

JSS MAHAVIDYAPEETHA
JSS COLLEGE FOR WOMEN
 CHAMARAJANAGAR

DEPARTMENT OF MATHEMATICS
Program outcomes, Course outcomes 2021-22

Program outcomes, Course outcomes (NEP)

Program Outcomes

Program Name: B.Sc

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
PO 5	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
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.

I semester-Course Outcomes

Course No	Title	Course Outcomes
MATDSCT1.1	Algebra-I and Calculus-I	1. Learn to solve system of linear equations.
		2.Solve the system of homogeneous and non homogeneous linear of m equations in n Variables by using concept of rank of matrix.
		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

Course No	Title	Course Outcomes
MATOET1.3	Mathematical Aptitude-I	1.Have a strong base in the fundamental mathematical concepts.
		2.Grasp the approaches and strategies to solve problems with speed and accuracy
		3. Gain appropriate skills to succeed in preliminary selection process for recruitment

II semester-Course Outcomes

Course No	Title	Course Outcomes
MATDSCT 1.2.1	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 congruences 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.Find the extreme values of functions of two variables.
		7.Students learn to find areas and volumes using integration

Course No	Title	Course Outcomes
MATOET2.3	Mathematical Aptitude-II	1. Have a strong base in the fundamental mathematical concepts.
		2. Grasp the approaches and strategies to solve problems with speed and accuracy
		3. Gain appropriate skills to succeed in preliminary selection process for recruitment

Program outcomes, Course outcomes for II BSc and III BSc

PROGRAMME : B.Sc (Physics, Chemistry, Mathematics)

B.Sc(Physics,Mathematics,Computerscience

Programme Code	Program Outcomes
BSC1	Demonstrate proficiency in mathematics and mathematical concept needed for proper understanding of Physics.
BSC2	Develop and understand value Of Mathematical proof and demonstrate proficiency in writing and understanding proofs.
BSC3	The programme makes the students ready to take up jobs in various sectors such as research firms ,healthcare industry,chemical industry,testing laboratories, Software Company,banks,etc.
BSC4	Demonstrate the ability to justify and explain their Thinking and/or approach.
BSC5	Students are expected to have an understanding of the Analytical methods required to interpret and analyze results and draw conclusions as supported by their data.
BSC6	Students are expected to develop written and oral Communication skills in science and mathematics related topics.
BSC7	Students are able to analyze inorganic and organic molecules.
BSC8	The programme develops the team spirit and co-ordination in students through experiential and investigative laboratory learning.
BSC9	Develop laboratory skills and professional communication skills.
BSC10	Appreciate the role of chemistry in the society.
BSC11	The ability to understand, analyze and develop software programs in the areas related to system software, web design, application program, database, graphics and networking for efficient design of technology of varying complexity

BSC12	Students will use effective technology appropriately, such as PowerPoint, slides, posters, handouts, and transparencies in oral presentations.
BSC13	Develop personal skills such as the ability to work both independently and in a group.
BSC14	Acquire academic abilities, personal qualities and transferable skills, which will give the main opportunity to develop as responsible citizens.

III Semester -Course Outcomes

Course No	Title	Course Outcomes
MATH-03	Algebra-II and Differential Equations-II	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 Outcomes

Course No	Title	Course Outcomes
MATH-04	Differential Equations-II and Real Analysis	1.Method of Solution of the differential equation of the form $dx/P=dy/Q=dz/R$
		2.Use Lagrange's method for solving the first order linear Partial differential equations.Learn the definition & concept of line integral
		3.Evaluations of double integral & triple integrals.
		4.Find the volume of given surface by using triple Integrals.
		5.Learn the definition of Riemann integral. Uppersum sand lowersums.
		6.Criterion for integrability. Fundamental theorem of integral calculus
		7.Learn First and Second Mean Value theorems of integral calculus.

V Semester -Course Outcomes

Course No	Title	Course Outcomes
DSE-MATH -01	Real Analysis –II and Algebra-III	1.Understand the term Convergence.
		Applies this term into problems.
		2.Illustrate the convergence properties of infinite series.
		3.Test the convergence of infinite series by comparison tests, D'Alembert's ratio test, Raabe's test. Cauchy's root test
		4.Defines rings ,fields, integral domain and the types of the ring
		5.Problems On Rings, Fields And Integral Domain
		6.Proves the theorems on ideals, rings and fields and other
		7.Defines Divisibility, associates and units and solves problems on the concept
		8.Defines Homomorphism ,and find the GCD of polynomials

Course No	Title	Course Outcomes
SEC-MATH -02	Numerical Analysis	1.Understand the concepts of floating point errors in representing numbers Solving equations using different methods.
		2.Solve the problems using numerical Differentiation and Integration.
		3.Solve the system of linear equations by using numerical methods.

VI Semester -Course Outcomes

Course No	Title	Course Outcomes
DSE-MATH -02	Algebra –IV and Complex Analysis I	1.Understand the idea about vectors space.
		2.Analyze finite and infinite dimensional Vectorspace and Subspaces over a Field and their properties, including basis structure of vectorspaces.
		3.Use the definition and properties of linear transformation and matrices of linear Transformations and change of basis including kernel, range and isomorphism.
		4.Compute with the characteristic polynomials eigen vectors, eigen spaces.
		5.Understand the idea about vectors space.
		6.Represent Complex Number algebraically and geometrically.
		7.Apply the concept and consequences of analyticity and Cauchy-Riemann Equation and results on harmonic functions
		8.Evaluate complex contour integrals directly and by the fundamental theorem, Apply the Cauchy integral theorem.

Course No	Title	Course Outcomes
SEC-MATH -03	Complex Analysis and Improper Integral	1.Understand the idea about complex integration
		2.Proves Cauchy's integral theorem and its consequences
		3.Solve the problems on analytical functions applying Cauchy's Riemann Equations.
		4.Learn about fundamental theorem of Algebra,Cauchy's inequality
		5.Defines beta and gama functions
		6.Applies the relation between beta and gama function on solving problems
		7.Applies the evaluation of integral formula and duplication formula.