

M.V.R. DEGREE COLLEGE

(UG And PG Courses)

(Affiliated to Andhra University)
An Institution of Priyadarshini Educational Academy)
NAAC ACCREDITED COLLEGE

Dr.V.Rama Rao, M.A.,Ph.D.,
Secretary & Correspondent

Dr.A.Balakrishna,M.Sc.,Ph.D.,
Principal

DEPARTMENT OF MATHEMATICS

Program Specific Outcomes

Revised CBCS

W.E.F 2020-2021

- PSO1:** Be able to apply theoretical / analytical / statistical knowledge gained in various courses of B.Sc to solve numerical problems based on real life situations during practical and draw meaningful solutions to day to day problems like traffic management.
- PSO2:** Be able to apply theoretical / analytical / statistical knowledge gained in various courses of B.Sc to solve numerical problems based on real life situations during practical and draw meaningful Solutions to day to day problems like traffic management.
- PSO3:** Be able to access, explore an area to obtain information and use the literature in Mathematics and also able to work as a member of a team.
- PSO4:** Be able to integrate knowledge gained in Mathematics to General education courses like Analytical Skills.
- PSO5:** Enabling students to develop a positive attitude towards Mathematics as an Interesting and valuable subject of study.



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PRINCIPAL

M.V.R. DEGREE COLLEGE
Shramika Nagar, Gajuwaka,
VISAKHAPATNAM - 530 026

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Principal

Department Of Mathematics

Bachelor Of Science

REVISED CBCS

W.E.F 2020-2021

Code	Title of the paper	Course Out Comes
COURSE –I	Differential equations and differential equations problem solving sessions	CO 1: To find the linear differential equations. CO 2:To find the solutions of differential equations by using exact differential equations CO 3:Using orthogonal trajectories in Cartesian form and polar form of family curves. CO4:To solve homogenous differential equations using some rules CO5:Compute all the solutions of second and higher order linear differential equations with constant coefficients, linear equations with variable coefficients. CO6:To find complementary and particular functions using some methods i.e trigonometry ,polynomial, exponential functions CO7:To find complementary and particular functions using some methods i.e trigonometry ,polynomial, exponential with trigonometry functions CO8:Variation of parameters CO9:Compute all the solutions of Higher Order Linear Differential Equations with Constant Coefficients and non Constant Coefficients



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COURSE-II	Three dimensional solid geometry and three dimensional solid geometry problem solving session	CO1:To find equation of plane in terms of its intercepts on the axis. CO2:To find combined equation of two planes, Orthogonal projection on a plane CO3:Find the angle between planes, Bisector planes, Perpendicular distance from a point to a plane, Image of a line on a plane, Intersection of two lines CO4:The condition that a given line may lie in a given plane CO5:Sets of conditions which determine a line CO6:The shortest distance between two lines CO7:Angle between a line and a plane CO8:Definition and equation of the sphere; CO9:Equation of a circle CO10:To find Power of a point; Tangent plane; Plane of contact; Polar plane; Pole of a Plane; Conjugate points; Conjugate planes. CO11:Definitions of a cone; vertex; guiding curve; generators CO12:Equation of the right circular cone with a given vertex; axis and semi-vertical angle CO13:Definition of a cylinder; Equation to the cylinder whose generators intersect a given conic and are parallel to a given line
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COURSE-III	Abstract Algebra and Abstract Algebra Problem Solving Sessions	CO1:To find set is a group or not with some conditions CO2:Binary Operation – Algebraic structure – semi group-monoid CO3:Write the definitions of Complex, subgroup and coset CO4:Prove some theorems Index of a subgroups of a finite groups– Lagrange's Theorem. CO5:Examples of Subgroups, cosets and union and intersection of Subgroups CO5: criterion for a subgroup to be a normal subgroup – intersection of two normal subgroups CO6:criteria for the existence of a quotient group CO7:Definition of homomorphism ,Isomorphism, aultomorphism ,kernel of a homomorphism CO8:Fundamental theorem on Homomorphism and applications CO9:Theorems of permutation multiplication – Inverse of a permutation – cyclic permutationsand Cayley's theorem. CO10:Definition Ring and their properties CO11:Definitions of Integral Domains,Fields CO12:Theorems on Integral Domains and Fields CO13:Definition of Characteristic of a Ring CO14:Theorems on Characteristic of a Ring
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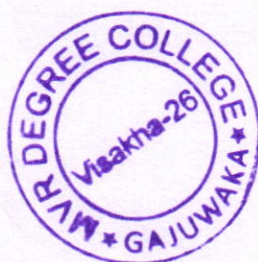
COURSE IV	Real Analysis & Real Analysis Problem Solving Sessions	CO1:To understand about all numbers definitions. CO2:To learn about real numbers in absolute value, real line CO3:To know about theorems of convergence, limits and continuity CO4:Definition and Theorems on sequences CO5:To practice the test problems 1)P-test 2.) Cauchy's n^{th} root test or Root Test. 3.) D'-Alemberts' Test or Ratio Test.4.) Alternating Series – Leibnitz Test CO6:Know some theorems Cauchy's general principle of convergence, Absolute convergence and conditional convergence, semi convergence CO7:To use the definition of continuity CO8:To know the different types of Continuity CO9:To learn some examples and theorems CO10:To learn definition of differentiation by using continuity definition CO11:To do some problems by using differentiation function CO12:To know the Mean value Theorems CO13:To know Properties of integrable functions CO14:Fundamental theorem of integral calculus, integral as the limit of a sum
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COURSE V	Linear Algebra & Linear Algebra Problem solving sessions	CO1: It is easily to highlight the need for linear algebra for physicists- quantum mechanics is entirely based on it CO2: To learn properties of vector spaces CO3: To write the properties of vector spaces CO4: To do some theorems and problems in Dimension of a Vector space, Dimension of a subspace, Quotient space and Dimension of Quotient space. CO5: To find rank and nullity in the matrix CO6: Using some properties in the linear transformations CO7: Give some examples in the linear transformations CO 8: It used operations in rows and columns in various methods. CO 9: It is used structural reasoning with entries of the matrix and orientation of the shape CO 10: To do some theorems are Bessel's inequality and Parseval's Identity
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Program Specific Outcomes (2015-16)

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Course Outcomes of Mathematics:

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Course V	Ring Theory and Vector Calculus & Ring Theory and Vector Calculus Problem Solving Sessions	CO1: Define rings , zero divisors of a ring , integral domain , field and prove theorems Define Homomorphism, Homomorphic Image, Elementary Properties of Homomorphism Define Kernel of a Homomorphism and explain Fundamental theorem of Homomorphism on Groups and Rings CO2: To learn new concepts like gradient, divergence and curl CO 3: Here using partial differentiation to find gradient, curl, divergence CO 4: Here using vector and scalar point CO 5: Here to define line , surface and volume integrals CO 6: Which occur frequently in connection with physical and engineering problems CO 7: Vector function reduces to the evaluation of three ordinary real integrals CO 8: Readers are advised to grasp the significance in each CO 9: We discuss three important vector integral theorems
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COURSE VI	Linear Algebra &Linear Algebra Problem solving sessions	CO1:It is easily to highlight the need for linear algebra for physicists- quantum mechanics is entirely based on it CO2:To learn properties of vector spaces CO3:To write the properties of vector spaces CO4:To do some theorems and problems in Dimension of a Vector space, Dimension of a subspace, Quotient space and Dimension of Quotient space. CO5:To find rank and nullity in the matrix CO6:Using some properties in the linear transformations CO7: Give some examples in the linear transformations CO 8: It used operations in rows and columns in various methods. CO 9: It is used structural reasoning with entries of the matrix and orientation of the shape CO 10: To do some theorems are Bessel's inequality and Parseval's Identity
Course VII(B)	Numerical Analysis & Problem Solving Sessions	CO1: Define Basic concepts of operators Δ , E, ∇ Define The Calculus Of Finite Differences Find the difference of polynomial and define Interpolationwith Equal Intervals CO2 : Here learn some method solving equations CO 3: Here to find accurate value by using successive values CO 4: we wish to find some approximate value of the root whichsatisfies our need without much change in its basic characters CO 5: Symbolic relations, Detection of errors by use of CO6: To enjoy the class and to learn easily CO 7: To do problems fastly CO 8: Stirling's formula decrease much more rapidly than other difference

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		formulae hence considering first few number of terms itself will give better accuracy. CO 9: Forward or backward difference formulae use the inside information of the function where as Stirling's formula uses the function values on both sides of $f(x)$. CO 10: The insertion of something of a different nature into something else CO 11: A remark interjected in a conversation.
Course VIII A-1	Integral Transforms & Problem Solving Session	CO 1: We have applied laplace transformation in linear ode with constant coefficient . CO2: It makes easier to solve the problems . CO 3: It makes differential equations simple solve. CO 4: It is applied to one of the variables and the resulting differential equation in the second variable is then solved by the usual method of ODE . CO 5: to find the shape of a frictionless wire lying in a vertical plane such that a bead placed on the wire slides to the lowest point in the same time regardless of where the bead is placed initially CO 6: To efficient numerical method for the treatment of singular integral equations of the first and second kind CO 7: The Fourier transform (FT) decomposes a function into its constituent frequencies. A special case is the expression of amusical chord in terms of the volumes and frequencies of its constituent

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		CO 8: A special case is the expression of a musical chord in terms of the volumes and frequencies of its constituent notes CO 9: We solved using either the method of undetermined coefficients or variation of parameters. CO 10: we can define a Finite Fourier Transform that produces a different set of n
COURSE VIII-A-2	Advanced numerical analysis	CO 1: The curve fit will produce an equation that can be used to find points anywhere along the curve. CO 2: In some cases, you may not be concerned about finding an equation. CO 3: Numerical differentiation is the process of finding the numerical value of a derivative of a given function at a given point CO 4: To find maximum and minimum problems CO 5: Estimate the derivatives (slope, curvature, etc.) of a function by using the function values at only a set of discrete points CO 6: They are used in practice for solving ordinary and partial differential equations as well as representing signals and systems. CO 7: Finding areas under curved surfaces, Centers of mass, displacement and Velocity, and fluid flow are other uses of integration CO 8: To solve matrices using row and

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		columns operations in different method CO 9:To solve equations in matrix method CO 10:To solve circuits by using Gauss elimination method CO 11:We analyse the error in Euler's method, and then introduce some more advanced important subclass are given by linear differential equations CO 12:Numerical symbolic and qualitative methods that are used for solving and analyzing linear and nonlinear equation.
COURSE VIII-A-3	Project work	Project Work: This project work provides an opportunity for the student to apply knowledge and skills obtained in Mathematics theory and practical coursework. From a list of relevant application level topics provided by the dept., Students choose one topic for study, based on their own interest. The study is followed by collective report submission and individual oral presentation. Attainment of this learning outcome is ensured and assessed by the concerned faculty member at every stage through direct as well as indirect guidance and monitoring

Program outcomes

The Department of Mathematics, MVR Degree College seeks to serve B.Sc Program students interested in careers related to Mathematics. The department has taken conscious efforts to nurture high quality teaching and research at UG level. Alongside we have also built good research infrastructure like applications of Differential Equations, Solid Geometry, Abstract Algebra, Real Analysis, Ring Theory and Vector Calculus, Linear Algebra and Numerical Analysis, Integral Transforms, Advanced Numerical Analysis etc. Our research is published in the best Mathematics reputed Journals In continuation with the Skill Development initiative of the Government of Andhra Pradesh, we have trained UG students in the campus placements skills. In order to cater to the diverse interests of students and employers, a total of 9 theory 9 practical courses and 1 project are offered as part of Mathematics domain in all five combinations