<b>Course Outcome</b>
1.	CO1: Problem solving skills of students are enhanced.
2.	CO2: Theoretical concepts are strengthened by solving maximum no. of problems
3.	CO3: Due to one to one interaction with the teacher doubts of the students get cleared if any.
4.	CO4: Students learn how to apply mathematical concepts to practical and real life problems.
5.	CO5: Interdisciplinary approach is developed

**Course Outcomes**

**S.Y.B.Sc. (CBCS- 2019)**

**MT211 Multivariable Calculus I**

<b>CO Number</b>	<b>Course Outcome</b>
1.	CO1: To study functions and several variables.
2.	CO2: To study the notion of Continuity and Differentiability of multivariate functions
3.	CO3: To find extreme values of multivariable functions using derivatives
4.	CO4: To learn evaluation of double and triple integration and its application to area and volume.

**Course Outcomes**

**S.Y.B.Sc. (CBCS- 2019)**

**MT212(B) Laplace Transform and Fourier series**

<b>CO Number</b>	<b>Course Outcome</b>
1.	CO1: To learn the evaluation of Laplace transform of different types of functions, their derivatives and integrations.
2.	CO2: To learn the evaluation of Inverse Laplace transform of functions, their derivatives and integrations, and to learn application of Convolution theorem.
3.	CO3: To learn to apply Laplace Transform to solve Ordinary Differential equations with constant coefficients.
4.	CO4: To learn to evaluate the Fourier series of various even and odd functions.

  
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**Course Outcomes**  
**S.Y.B.Sc. (CBCS- 2019)**

**MT221 Linear Algebra**

<b>CO Number</b>	<b>Course Outcome</b>
1.	CO1: To learn the importance of linear transformation in Physics, Engineering, Social sciences and various branches of Mathematics.
2.	CO2: To learn to find Eigen values and Eigen vectors of a matrix which is used in the study of vibrations, chemical reactions and geometry.
3.	CO3: To learn Inner Product spaces and Gram-Schmidt process of orthogonalization.CO4: To get well equipped with Mathematical Modelling abilities.
4.	CO1: To learn the importance of linear transformation in Physics, Engineering, Social sciences and various branches of Mathematics.

**Course Outcomes**  
**S.Y.B.Sc. (CBCS- 2019)**

**MT222(B) Numerical Analysis**

<b>CO Number</b>	<b>Course Outcome</b>
1.	CO1: To learn to apply the various numerical techniques for solving real life problems.
2.	CO2: The problems which cannot be solved by usual formulae and methods can be solved approximately by using numerical techniques.
3.	CO3: To fit curve to the data by using 5 different methods of interpolation as well as extrapolation.
4.	CO4: To find approximate solutions to difficult differential equations occurring in engineering sciences.

  
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<b>Course Outcomes</b> <b>S.Y.B.Sc. (CBCS- 2019)</b> <b>MT223 Mathematics Practical</b>	
<b>CO Number</b>	<b>Course Outcome</b>
1.	CO1: Problem solving skills of students are enhanced.
2.	CO2: Theoretical concepts are strengthened by solving maximum no. of problems
3.	CO3: Due to one to one interaction with the teacher doubts of the students get cleared if any.
4.	CO4: Students learn how to apply mathematical concepts to practical and real life problems.
5.	.CO5: Interdisciplinary approach is developed

<b>Course Outcomes</b> <b>T.Y.B.Sc. (CBCS- 2019)</b> <b>MT331 Metric Spaces</b>	
<b>CO Number</b>	<b>Course Outcome</b>
1.	CO1: To equip students with basic mathematical tools such as open & close sets, continuity, connectedness, compactness which can be used to study general topology and real & complex analysis.
2.	CO2: To enhance abstract thinking and visualization of students.
3.	CO3: To generalize the notion of distance, convergent sequence and continuity of functions.
4.	CO4: To increase problem solving ability by solving examples and counter-examples of various concepts involved.

<b>Course Outcomes</b> <b>T.Y.B.Sc. (CBCS- 2019)</b> <b>MT332 Real Analysis I</b>	
<b>CO Number</b>	<b>Course Outcome</b>
1.	CO1: To learn basic techniques and examples in analysis to be well prepared for courses like Topology, Measure theory and Functional analysis.
2.	CO2: To study various types of sets and relations, and concept of countable and uncountable..
3.	CO3: To study concept of sequence and series and hence find sum of infinite terms with different methods.
4.	CO4 To study notion of lub and glb which helps to learn integrations which helps to find area under any functions.:

  
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<b>Course Outcomes</b> <b>T.Y.B.Sc. (CBCS- 2019)</b> MT334 Group Theory	
<b>CO Number</b>	<b>Course Outcome</b>
1.	CO1: To learn fundamental properties and mathematical tools such as closure, identity, inverse and generators
2.	CO2: To study algebraic structure 'Groups' in detail which is useful in study of Rings, Modules, Algebraic topology, Analysis
3.	CO3: To enhance abstract thinking of students.
4.	CO4: To learn to compare two different algebraic structures and study transfer of properties in-between these structures through homomorphism and isomorphism

<b>Course Outcomes</b> <b>T.Y.B.Sc. (CBCS- 2019)</b> MT335 Ordinary Differential Equations	
<b>CO Number</b>	<b>Course Outcome</b>
1.	CO1: To learn methods to solve linear differential equation with constant coefficients.CO2: To learn methods for solving non-homogenous differential equation.
2.	CO3: To learn power series solution method using ordinary and singular points.CO4: To solve system of first order differential equations.
3.	CO1: To learn methods to solve linear differential equation with constant coefficients.CO2: To learn methods for solving non-homogenous differential equation.
4.	CO4: To solve system of first order differential equations

  
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**Course Outcomes**  
**T.Y.B.Sc. (CBCS- 2019)**

**MT337F Number Theory**

<b>CO Number</b>	<b>Course Outcome</b>
1.	CO1: In this course, students learn the properties of the set of integers in detail.
2.	CO2: Students can find integer solutions to the system of equations which arises in real life problems.
3.	CO3: Students study various theorems on primes and also learn congruence which are used in cryptography.

**Course Outcomes**  
**T.Y.B.Sc. (CBCS- 2019)**

**MT337A Operations Research**

<b>CO Number</b>	<b>Course Outcome</b>
1.	CO1: Students learn conversion of real life problems into mathematical models which enhance their problem solving and decision making abilities.
2.	CO2: Students learn to calculate optimal solution of models through graphical and iterative methods.
3.	CO3: Students study transportation and assignment models and methods to solve them.
4.	CO4: This helps them to get optimum solutions within the given constraints to problems arising in industry

  
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**MT341 Complex Analysis**

<b>CO Number</b>	<b>Course Outcome</b>
1.	CO1: To learn basic algebraic properties of complex numbers and limit and continuity of Complex functions.
2.	CO2: To learn analytic functions and the C-R equations as its necessary and sufficient conditions
3.	CO3: To learn tools which are useful in finding integration of Complex valued functions.
4.	CO5: To learn applications of residues and poles in integrals of complex functions.
5.	CO3: To learn tools which are useful in finding integration of Complex valued functions.

**Course Outcomes**  
**T.Y.B.Sc. (CBCS- 2019)**

**MT342 Real Analysis II**

<b>CO Number</b>	<b>Course Outcome</b>
1.	CO1: To learn Riemann Integral and its properties in detail, leading to fundamental theorem of calculus and Mean value theorems.
2.	CO2: To study different tests for solving improper integrals of first and second kind. CO3: To study pointwise and uniform convergence of sequences and series of functions.

**Course Outcomes**  
**T.Y.B.Sc. (CBCS- 2019)**

**MT344 Ring Theory**

<b>CO Number</b>	<b>Course Outcome</b>
1.	CO1: To study the algebraic structure Ring in detail through various examples.
2.	CO2: To learn the construction of field of quotients of an integral domain.
3.	CO3: To study the Rings of polynomials and its factorization over a field.
4.	CO4: To study the notion of ideals and factor rings with examples
5.	CO5: To study Unique Factorization domain, Euclidean Domain and related results

  
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**Course Outcomes**  
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**MT345 Partial Differential Equations**

<b>CO Number</b>	<b>Course Outcome</b>
1.	CO1: To understand the concept of Ordinary differential Equations in more than two variables.
2.	CO2: To learn the application of Ordinary differential Equations through method to find Orthogonal Trajectories.
3.	CO3: Introduction of first order Partial Differential Equations.
4.	CO4: Learn methods to solve first order Partial Differential Equations

**Course Outcomes**  
**T.Y.B.Sc. (CBCS- 2019)**

**MT347D Graph theory**

<b>CO Number</b>	<b>Course Outcome</b>
1.	CO1: To introduce the concept of Graphs, which is an important tool for Mathematical Modeling
2.	CO2: To study different types of graphs and operations on graphs
3.	CO3: To study the concept of trees in detail and algorithms to find special spanning trees CO4: To study Directed Graphs and its applications
4.	CO4: To study Directed Graphs and its applications

**Course Outcomes**  
**T.Y.B.Sc. (CBCS- 2019)**

**MT347F Computational Geometry**

<b>CO Number</b>	<b>Course Outcome</b>
1.	CO1: Students learn the representation of objects in 2D and 3D in the form of matrices
2.	CO2: To study the transformations like reflection, rotation, scaling, shearing, translation of objects in 2D and 3D and their geometrical significance.
3.	CO3: Students learn to generate plane curves by using parametric equation
4.	CO4: All the concepts help students to learn graphic display of objects on computer.

  
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