

DEPARTMENT OF MATHEMATICS

PROGRAMME SPECIFIC OUTCOME

1. Students will get a strong and valuable knowledge of mathematics which will help them to think logically and they can apply them in both their personal & professional life throughout.
2. Students will have the ability to formulate and then solve the critical and complex type problems.
3. Students will create an interdisciplinary relation between the other streams.
4. Students will have a creative and logical mind by which they can analyze & solve practical problems in their life.
5. Students will apply appropriate techniques and also have the ability of modeling complex and challenging problems.
6. The knowledge of Mathematics will make the students ethical and responsible citizen of nation.
7. Students will be able to do work as a whole or team or individually and communicate effectively with others.
8. Students will recognize the need of self learning and life-long learning to demonstrate the knowledge in the development of society and himself.

B.SC. HONOURS

PART-I -1ST SEMESTER

COURSE CODE: MATH11 HCC-1

COURSE OUTCOME

Course Title: Calculus, Geometry and Differential Equation

This course offers the students to

1. Know about the Hyperbolic functions, higher order derivatives, to know about Leibnitz rule and its applications.
2. Understand the concavity and inflection points, envelopes, asymptotes, curve tracing in Cartesian coordinates.
3. Gain a concept about L'Hospital's rule and its applications in different fields like in business, economics and life science.

4. Know the Reduction formulae, derivations and illustrations of reduction formulae, understand the parametric equations, arc length of a curve, area and volume of revolution and to solve the related problems.
5. Understand the basic concept of conics, rotation of axes and classification of conics and polar equations of conics.
6. Know about the properties of Sphere, Cylindrical surfaces, conicoids, paraboloids , generating lines and solve these related problems.
7. Understand the basic idea of Differential equation and apply the knowledge of Differential equations to solve the real life problems.
8. Solve the first order Differential equations using different types of method, especially linear differential equations and Bernoulli equations.

PART I- 1ST SEMESTER

COURSE CODE: MATH11 HCC-II

COURSE OUTCOME

Course Title: Algebra

This course offers the students to

1. Understand the basics of Complex number, proof of De Moivre's theorem and its applications.
2. Know about Theory of Equations, relationship between roots and coefficients, Descartes rule of signs, to solve the cubic & biquadratic equations.
3. Have the knowledge in inequality involving $A.M \geq G.M \geq H.M$.
4. Understand the basic concept of Integers, well ordering property of positive integers, congruence relation and mathematical induction and solving problems using these results.
5. Know about set theory, equivalence relation, functions and its types.
6. Have a basic and strong knowledge in Linear algebra.
7. Solve the linear system problems using matrix representation, applications of linear systems.
8. Gain knowledge about Vector space, subspaces and dimension of subspaces.
9. Solve the Eigen value related problems; understand about Eigen vectors, Cayley-Hamilton theorem and using this find the inverse of a matrix.

PART-I 2ND SEMESTER

COURSE CODE: MATH21 HCC-III

COURSE OUTCOME

Course Title: Real Analysis

This course offers the students to:

1. Understand the algebraic and order properties of \mathbb{R} , brief idea about countability of sets, know L.U.B & G.L.B of a set, gain a clear idea of Archimedean property.
2. Understand about Point set theory, neighbourhood of a point, concept about limit points and find limit points of sets, know about Bolzano-Weierstrass theorem and know about its importance on limit point.
3. Gain the concept on closed set, open set and its operations and apply this knowledge in solving some related problems.
4. Understand about the concept of Sequence and check its convergence, non-convergence, Cauchy sequence, to understand some basic theorems on Subsequences, know about limsup, liminf of a sequence, subsequential limits.
5. Know about series its definition, convergence and divergence, different types of test such as Comparison test, limit test, Cauchy's nth root test to check the convergence of infinite series of positive real numbers and also have an idea about Absolute and conditional convergence.

PART-I 2ND SEMESTER

COURSE CODE: MATH21 HCC-IV

COURSE OUTCOME

Course Title: Differential Equations and Vector Calculus

This course offers the students to

1. Know about Lipschitz condition and Picard's theorem to check the existence of a solution of a D.E, have idea to solve homogeneous equation of second order, and also linear homogeneous and non-homogeneous equations of higher order with constant coefficients using the method of undetermined coefficients, method of variation of parameters.
2. Understand the system of linear differential equations, and know differential operator and its applications to solve the linear system with constant coefficients.
3. Know the Power series solution of D.E. and also understand the ordinary and singular points of an O.D.E.
4. Gain the idea of equilibrium points and interpretation of phase plane.

5. Gain idea of vector triple product and its application, understand about limit and continuity of vector functions and using this idea solve some problems, also know the differentiation and integration of vector functions.

B.SC HONS 2ND YEAR

PAPER-V

COURSE OUTCOME

Course Title: Real Analysis-II, Calculus of Several Variables-II, Applications of Calculus

This course offers the students to

1. Make a clear concept of series of non-negative real numbers, different types of test to check the convergent.
2. Able to understand Limit of functions, Sandwich theorem, Cauchy criterion for the existence of finite limit.
3. Be able to understand Continuity of functions, Bolzano's theorem, Intermediate value theorem, Uniform continuity and their properties.
4. To make a clear concept of Derivative of functions, Lipschitz's condition and Darboux's theorem.
5. Gain a clear concept of maxima and minima of functions, sufficient condition for the existence and their applications.
6. To understand theory of Young's theorem, Schwartz's theorem, Jacobian, Implicit function and about functions of several variables.
7. To make clear concept about the application of Differential calculus: Plane curve, Tangents and Normals, Curvature, Asymptotes, Envelopes and Singular points.
8. To understand the application of Integral calculus: Area enclosed by a curve, Volume and Surface areas, Centre of Gravity, Moment of Inertia, Reduction Formulae.

B.SC HONS 2ND YEAR

PAPER-VI

COURSE OUTCOME

Course Title: Integral Calculus-II, Dynamics of a Particle

This course offers the students to

1. Make a clear concept of Riemann Integration, Darboux's theorem, Necessary and Sufficient condition of Riemann integrability and different classes of Riemann-integrable functions.

2. Gain clearer concept of Riemann sum, properties of definite integral, Fundamental theorem of Integral Calculus, statements and applications of First and Second Mean Value theorems of Integral Calculus.
3. Understand Motion in a straight line under variable acceleration, Simple Harmonic motion.
4. Be able to understand Motion in a plane under central forces, Central orbit, Tangential and normal components of acceleration and Circular motion.
5. Make a clear concept of Motion of a particle in a plane under different laws of resistance, Motion of a projectile in a resisting medium, Terminal velocity.
6. Gain clear concept of Motion of a particle under the Inverse square law in a plane, Kepler's laws of planetary motion
7. Able to understand Equation of motion of a particle of varying mass and problems of varying mass.

B.SC HONS 2ND YEAR

PAPER-VII

COURSE OUTCOME

Course Title: Modern Algebra-II, Linear Algebra-II, Vector Analysis

This course offers the students to

1. Able to understand Cosets, Lagrange's theorem and Cyclic groups.
2. Gain clearer concepts of Permutation, Ring, Integral domain, Field and able to solve related problems, theorems.
3. To make clear concept of Inner product spaces, Bessel's inequality, Gram-Schmidt orthogonalization method.
4. To understand concepts of Linear Transformation on Vector Spaces, corresponding Matrix representation and its properties.
5. Gain clear concept of Vector differentiation, Tangent to a curve at a point, Normal plane, Serret-Frenet formulae, Oscillating plane and Rectifying plane.
6. Able to understand concept of scalar and vector fields, Directional derivative, Gradient, Divergence and Curl, their properties, Green's theorem in a plane, Stokes' theorem and Divergence theorem.

B.SC HONS 2ND YEAR

PAPER-VIII

COURSE OUTCOME

Course Title: Geometry (3D), Differential Equations-II

This course offers the students to

1. Gain clear concept of equation of plane, Straight line, condition of Co planarity of two lines, Skew lines and shortest distance between skew lines.
2. To make clear concept of Sphere, Cone, Cylinder, Ellipsoid, Hyperboloid, Paraboloid referred to principal axes and solve different types of problems.
3. Able to understand Transformation of rectangular axes by translation, rotation and their combinations, Tangent and Normal, Enveloping cone and Reciprocal cone.
4. Gain clear concept of Second order linear differential equations with variable coefficients, simple Eigen value problem, Simultaneous linear differential equations.
5. Understand concept of Partial differential equations and classification, solution by Lagrange's method and Charpit's method, application of Laplace transformation, Power series solution.

B.SC. HONS 3RD YEAR

PAPER-IX

COURSE OUTCOME

Course Title: LPP, Tensor algebra and Analysis

The students who complete this course successfully are expected to

1. Gain clear concept of Linear programming problem formulation, basic properties of Convex sets, Hyperplane, Convex hull, linear programming in matrix notation.
2. To understand different methods of solution of Linear programming problem such as Graphical method, Simplex method, duality, Transportation and Assignments problems.
3. Be able to understand concepts of E^n , Tensor as a generalisation of vector in E^2, E^3 and E^n , Covariant and Contravariant vectors, Invariant, Einstein's Summation convention, Kronecker delta.
4. Make clear concept of Covariant, Contravariant and Mixed tensors, Algebra of tensors, Symmetric and skew-symmetric tensors, Reciprocal tensor and Quotient law.
5. Gain clear concept of Riemannian space, Metric tensor, Magnitude of a vector, Angle between two vectors.

6. Understand concept of Christoffel symbols and their laws of transformations, Ricci tensor, Geodesic coordinates and Bianchi identity.

B.SC. HONS 3RD YEAR

PAPER-X

COURSE OUTCOME

Course Title: Real Analysis-III, Integral Calculus-III

This course offers the students to

1. Gain clear concept of Linear point set, Compact sets, Cantor intersection theorem, Heine Borel theorem.
2. Be able to understand Limit, Continuity and Uniform continuity on Compact set, Sequence of function, Dini's theorem on Uniform convergence and able to check pointwise and uniform convergence of a given sequence of function.
3. Understand series of functions, some tests to check uniform convergence of a series of function.
4. Able to understand power series, Cauchy-Hadamard and Abel's limit theorem and their application, finding Radius of convergence.
5. Make a clear concept of Mean value theorem and Taylor's theorem, Extremum of functions of two and three variables.
6. Gain clear concept of Improper integral, Necessary and Sufficient condition for convergence of improper integral, different types of test of convergence of improper integral, Uniform convergence of improper integral by M-test and convergence of Beta and Gamma functions.
7. Understand Differentiation and integration with respect to parameter under integral sign, some relevant theorems and problems.
8. Able to solve Fourier series problems.
9. Solve problems related to Multiple integral.

B.SC HONS 3RD YEAR

PAPER –XI

COURSE OUTCOME

Course Title: Metric space, Complex Analysis, Modern Algebra-III

This course offers the students to

1. Understand the basic concepts of Metric spaces,

2. Make a clear idea of open sets, closed set, subspace of Metric space.
3. Understand Cauchy sequence, theory of Cantor Intersection, Real number as a complete ordered field.
4. Gain concept complex number as an ordered pair, Stereographic projection.
5. Understand complex functions, continuity and differentiability of complex functions. Analytic functions, harmonic functions.
6. Know conformal mappings Bilinear transformation.
7. Gain the basic concept of Normal subgroups, their properties, Quotient group of a group by a normal subgroup.
8. Understand about Homomorphism, isomorphism. Infinite cyclic group is isomorphic to the group of residue classes of modulo n .

B.SC HONS 3RD YEAR

PAPER –XII

COURSE OUTCOME

Course Title: Theory of Probability, Rigid Dynamics

This course offers the students to

1. Know the basic concept of random experiments, simple and compound events, event space, classical and frequency definitions of probability, axioms of probability, Bayes' theorem.
2. Understand about independent events, Bernoulli trials and binomial law. Poisson trials, probability distribution function, continuous and discrete distribution: Binomial, Poisson, Gamma, Uniform and Normal distributions.
3. Know about transformation of random variable, Two dimensional probability distributions, Discrete and continuous distributions, conditional distributions.
4. Understand the concepts of mathematical expectation, mean, variance, moments and central moments, dispersion, skewness and kurtosis, median, mode quartiles, moment generating function, characteristic equation, correlation co-efficient, Regression curves, least square regression lines and parabolas.
5. Know the idea of Chi-square and t-distributions and their properties, Tchebychef's inequality, statement of Bernoulli's limit theorem, law of large numbers, Poisson's approximation to binomial distribution and normal approximation to binomial distribution, statement of central limit theorem in the case of equal components and of limit theorem for characteristic functions.
6. Understand about rigid dynamics- momental ellipsoid, equimomental system.

7. Know about D'Alembert's principle, D'Alembert's equations of motion, principle of conservations of linear and angular momentum, independence of the motion of centre of inertia and the motion relative to the centre of inertia.
8. Gain an idea about the equation of motion of a rigid body about a fixed axis, expression for kinetic energy and moment of momentum of a rigid body moving about a fixed axis.
9. Know about compound pendulum, its point of suspension and centre of oscillation, minimum time of oscillation.

B.SC HONS 3RD YEAR

PAPER – XIII

COURSE OUTCOME

Course Title: Theory of Statistics, Analytical Statics

This course offers the students to

1. Know about the basic concept of Random sample, Sampling and its various types, tabulation and graphical representation of data.
2. Understand about Sampling distribution, estimates of a parameter, unbiased and consistent estimates, sampling distribution of the sample mean and variance.
3. Have an idea about Bivariate samples, sample correlation coefficient, and solve the problems related least square regression lines and parabolas.
4. Understand and solve the estimation of parameters, method of maximum likelihood function and its application in binomial, poisson and normal populations.
5. Have a clear idea about statistical hypothesis.
6. Know the theory of Neyman-Pearson and its application to normal population and also some application of hypothesis testing.
7. Know about center of gravity, general formula of C.G., determination of C.G. of any arc, area of solid of known shape.
8. Gain an idea about astatic equilibrium, astatic centre, and positions of equilibrium of a particle lying on a smooth plane curve under the action of given forces.
9. Know about virtual work, principle of virtual work, principle of virtual work for any system of coplanar forces acting on a rigid body, converse of the principle of virtual work.
10. Gain an idea about stable and unstable equilibrium, degree of freedom, conservative field, potential energy of a system, the energy test of stability, condition for stability of equilibrium of a heavy body lying on fixed body.

11. Understand about forces in three dimensions, moment about a line, conditions for equilibrium of a system of forces acting on a body, Poinsot's central axis, and equation of central axis of a given system of forces.

B.SC. HONS 3RD YEAR

PAPER – XIV

COURSE OUTCOME

Course Title: Classical Mechanics, Discrete Mathematics and Boolean Algebra

This course offers the students to

1. Gain a basic concept about conservation principles, conservation of linear momentum and energy, degrees of freedom.
2. Know the Newtonian mechanics, its limitations, generalized potential, energy integrals for conservative fields.
3. Understand the principle of Discrete mathematics and its applications, partial and linear orderings, lattices.
4. Have an idea about Boolean Algebra, relation of Algebra with Boolean Algebra, duality, know about Boolean functions and its normal forms.
5. Have a basic concept of Graph theory, its basic properties, different types of graphs such as connected graph, complete graph, complement of a graph, Bipartite graphs.
6. Know about Euler graphs, Planar graphs, basic idea of tree and its properties, Kruskal's algorithm, Binary tree.

B.SC. HONS 3RD YEAR

PAPER – XV

COURSE OUTCOME

Course Title: Numerical Analysis, Computer Science and Programming

This course offers the students to

1. Know about the basics of numerical analysis, errors, different types of errors, types of operators.
2. Understand about interpolation, students are capable to solve the problems related to interpolation, Newton's forward and backward interpolation formulae, Stirling's and Bessel's interpolation formulae, Lagrange's interpolation formula.
3. Gain the concept of numerical differentiation, numerical integration, their formulae and their application in solving problems.

4. Know the method to solve the solutions of non-linear equations and system of linear equations- Gauss elimination method, Seidal method their convergence.
5. Solve the Eigen value problems, ordinary differential equations- Euler method, Runge-Kutta method (2nd order, 4th order).
6. Understand the basics of computer fundamentals.
7. Know about different types of number system and their conversion, algorithm and flow charts.
8. Gain the knowledge about programming language.
9. Know about the basics of ANSI C, construction of simple C program & apply this knowledge in various fields.

B.SC HONS 3RD YEAR

PAPER – XVI

COURSE OUTCOME

Course Title: Numerical methods: Practical (using scientific calculator and using C programming)

This paper offers the students to

1. Solve the numerical methods using scientific calculator with the help of their knowledge of numerical analysis. The methods are-Bisection method, Fixed-point method, Newton-Raphson method, Regula-Falsi method, Newton's Divided Difference Interpolation, Stirling & Bessel interpolations, Lagrange interpolation, Newton's forward and backward interpolations, Trapezoidal, Simpson's 1/3 and Weddle's rules, Gauss Elimination method, Gauss-Seidal method, Euler's method, Runge-Kutta method(4th order).
2. Apply the knowledge of C programming in solving the numerical methods, such as- Bisection method, Fixed-point iteration, Scant method, Newton-Raphson method, Regula – Falsi method, Simpson's 1/3 rule, Euler's method, Runge-Kutta method(4th order).

GENERIC ELECTIVE (GE) COURSE

COURSE CODE: MATPGE1

COURSE OUTCOME

Course Title: Calculus, Geometry and Differential Equation

This course offers the students to

1. Know about the Hyperbolic functions, higher order derivatives, to know about Leibnitz rule and its applications.

2. Understand the concavity and inflection points, envelopes, asymptotes, curve tracing in Cartesian coordinates.
3. Gain a concept about L'Hospital's rule and its applications in the different fields like in business, economics and life sciences.
4. Know the Reduction formulae, derivations and illustrations of reduction formulae, understand the parametric equations, arc length of a curve, area and volume of revolution and to solve these related problems.
5. Understand the basic concept of conics, rotation of axes and classification of conics and polar equations of conics.
6. Know about the properties of Sphere, Cylindrical surfaces, conicoids, paraboloids, generating lines and solve these problems.
7. Understand the basic idea of Differential equation and apply the knowledge of Differential equations to solve the real life problems.
8. Solve the first order Differential equations using different types of method, specially linear differential equations and Bernoulli equations.

COURSE CODE: MATPGE2

COURSE OUTCOME

Course Title: Algebra

This course offers the students to

1. Understand the basics of Complex number, theory of De Moivre's theorem and its applications.
2. Know about Theory of Equations, relationship between roots and coefficients, Descartes rule of signs, to solve the cubic & biquadratic equations.
3. Have the knowledge in inequality involving $A.M \geq G.M \geq H.M$.
4. Understand the basic concept in Integers, well ordering property of positive integers, congruence relation, and mathematical induction and solving problems using this.
5. Know about set theory, equivalence relation, functions and its types.
6. Have a basic and strong knowledge in Linear algebra.
7. Solve the linear system problems using matrix representation, applications of linear systems.
8. Gain knowledge about Vector space, subspaces and dimension of subspaces.
9. Solve the Eigen value related problems, understand about Eigen vectors, Cayley-Hamilton theorem and using this find the inverse of a matrix.

COURSE CODE: MATPGE3

COURSE OUTCOME

Course Title: Differential Equation and Vector Calculus

This course offers the students to

1. Gain knowledge about Lipschitz condition and Picard's Theorem, 2nd order homogeneous equations, properties and applications of Wronskian.
2. Make a clear concept of Linear homogeneous and non-homogeneous equations of higher order with constant coefficients, Euler's equation.
3. Solve method of undetermined coefficients and method of variation of parameters related problems.
4. Gain a clear concept of power series solution of a differential equation about an ordinary point and solution about a regular singular point.
5. Know about systems of linear differential equations, types of linear system, operator method for linear systems with constant coefficients.
6. Make a clear concept of linear systems in normal form, homogeneous linear systems with constant coefficients
7. Understand vector triple product, limit, continuity, differentiation and integration of vector functions.

COURSE CODE: MATPGE4

COURSE OUTCOME

Course Title: Group theory

This course offers the students to

1. Gain a clear concept of Groups including permutation groups and quaternion groups, subgroups, center of group, product of two subgroups.
2. Knowledge about cyclic groups, properties of permutation, alternating group, Cosets, Lagrange's theorem and consequences including Fermat's Little theorem.
3. Make a clear concept of external direct product of finite number of groups, normal subgroups, factor groups and Cauchy's theorem.
4. Understand group homomorphism, properties of homomorphism.
5. Know about Cayley's theorem, properties of isomorphisms and isomorphism theorems.

COURSE CODE: MATPGE5

COURSE OUTCOME

Course Title: Numerical Method

This course offers the students to

1. Know about the basics of numerical analysis, errors, different types of errors, types of operators.
2. Understand about interpolation , students are capable to solve the problems related to interpolation, Newton's forward and backward interpolation formulae, Lagrange's interpolation formula.
3. Gain the concept of numerical differentiation, numerical integration ,their formulae and their application in solving problems.
4. Know the method to solve the solutions of non-linear equations and system of linear equations- Guass elimination method, Seidal method their convergence.
5. Solve the Eigen value problems, ordinary differential equations- Euler method, Runge-Kutta method (2nd order).

B.SC. PROGRAMME COURSE / GENERAL

1. Students will get a strong and valuable knowledge of mathematics which will help them to think logically and apply them in both their personal & professional life throughout.
2. Students will have the ability to formulate and then solve the critical and complex type problems.
3. Students will create an interdisciplinary relation between the other streams.
4. Students will have a creative and logical mind by which they can analyze & solve practical problems in their life.
5. The knowledge of Mathematics will make the students ethical and responsible citizen of nation.
6. Students will be able to do work as a whole or team or individually and communicate effectively with others.
7. Students will recognize the need of self learning and life-long learning to demonstrate the knowledge in the development of society and him.

UG PROGRAMME COURSE

COURSE OUTCOME

SEMESTER-1

PAPER-1

Course Code: MATP11DSC

Course Title: Calculus and Geometry

This course offers the students to

1. Know about the Hyperbolic functions, higher order derivatives, to know about Leibnitz rule and its applications.
2. Understand the concavity and inflection points, envelopes, asymptotes, curve tracing in Cartesian coordinates.
3. Gain a concept about L'Hospital's rule and its applications in the different fields like in business, economics and life sciences.
4. Know the Reduction formulae, derivations and illustrations of reduction formulae, understand the parametric equations, arc length of a curve, area and volume of revolution and to solve these related problems.
5. Understand the basic concept of conics, rotation of axes and classification of conics and polar equations of conics.
6. Know about the properties of Sphere, Cylindrical surfaces, conicoids, paraboloids , generating lines and solve these related problems.

SEMESTER-2

PAPER-2

COURSE OUTCOME

Course Code: MATP24 DSC

Course Title: Algebra

This course offers the students to

1. Understand the basics of Complex number, polar representation of complex number, theory of De Moivre's theorem and its applications.
2. Know about Theory of Equations, relationship between roots and coefficients, Descartes rule of signs, to solve the cubic & biquadratic equations.
3. Have the knowledge in inequality involving $A.M \geq G.M \geq H.M$.

4. Understand the basic concept in Integers, well ordering property of positive integers, congruence relation, and mathematical induction and solving problems using this.
5. Know about set theory, equivalence relation, functions and its types.
6. Have a basic and strong knowledge in Linear algebra.
7. Solve the linear system problems using matrix representation, applications of linear systems.
8. Gain knowledge about Vector space, subspaces and dimension of subspaces.
9. Solve the Eigen value related problems, understand about Eigen vectors, Cayley-Hamilton theorem and using this find the inverse of a matrix.

B.SC GENERAL 2ND YEAR

PAPER-IV

COURSE OUTCOME

Course Title: Integral Calculus, Ordinary Differential Equations

This course offers the students to

1. Able to understand evaluation of Definite Integrals, Reduction formulae and associated problems, Integration as the limit of sum.
2. Understand definition of Improper Integrals, statements and simple problems of μ -test, comparison test, Beta and Gamma functions.
3. Familiar with the working knowledge of Double integral.
4. Make a clear concept of Rectification, Quadrature, some problems of volume and surface areas of solids formed by revolution of plane curve and areas.
5. Gain a clear concept of Order, degree, solution of Ordinary Differential Equation and its formation.
6. Understand First order Differential Equation, variables separable, Homogeneous equations, Exact equations, Euler's and Bernoulli's equations, Clairaut's equation.
7. Make a clear concept of Higher order Linear Differential Equations with constant coefficients, Euler's homogeneous equations and Orthogonal trajectories.

B.SC GENERAL 2ND YEAR

PAPER-V

COURSE OUTCOME

Course Title: Numerical Analysis, Linear Programming and Optimization

This course offers the students to

1. Able to understand Approximation of numbers, Rounding off numbers, various types of errors, definitions and some relations among Operators.
2. Make a clear concept of Polynomial Interpolations like Lagrange's Interpolation formula, Newton's divided interpolation formula, Newton's Forward and Backward Interpolation Formula and their applications.
3. Able to know deduction of Trapezoidal, Simpson's 1/3 formulae and their geometrical interpretations and some problems.
4. Gain a clear concept of finding solution of Numerical Equations by Location of root, Bisection method, Newton-Raphson method with geometrical problems and some problems.
5. Make a clear concept of Linear programming problem formulation, various types of solutions, basic properties of convex sets, Hyperplane.
6. Finding solution of Linear programming problem by Graphical method, Simplex method and method of Penalty.
7. Make a clear concept of Duality, Duality theorem and some dual problems.

B.SC GENERAL 2ND YEAR

PAPER-VI

COURSE OUTCOME

Course Title: Analytical Dynamics, Probability and Statistics

This course offers the students to

1. Gain clear concept of Motion in a straight line under variable acceleration, Simple Harmonic motion.
2. Know the expressions for velocity and acceleration of a particle moving on a plane in Cartesian and Polar coordinates, Central force and central orbit.
3. Make a clear concept of Tangential and normal accelerations, Circular motion.
4. Understand concept of Motion of a particle in a plane under different laws of resistance, Motion of a projectile in a resisting medium, Trajectories in a resisting medium, Terminal velocity.
5. Gain a clear concept of Random variables, Distribution function, Discrete and continuous distribution in two dimensions and their related study.
6. Make a clear idea about Mathematical expectation, Mean, Variance, Moments and central moments.
7. Understand Measures of skewness and kurtosis, Median, Mode, Quartiles, Covariance, Correlation co-efficient, Regression curves.

8. Gain clear concept of Random sample, collection, tabulation and graphical representations.
9. Make a clear concept of sampling distribution.

B.SC GENERAL: PART- III

PAPER-VII(A)

COURSE OUTCOME

Course Title: Computer Science and Programming, A course of Calculus, Discrete Mathematics

This course offers the students to

1. Know about the basics of Computer Fundamentals such as its historical development, generations, gain knowledge about operating system, number system- binary, decimal, octal & their conversion.
2. Gain a clear concept about programming languages: Machine language, Assembly language, High level language, their algorithm and their application to write a program.
3. Able to gain the knowledge about key words, Data type different types of operator, statements: do, while statements and able to construct simple C program by using their knowledge and apply them in various kinds of fields.
4. Gain a clear knowledge of Sequence of Functions their convergence, Uniform convergence and integration, uniform convergence and differentiation.
5. Understand about Power Series, to perform term to term integration and differentiation of Power Series, convergence of Power Series and to solve simple problems related Power Series.
6. Know about Fourier Series and its application to solve problems, Dirichlet's conditions for convergence of Fourier Series.
7. Solve the Ordinary Differential Equations using Method of variation of parameters and Method of undetermined coefficients. Gain idea to solve simple Eigen value problems.
8. Gain a basic knowledge about Partial Differential Equation, its formation and its solutions using Lagrange's method.
9. Know about the Laplace Transform and how to use it in solving Ordinary Differential Equations, elementary properties of derivatives and integrals.
10. Gain a preliminary knowledge in Integers, Division algorithm, integral solutions of $ax+by=c$ this type of equations, Unique factorization theorem.
11. Know about Congruence, its definition and properties, Euler's phi function and its application, understand the Chinese Remainder theorem, to check digits in ISBN, UPC and credit cards.

12. Gain a clear concept about Boolean Algebra , Huntington postulates for Boolean Algebra, understand Algebra as an examples of Boolean Algebra , and know design of simple switching circuits. They gain the knowledge of Boolean Algebra to apply this in various fields.

PAPER – VII(B)

COURSE OUTCOME

Course Title: Practical: Numerical Methods

This course offers the students to

1. Apply their knowledge of Numerical Analysis practically by solving some problems using Scientific Calculator and C programming. Students are able to solve the solutions using Bisection method, Fixed point iteration method, Newton - Raphson method, Regula-Falsi method. Also know Numerical Integration- Trapezoidal rule, Simpson's 1/3 rule.