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.,　　　　　　　　　**Dr.A.Balakrishna,M.Sc.,Ph.D.,**
Secretary & Correspondent　　　　　　　　　　　　　**Principal**

Department Of Mathematics

Bachelor of Science

CBCS 2015-2016

Course Outcomes of Mathematics:

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. CO2 :To find the solutions of differential equations by using exactdifferential equations CO3 :Using orthogonal trajectories in Cartesian form and polar form of family curves. CO4:To solve homogenous differential equations using somerules 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 somemethods i.e trigonometry ,polynomial, exponential functions CO7:To find complementary and particular functions using some methods i.e trigonometry ,polynomial, exponential with trigonometryfunctions 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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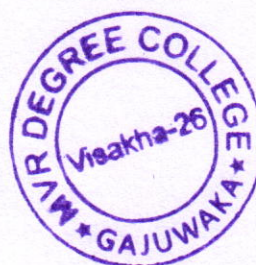### (Affiliated to Andhra University)
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COURSE-II	Three diamensional solid geometry and three diamensional solid geometry problem solving session	CO1:To find equation of plane in terms of its intercepts on the axis. CO2:To find combined equation of two planes, Orthogonal projectionon a plane CO3:Find the angle between planes, Bisector planes, Perpendiculardistance 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; Polarplane; 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 ofSubgroups CO5: criterion for a subgroup to be a normal subgroup – intersectionof two normal subgroups CO6:criteria for the existence of a quotient group CO7:Definition of homomorphism ,Isomorphism, automorphism , kernel of a homomorphism CO8:Fundamental theorem on Homomorphism and applications CO9:Theorems of permutation multiplication – Inverse of a permutation – cyclic permutations and Cayley's theorem.

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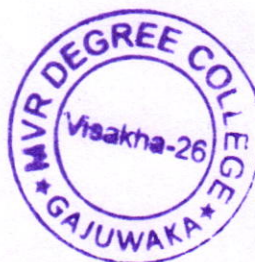| COURSE IV	Real Analysis & Real Analysis Problem Solving Sessions	CO1:To understand about all numbers defintions. CO2:To learn about real numbers in absolute value, real line CO3:To know about theorems of convergence, limits andcontinuity CO4:Definition and Theorems on sequences CO5:To practice the test problems 1)P-test 2.) Cauchey's n^{th} root test or Root Test. 3.) D'-Alemberts' Test or Ratio Test.4.) Alternating Series – Leibnitz Test CO6:Know some theorems Cauchey'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 continuitydefinition 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 asthe limit of a sum

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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 andprove theorems Define Homomorphism, Homorphic Image, ElementaryProperties of Homomorphism Define Kernel of a Homomorphism and explain Fundamentaltheorem of Homomorhphism 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 realintegrals 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:I t 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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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 formulae hence considering first few number of termsitself will give better accuracy. CO 9: Forward or backward difference formulae use the onside information of the function where as Stirling's formula uses thefunction values on both sides of f(x). CO 10: The insertion of something of a different nature into somethingelse CO 11: A remark interjected in a conversation.
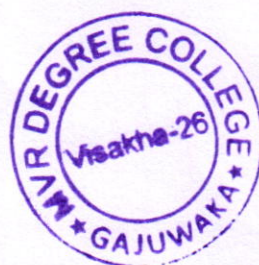
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Course VIII A-1	Integral Transforms & Problem Solving Session	CO 1: We have applied laplace transformation in linear ode withconstant coefficient .
		CO2: It makes easier to solve the problems .
		CO 3: It makes differential equations simple solve.
		CO 4: It is applied to one of the variables and the resulting differential equation in the second variable is then solved by theusual 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 beadis 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 itsconstituent
		CO 8: A special case is the expression of a musical chord in termsof the volumes and frequencies of its constituent notes
		CO 9: We solved using either the method of undetermined coefficientsor variation of parameters.
		CO 10: we can define a Finite Fourier Transform that produces a different set of n
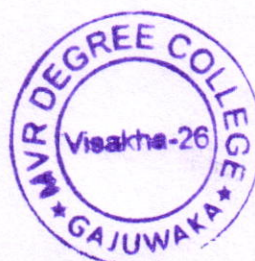
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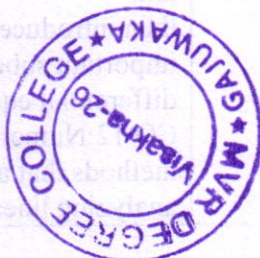| COURSE VIII-A-2	Advanced numerical analysis	CO 1:The curve fit will produce an equation that can be used to findpoints anywhere along the curve.
		CO 2:In some cases, you may not be concerned about finding an equation.
		CO 3:Numerical differentiation is the process of findingthe numerical value of a derivative of a given function at a givenpoint
		CO 4:To find maximum and minimum problems
		CO 5:Estimate the derivatives (slope, curvature, etc.) of a function byusing the function values at only a set of discrete points
		CO 6:They are used in practice for solving ordinary and partialdifferential 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 usesof integration
		CO 8:To solve matrices using row and columns operations in differentmethod
		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 aregiven by linear differential equations
		CO 12:Numerical symbolic and qualitative methods that are used for solving and analyzing linear and nonlinear equation.

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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 everystage through direct as well as indirect guidance and monitoring

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