SAMARTH MAHAVIDYALAY LAKHANI
DEPARTMENT OF MATHEMATICS
PROGRAM NAME: B.SC.

Programme outcomes

1) Scientific temper will be developed in Students.

2)Students will acquire basic Practical skills & Technical knowledge along with domain knowledge of different subjects in the science stream.

3)Students will become employable; they will be eligible for career opportunities in Industry,or will be able to opt for entrepreneurship.

4) Students will possess basic subject knowledge required for higher studies, professional and applied courses like Management Studies, Law etc.

5)Students will be aware of and able to develop solution oriented approach towards variousSocial and Environmental issues.

Programme specific outcomes

1)A student should be able to recall basic facts about mathematics and should be able todisplay knowledge of conventions such as notations , terminology.

2) A student should get adequate exposure to global and local concerns that explore themmany aspects of mathematical sciences.

3) Student is equipped with mathematical modeling ability, problem solving skills, creativetalent and power of communication necessary for various kinds of employment.

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.

5) Enabling students to develop a positive attitude towards mathematics as an interesting and valuable subject of study.

Statement of Course Outcomes

B.Sc. Sem-I Paper-M 1: Algebra & Trigonometry

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

- Use Matrices to solve system of linear equations.
- Understand the concept of Eigen value & Eigen vectors and method to find it.
- Find roots of polynomial equation in one variable.
- Understand the basic concept of complex analysis.
- Understand the basic concept of Group Theory.

B.Sc. Sem-I Paper-M 2: Calculus

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

- Understand the concept of limit, continuity and differentiability of function of one variable, successive differentiation and Lebinitz's theorem.
- Understand the concept series expansions (Maclaurin & Taylor Series).
- Find limits of Indeterminate forms by using L'Hospital Rule.
- Understand the concept of partial differentiation, Euler's theorem, Jacobians.
- Solve definite integrals.

B.Sc. Sem-II Paper- M 3: Geometry, Differential & Difference Equations

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

- Understand the concept of Geometry (line, Plane, Circle, Sphere, cone, cylinder).
- Solve first order exact differential equation, first order linear differential equation.
- Study Bernoulli's differential equation.
- Study higher order linear differential equation.
- Study Difference equation.

B.Sc. Sem-II Paper- M 4: Vector Calculus & Improper Integrals

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

- Understand the concept of vector calculus (Gradient, Divergence, Curl).
- Understand the concept of line Integral, work done, conservative vector field.
- Use double integration to find area.
- Solve problems on vector Integration (Surface Integral, Volume Integral).
- Evaluate Improper Integrals.

B.Sc. Sem-III Paper-M 5: Advanced Calculus, Sequence & Series

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

- Understand Mean Value Theorems, Limit & continuity of functions of two variables.
- Understand the concept of Minima & maxima of functions of two variables.
- Understand the concept of sequence.
- Understand the concept of series.

B.Sc. Sem-III Paper-M 6: Differential Equations & Group Homomorphism

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

- Understand Bessel's & Legendre's functions with their properties.
- Understand the concept Laplace Transform & Inverse Laplace Transform.
- Solve Ordinary and Partial Differential Equations using Laplace transform.
- Understand the concept of Fourier Transform.
- Understand the concept of Group.

B.Sc. Sem-IV Paper-M 7: Partial Differential Equations & Calculus of Variation

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

- Solve simultaneous differential equations.
- Form partial differential equations of first order.
- Use suitable method to find solution of partial differential equations of first order.
- Solve linear partial differential equations of higher order.
- Study calculus of variation.

B.Sc. Sem-IV Paper-M 8: Mechanics

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

- Understand the concepts of equilibrium of coplanar forces, virtual work, catenary.
- Understand the concept of radial & transverse velocity, radial & transverse acceleration.
- Understand the concept of simple harmonic motion.
- Understand Mechanics of a system of particles.
- Study equations of motion.

B.Sc. Sem-V Paper-M 9: Analysis

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

- Understand the concept of fourier series.
- Understand the concept Riemann-Stieltjes integral.
- Understand fundamental theorem of calculus.
- Understand basic concept of analytic functions.
- study Mobius transformation.

B.Sc. Sem-V Paper-M 10: Metric Spaces, Complex Integration & Algebra

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

- Examine countable and uncountable sets.
- Understand the concept Metric spaces.
- Understand the concept of Ring.
- Study complex integration.

B.Sc. Sem-VI Paper-M 11: Abstract Algebra

By the end of this course, Students will be able to:
- Understand the concept of Group Automorphism.
- Give examples of vector spaces.
- Understand the concept of linear transformation.
- Link linear transformations with matrices.
- study inner product spaces.

B.Sc. Sem-VI Paper-M 12 (Optional)

Special Theory of Relativity
By the end of this course, Students will be able to:
- Study Newtonian Relativity, Galilean Transformation.
- Understand failure of Newtonian Relativity.
- Study Einstein's Theory of Relativity, Lorentz Transformation.
- study Tensors, Riemannian metric, metric tensor.
  Study Maxwell's equations of electromagnetic theory, equivalence of mass and energy $E=mc^2$.

B.Sc. Sem-VI Paper-M 12 (Optional)

Discrete Mathematics and Elementary Number Theory
By the end of this course, Students will be able to:
- Distinguish between equivalence relation and partial order relation.
- Understand Boolean algebra.
- Study basic concept of Number Theory.
- Understand Greatest Integer Function, Quadratic Residues and Reciprocity.
- Study the Diophantine equations $ax+by=c$, the equations $x^2+y^2=z^2 \Box x^4+y^4=z^4$.