JSS MAHAVIDYAPEETHA

JSS COLLEGE FOR WOMEN

Affiliated to the University of Mysore & Re-Accredited by NAAC with 'A' Grade
DOUBLE ROAD, CHAMARAJANAGAR : 571 313

Ph.: 08226-222076 & FAX: 08226-226505 Web: www.jsscwchn.com E-Mail: jsswcc@rediffmail.com

Department of Mathematics

Program and Course Outcomes-2023-24

Program Outcomes (NEP)

Program Name: BSc Discipline Course: Mathematics

PO 1	**Disciplinary Knowledge**: Disciplinary Knowledge : Bachelor degree in Mathematics is the culmination of in-depth knowledge of Algebra, Calculus, Geometry, differential equations and several other branches of pure and applied mathematics. This also leads to study the related areas such as computer science and other allied subjects.
PO 2	**Communication Skills:** Ability to communicate various mathematical concepts effectively using examples and their geometrical visualization. The skills and knowledge gained in this program will lead to the proficiency in analytical reasoning which can be used for modeling and solving of real life problems.
PO 3	**Critical thinking and analytical reasoning:** The students undergoing this programme acquire ability of critical thinking and logical reasoning and capability of recognizing and distinguishing the various aspects of real life problems.
PO 4	**Problem Solving** : The Mathematical knowledge gained by the students through this programme develop an ability to analyze the problems, identify and define appropriate computing requirements for its solutions. This programme enhances students overall development and also equip them with mathematical modelling ability, problem solving skills
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PO 6	**Information/digital Literacy**: The completion of this programme will enable the learner to use appropriate softwares to solve system of algebraic equation and differential equations.
PO7	**Self – directed learning**: The student completing this program will develop an ability of working independently and to make an in-depth study of various notions of Mathematics.
PO8	**Moral and ethical awareness/reasoning:** : The student completing this program will develop an ability to identify unethical behavior such as fabrication, falsification or misinterpretation of data and adopting objectives, unbiased and truthful actions in all aspects of life in general and Mathematical studies in particular.
PO9	**Lifelong learning**: This programme provides self directed learning and lifelong learning skills. This programme helps the learner to think independently and develop algorithms and computational skills for solving real word problems.
PO10	Ability to peruse advanced studies and research in pure and applied Mathematical sciences.

Course Outcomes - I BSc

I Semester

Course No	Title	Course Outcomes
MATDSCT1.1	Algebra-I and Calculus-I	1. Learn to find the rank of matrix
		2. Solve the system of homogeneous and non homogeneous form.
		3. Students will be familiar with the techniques of integration and differentiation of function with real variables.
		4. Students learn to solve polynomial equations.
		5.Learn to apply Reduction formulae

II Semester

Course No	Title	Course Outcomes
MATDSCT 2.1	Algebra II (Number Theory) and Calculus-II	1.Learn the concept of Divisibility
		2. Learn about prime and composite numbers.
		3. Learn the concept of congruence's and its applications.
		4. Identify and apply the intermediate value theorems and L'Hospital rule.
		5. Understand the concept of differentiation and fundamental theorems in differentiation and various rules.
		6.Understand the concept of line, double and triple integral
		6. Find the values of integral using double and triple integral
		7.Students learn to find areas and volumes using integration

Course Outcomes-II BSc

III Semester

Course No	Title	Course Outcomes
MATDSCT 3.1	Algebra-III and Diffential Equations-I	1 Assess properties implied by the definitions of groups.
		2 Use various canonical types of groups(including cyclic groups and groups of permutation)
		3. Analyze and demonstrate examples of subgroups, Normal Subgroups and Quotient groups.
		4. Obtain the solution of differential equations by the method of separation of variables, homogeneous, Linear and exact differential equations
		5. Obtain an integrating factor which may reduce a given differential equation into an exact one and provide its Solution
		6. Find the complementary function and particular integrals of Linear differential equations

IV Semester

Course No	Title	Course Outcomes
MATDSCT-4.1	Real Analysis-I and Differential Equations-II	1.Understand the concept of Sequence ad Series
		2. Able to find the character of the sequence and series.
		3.Find the monotonic increasing and decreasing sequense
		4.Able to apply the various tests like root,ratio tests etc to find the character of the series
		5.Able to find the solution for LDE b different methods
		6.Method of Solution of the differential equation of the form dx/P=dy/Q=dz/R
		7.able to learn the Partial differential equations.Learn the definition & concept
		8.Will solve the PDE bydifferent types of methods

Course Outcomes

III Bsc V Semester

Course No	Title	Course Outcomes
MATDSCT5.1	**Real Analysis-II and Complex Analysis**	1. Carry out certain computations such as computing upper and lower Riemann sums as well integrals.
		2. Describe various criteria for Inerrability of functions.
		3. Exhibit certain properties of mathematical objects such as integrable functions, analytic functions, and harmonic functions and so on.
		4. Prove some statements related to Riemann integration as well as in complex analysis
		5.Carry out the existing algorithms to construct mathematical structures such as analytic functions.
		6. Applies the gained knowledge to solve various other problems

Course No	Title	Course Outcomes
MATDSCT 5.2	**Advanced Algebra and Discrete Mathematics**	**1. Identify and analyze different algebraic structures such as rings, fields, domains and so on.**
		2. Explore the properties of the above mentioned algebraic structures.
		3. Carry out the prescribed algorithm to compute the GCD of polynomials, irreducibility of polynomials and so on.
		4. Prove various statements related to algebraic structures.
		5. Apply the gained knowledge to solve various other problems
		6. Handle various mathematical operations

		like rules for counting, arrangements and selections with repetitions.
		7. Understand recurrence relation and solving them.
		8. apply the rules of logic in arriving at inferences (like that of Modus ponens, Modus Tollens and so on).
		9. Apply the rules, principles and algorithms in solving problems like that of solving recurrence relations, minimizing the Boolean expression through Karnaugh Map method, solving problems basedon counting principles
		10. Prove the mathematical statements related to Boolean algebra, mathematical logic.

Course Outcomes- III BSc

VI Semester

Course No	Title	Course Outcomes
MATDSCT 6.1	**Linear Algebra**	
		1 Understand the concepts of Vector spaces, subspaces, bases dimension and their properties.
		2 Become familiar with the concepts Eigen values and eigen vectors, minimal polynomials, linear transformations etc.
		3 Learn properties of inner product spaces and determine orthogonality in inner product spaces.
		4. Prove various statements in the context of vector spaces.
		5. Realise importance of adjoint of a linear transformation and its canonical form.

Course No	Title	Course Outcomes

MATDSCT 6.2	**Numerical Analysis**	1. Describe various operators arising in numerical analysis such as difference operators, shift operators and so on
		2. Articulate the rationale behind various techniques of numerical analysis such as in finding roots,integrals and derivatives
		3 Reproduce the existing algorithms for various tasks as mentioned previously in numerical analysis
		4. Apply the rules of calculus and other areas of mathematics in justifying the techniques of numerical analysis
		5. Solve problems using suitable numerical technique
		6. Appreciate the profound applicability of techniques of numerical analysis insolving real life problems and also appreciate the way the techniques are modified to improve the accuracy.

PROGRAMME OUTCOMES

NEP

Department of Mathematics

Disciplinary knowledge

Bachelor degree in Mathematics is the culmination of in-depth knowledge of Algebra, Calculus, Geometry, differential equations and several other branches of pure and applied mathematics. This also leads to study the related areas such as computer science and other allied subjects.

Problem solving

The Mathematical knowledge gained by the students through this programme develop an ability to analyze the problems, identify and define appropriate computing requirements for its solutions. This programme enhances students overall development and also equip them with mathematical modelling ability, problem solving skills

Information/ Digital library

The completion of this programme will enable the learner to use appropriate softwares to solve system of algebraic equation and differential equations.

Communication skill

Ability to communicate various mathematical concepts effectively using examples and their geometrical visualization. The skills and knowledge gained in this program will lead to the proficiency in analytical reasoning which can be used for modeling and solving of real life problems.

Critical thinking and analytical reasoning

The students undergoing this programme acquire ability of critical thinking and logical reasoning and capability of recognizing and distinguishing the various aspects of real life problems.

Problem solving

The Mathematical knowledge gained by the students through this programme develop an ability to analyze the problems, identify and define appropriate computing requirements for its solutions. This programme enhances students overall development and also equip them with mathematical modelling ability, problem solving skills

Moral and ethical awareness/ reasoningblem solving

The student completing this program will develop an ability to identify unethical behavior such as fabrication, falsification or misinterpretation of data and adopting objectives, unbiased and truthful actions in all aspects of life in general and Mathematical studies in particular.

Self-directed learning

The student completing this program will
develop an ability of working independently and to make an in-depth study of various notions of Mathematics. .

Advance studies

Ability to peruse advanced studies and research in pure and applied Mathematical sciences.

Life long learning

This programme provides self directed learning and lifelong learning skills. This programme helps the learner to think independently and develop algorithms and computational skills for solving real word problems.

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LEAD.

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