



A.D.M. COLLEGE FOR WOMEN

(Autonomous)

Affiliated to Bharathidasan University

(Nationally Accredited with "A" Grade by NAAC – 3rd Cycle)

NAGAPATTINAM 611 001.

LOCAL/NATIONAL/REGIONAL/GLOBAL RELEVANCE

PG AND RESEARCH DEPARTMENT OF MATHEMATICS

Programme: B.Sc Mathematics

Year: 2021-2022

Course Code	Title of the Course	Local/Regional/ National /Global	Rationale	Course Outcomes	PSOs Addressed	Cognitive Level
MUA	Differential Calculus and Trigonometry	Local , Regional, National & Global	Application of mathematics in various disciplines	<ul style="list-style-type: none"> CO1:Apply Leibnitz's Theorem for finding the n^{th} derivative of product of functions. 	PSO2,3,4	U
				<ul style="list-style-type: none"> CO2: Evaluate envelopes and curvatures of plane curves. 	PSO1,2,3,4	AP

				<ul style="list-style-type: none"> • CO 3: Compute maxima and minima of plane curves.. 	PSO1,2,3,4	U
				<ul style="list-style-type: none"> • CO 4: Interpret the relation between circular and hyperbolic functions 	PSO1,2,3,4	U
				<ul style="list-style-type: none"> • CO 5: Find the sum of infinite series using appropriate methods 	PSO1,2,3,4	U
MUB	Classical Algebra	Local , Regional, National & Global	To get more depth in basic topics	<ul style="list-style-type: none"> • CO 1: Understand the aspects of classical algebraic structures 	PSO2	U,KN

				<ul style="list-style-type: none"> • CO 2: Find the nature of the roots of the equations 	PSO3	KN,AN,E
				<ul style="list-style-type: none"> • CO3: Solve and apply the inequalities. 	PSO3	E,AN,AP
				<ul style="list-style-type: none"> • CO 4: Find the inverse and rank of the matrix 	PSO2,3	E,AP
				<ul style="list-style-type: none"> • CO5: Calculate the Eigen values and vectors of a matrix and apply the C-H theorem for finding the inverse of a matrix 	PSO2,3,4	E,AP
MUC	Integral Calculus	Local , Regional, National & Global	Application of mathematics in chemistry is inculcated.	<ul style="list-style-type: none"> • CO1: Find the solutions of the integral. 	PSO2,3	CN,E

				<ul style="list-style-type: none"> • CO2: Solve the integration by parts. 	PSO2,3	E
				<ul style="list-style-type: none"> • CO3: Find the area of plane curves using Cartesian and polar coordinates 	PSO2,3,1,5	KN,E
				<ul style="list-style-type: none"> • CO4: Find the area by changing the given order of integration 	PSO 2,3	U,KN,E
				<ul style="list-style-type: none"> • CO5: understand the concepts of Beta and Gamma functions 	PSO 2,3	U,KN,E
MUD	Analytical Geometry of Three Dimensions	Local , Regional, National & Global	Better application knowledge	<ul style="list-style-type: none"> • CO 1: understand the three dimensional space, angle between lines and planes. 	PSO1,3,4,5	U
				<ul style="list-style-type: none"> • CO2: Find the coplanar lines, skew lines and to find shortest distance between them. 	PSO1,3,4,5	AP

				<ul style="list-style-type: none"> CO 3: Formulate the equation of sphere and their properties. 	PSO1,3,4,5	AP
				<ul style="list-style-type: none"> CO 4: Form the equation of cone with a conic as guiding curve and the tangent lines. 	PSO1,3,4,5	AP
				<ul style="list-style-type: none"> CO 5: retrieve the equation of cylinder and right circular cylinder. 	PSO1,3,4,5	AP
MUE	Differential Equations and Laplace Transforms	Local , Regional, National & Global	Application of Differential equations and Laplace transforms are vast.	<ul style="list-style-type: none"> CO 1: Solve the higher order linear differential equations with constant coefficients. 	PSO2,3,4	KN,EN
				<ul style="list-style-type: none"> CO 2: Solve differential equations by using 	PSO2,3,4	CN,EN

				method of variation of parameters		
				<ul style="list-style-type: none"> • CO 3: Find solutions of first order partial differential equations of the standard forms 	PSO3,5	KN,CN,EN
				<ul style="list-style-type: none"> • CO 4: Solve the PDE's using Charpit's method. 	PSO1,3	U,KN,EN
				<ul style="list-style-type: none"> • CO 5: apply the techniques of Laplace transform and inverse Laplace transform 	PSO2,3,4	U,CN,KN,EN
MUF	Vector Calculus and Fourier Series	Local , Regional, National & Global	To get more depth in basic Mathematical concepts.	<ul style="list-style-type: none"> • CO 1: Explain the concepts of differentiation of vector field. 	PSO1,3,4	U,C,KN

				<ul style="list-style-type: none"> CO 2: Integrate the vector functions over curves and surfaces. 	PSO1,2,3,4	U,E
				<ul style="list-style-type: none"> CO 3: Compute integrals using Green's theorem, Stoke's theorem and the divergence theorem. 	PSO1,2,3,4	U,E,AP
				<ul style="list-style-type: none"> CO4: Solve the wave equations, Laplace equations using Fourier series 	PSO1,2,3,5	U,E,AP
				<ul style="list-style-type: none"> CO5: Derive the fourier series to the periodic signals in half range. 	PSO1,2,3,5	U,E,AP

MUG	Sequences and Series	Local , Regional, National & Global	To meet the current requirements and concentrate more on application oriented problems	<ul style="list-style-type: none"> • CO 1: Find the convergence of sequences 	PSO4	U,E
				<ul style="list-style-type: none"> • CO 2: Evaluate the limits and describe the behavior of monotonic sequences 	PSO1,2,3,4	U,E,CN
				<ul style="list-style-type: none"> • CO 3: Interpret the concepts of subsequences and Cauchy sequences. 	PSO1,2,3,4	U,CN,KN
				<ul style="list-style-type: none"> • CO 4: Discuss the convergence or divergence of series using various tests 	PSO1,2,3,5	U,AN
				<ul style="list-style-type: none"> • CO 5: Compute the absolute convergence of series. 	PSO1,2,3,5	KN,E

MUH	Number Theory	Local , Regional, National & Global	To highlight the nuances in the world of numbers	<ul style="list-style-type: none"> • CO 1: Find the divisor, sum and product of a given natural number 	PSO2,3,4	CN,EN
				<ul style="list-style-type: none"> • CO 2: Gain the knowledge of number theoretic functions 	PSO3,4	KN,AN
				<ul style="list-style-type: none"> • CO 3: Interpret the famous conjectures in number theory 	PSO2,3,4	CN,AN
				<ul style="list-style-type: none"> • CO 4: Solve the system of linear congruence using the Chinese remainder theorem. 	PSO1,2,3,4	CN,EN
				<ul style="list-style-type: none"> • CO 5: Apply the law of quadratic reciprocity to classify numbers as quadratic residues & quadratic non-residues 	PSO1,2,3,4	AN,AP,EN

MUI	Algebra	Local , Regional, National & Global	To get Knowledge of pure mathematics	<ul style="list-style-type: none"> • CO1:Gain the knowledge of sets, mapping, relations, groups and subgroups. 	PSO2,4,5	U,KN
				<ul style="list-style-type: none"> • CO2:Interpret the notion of normal groups and isomorphism. 	PSO2,4	U,C
				<ul style="list-style-type: none"> • CO 3: Analyze the concepts of homomorphism and isomorphism for rings and field. 	PSO2,4	U,AN
				<ul style="list-style-type: none"> • CO 4: Recognize the facts of vector space and linear independence. 	PSO1,2,3,4	U,C
				<ul style="list-style-type: none"> • CO 5: Calculate the basis, dimension, matrix of the linear 	PSO2,4	U,E

				transformation and inner product space		
MUJ	Real Analysis	Local , Regional, National & Global	To get more depth in basic topics.	<ul style="list-style-type: none"> • CO1: Gain the knowledge of sets, mapping, relations, groups and subgroups. 	PSO2,4,5	U,KN
				<ul style="list-style-type: none"> • CO2: Interpret the notion of normal groups and isomorphism. 	PSO2,4	U,C
				<ul style="list-style-type: none"> • CO3: Analyze the concepts of homomorphism and isomorphism for rings and field. 	PSO2,4	U,AN
				<ul style="list-style-type: none"> • CO4: Recognize the facts of vector space and linear independence. 	PSO1,2,3,4	U,C

				CO5: calculate the basis, dimension, matrix of the linear transformation and inner product space	PSO2,4	U,E
MUK	Mechanics	Local , Regional, National & Global	More preference is given for pure mathematics	• CO 1: Apply the order completeness property.	PSO2,3,4	AN,KN
				• CO 2: Differentiate the continuity and discontinuity of functions.	PSO1,2,3,4,5	E,AN,AP
				• CO 3: Find the derivative of a given function.	PSO 1,3,4,5	E,AN,AP
				• CO 4: Demonstrate the mean value theorems.	PSO1,2,3,4	E,AN,AP,KN
				• CO 5: I interpret the integer ability of functions	PSO1,3,4,5	E,AN,AP,KN,C

MUE3	Operations Research	Local , Regional, National & Global	Latest reference needed for higher level concepts.	<ul style="list-style-type: none"> • CO 1: Apply the order completeness property. 	PSO3,5	UN,KN
				<ul style="list-style-type: none"> • CO 2: differentiate the continuity and discontinuity of functions. 	PSO1,2,3,4	KN, CN
				<ul style="list-style-type: none"> • CO 3: Find the derivative of a given function. 	PSO 3,4	KN, CN
				<ul style="list-style-type: none"> • CO 4: Demonstrate the mean value theorems. 	PSO2,3	CN,EN,AN
				<ul style="list-style-type: none"> • CO 5: Interpret the integrality of functions 	PSO1,2,3,4	CN,AN
MUL	Complex Analysis	Local , Regional, National & Global	To get the Knowledge of Analysis.	<ul style="list-style-type: none"> • CO 1: Understand the basic concepts of Cauchy-Riemann equations in Cartesian and polar coordinates. 	PSO2,3,4	AN,E,KN,AP

				<ul style="list-style-type: none"> CO 2: Interpret the analytic functions, harmonic functions, elementary and bilinear transformation concepts. 	PS02,3,4	AN,E,KN,AP
				<ul style="list-style-type: none"> CO 3: Apply the theorems using complex integration. 	PS01,2,3,4,5	AP,AN,E
				<ul style="list-style-type: none"> CO 4: Expand the Taylor's and Laurent's series of functions. 	PS01,2,3,4,5	AN,AP,E,KN
				<ul style="list-style-type: none"> CO 5: solve the definite integrals using the concepts of residues. 	PS01,2,3,4	E,AN,AP,KN

MUM & MUNY	Numerical Methods with C Programming (Theory & P)	Local , Regional, National & Global	For efficient project task completion and data analysis	<ul style="list-style-type: none"> • CO 1: Find the variables, constants, expressions and operators. 	PSO2,4,5	U,KN
				<ul style="list-style-type: none"> • CO 2: Use functions and arrays. 	PSO2	U,KN
				<ul style="list-style-type: none"> • CO 3: Write the programmes on arithmetic operations and recursion. 	PSO2,5	U,AP,KN
				<ul style="list-style-type: none"> • CO 4: Evaluate the linear equations and matrices numerically. 	PSO2	U,AP
				<ul style="list-style-type: none"> • CO 5: Solve simultaneous system of equations using numerical techniques. 	PSO2	U,AP

MUO	Astronomy	Local , Regional, National & Global	To know about the celestial objects.	<ul style="list-style-type: none"> • CO1: Perform calculations on celestial bodies. 	PSO1,3,4	U
				<ul style="list-style-type: none"> • CO 2: Compare our galaxy with other galaxies. 	PSO1,3,4	U
				<ul style="list-style-type: none"> • CO 3: apply the principles and fundamental techniques of the astronomy. 	PSO1,5	AP
				<ul style="list-style-type: none"> • CO 4: Analyze the size, age structure and motion of the universe over all using cosmological models. 	PSO1,3,4	AN

				<ul style="list-style-type: none"> CO 5: Understand the phases of moon and occurrence of Eclipses. 	PSO1,3,4	U
MUE4	Stochastic Processes	Local , Regional, National & Global	To know about real world applications	<ul style="list-style-type: none"> CO 1: Analyze and solve linear programming models of real life situations 	PSO2,3	CN,EN
				<ul style="list-style-type: none"> CO 2: Understand the problem solving method of Simplex and Big M Method. 	PSO2,3	EN
				<ul style="list-style-type: none"> CO 3: Exhibit the applications of Transportation Problem. 	PSO2,3,1,5	KN,EN

				<ul style="list-style-type: none"> • CO 4: Solve Assignment problems. 	PSO2,3	U,KN,EN
				<ul style="list-style-type: none"> • CO 5: Use PERT and CPM techniques in solving Network Analysis problems 	PSO2,3	U,KN,EN
MUE5	Graph Theory	Local , Regional, National & Global	To emphasize its applications.	<ul style="list-style-type: none"> • CO 1: Understand the basic concepts of Formal Languages. 	PSO 2	KN,AN
				<ul style="list-style-type: none"> • CO 2: Permutations and Combinations. 	PSO1	KN,AN
				<ul style="list-style-type: none"> • CO 3: Acquire knowledge about Finite State Machines 	PSO4	AN,AP
				<ul style="list-style-type: none"> • CO4: Understand Numeric Functions 	PSO4	AN,AP
				<ul style="list-style-type: none"> • CO5: Understand Recurrence Relations. 	PSO1	AN,E



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Programme: M.Sc., Mathematics

Year: 2021-2022

Course Code	Title of the Course	Local/Regional/ National /Global	Rationale	Course Outcomes	PSOs Addressed	Cognitive Level
PGMA	Algebra	Local , Regional, National & Global	Standard knowledge of algebra for global scenario	<ul style="list-style-type: none"> CO1:Understand Sylow's theorem and its applications. 	PSO2	An
				<ul style="list-style-type: none"> CO2:Analyze the various types of polynomials. 	PSO1	An

				<ul style="list-style-type: none"> • CO3:Develop the knowledge about modules. 	PSO2	Ap
				<ul style="list-style-type: none"> • CO4:Evaluate the roots and characteristics of polynomials. 	PSO1	An
				<ul style="list-style-type: none"> • CO5:Apply finite fields in Galois Theory 	PSO1 PSO2	An & Ap
GMB	Real Analysis	Local , Regional, National & Global	To get the Knowledge of Analysis.	<ul style="list-style-type: none"> • CO1:Acquire the basic topological properties on metric spaces. 	PSO1	U

				<ul style="list-style-type: none"> • CO2: Interpret the continuity and discontinuity of functions. 	PSO1	U
				<ul style="list-style-type: none"> • CO3: Analyze the Riemann - Stieltjes integral and their properties. 	PSO1	AN
				<ul style="list-style-type: none"> • CO4: Develop the knowledge of sequence and series of functions. 	PSO1	U
				<ul style="list-style-type: none"> • CO5: Understand functions of several variables. 	PSO1	AN
PGMC	Ordinary Differential Equations	Local , Regional, National & Global	Latest reference needed for higher level concepts	<ul style="list-style-type: none"> • CO1: Obtain the solutions of ordinary differential equations.. • 	PSO1	U

				<ul style="list-style-type: none"> • CO2: Evaluate the special functions. 	PSO2	AP
				<ul style="list-style-type: none"> • CO3: Analyze the behavior of the solutions of the ODE. 	PSO1 PSO2	AP
				<ul style="list-style-type: none"> • CO4: Discuss the properties of boundary value problems. 	PSO1,2,4	AP
				<ul style="list-style-type: none"> • CO5: Solve the system of nonlinear equations. 	PSO1,4	AP
PGMD	Advanced Graph Theory	Local , Regional, National & Global	Application Oriented topics were added	<ul style="list-style-type: none"> • CO1: Analyze the automorphism and operations on graphs. 	PSO1	U
				<ul style="list-style-type: none"> • CO2: Discuss the characterization, centers and centroids of trees. 	PSO1	U

				<ul style="list-style-type: none"> • CO3:Find the independent sets and matchings of graphs, Eulerian and Hamiltonian graphs. 	PSO1,2	U,AN
				<ul style="list-style-type: none"> • CO4:Color the graphs and find the chromatic polynomial. 	PSO1,4	AP
				<ul style="list-style-type: none"> • CO5:Interpret the planar and non-planar graphs. 	PSO1,2	AP
PGME1	Advanced Numerical Analysis	Local , Regional, National & Global	Latest reference needed for higher level concepts	<ul style="list-style-type: none"> • CO1:Solve transcendental and polynomial equations 	PSO1	U
				<ul style="list-style-type: none"> • CO2:Determine the solution of linear equations. 	PSO1	AP
				<ul style="list-style-type: none"> • CO3:Evaluate the higher order 	PSO1,4	AP

				interpolation.		
				<ul style="list-style-type: none"> • CO4:Estimate the numerical differentiation and integration. 	PSO1	U
				<ul style="list-style-type: none"> • CO5:Interpret the methods of solving integration numerically. 	PSO1,3	AP
PGMG	Partial Differential Equations	Local , Regional, National & Global	To know about higher level of solving method and its application in Heat, Wave Equation.	<ul style="list-style-type: none"> • CO1:Classify the PDE. 	PSO1	U
				<ul style="list-style-type: none"> • CO2:Apply Charpit's and Jacobi's method for solving PDE. 	PSO1	U
				<ul style="list-style-type: none"> • CO3:Solve second order and higher order PDE. 	PSO1	U
				<ul style="list-style-type: none"> • CO4:Evaluate non Linear equations of the second order. 	PSO1,4	AP

				<ul style="list-style-type: none"> • CO5: Compute boundary value problems. 	PSO1,3	AP
PGMH	Classical Dynamics	Local , Regional, National & Global	To get the knowledge about mathematical concepts in Classical version.	<ul style="list-style-type: none"> • CO1: Analyze the mechanical system of particles. 	PSO1	AN
				<ul style="list-style-type: none"> • CO2: Solve the Lagrange's equations of motion for the set of generalized coordinates. 	PSO1	U
				<ul style="list-style-type: none"> • CO3: Apply Lagrange's equations on various functions. 	PSO1	AP
				<ul style="list-style-type: none"> • CO4: Interpret Hamilton's equations and its principles. 	PSO2	U

				<ul style="list-style-type: none"> • CO5:Retrieve Hamilton – Jacobi Equation. 	PSO1	AP
PGME2	Fuzzy sets and its Applications	Local , Regional, National & Global	Recent Trend of Knowledge	<ul style="list-style-type: none"> • CO1: Discuss the properties and extension principles of fuzzy sets. 	PSO1,2,3,4,5	KN,CN
				<ul style="list-style-type: none"> • CO2: Apply the mathematical operations on fuzzy sets. 	PSO1,3,4	KN,EN
				<ul style="list-style-type: none"> • CO3:Construct the arithmetic operations on fuzzy numbers. 	PSO1,4	CN,EN
				<ul style="list-style-type: none"> • CO4: Interpret the relations on fuzzy sets. 	PSO1,2,3,4	KN,AN
				<ul style="list-style-type: none"> • CO5: Analyze fuzzy concepts in decision making 	PSO2,3,4	AN,EN

				problems.		
PGMI	Measure and Integration	Local , Regional, National & Global	To get the Knowledge about concepts of Integration using Measures.	<ul style="list-style-type: none"> • CO1: Find the Lévesque measure of measurable sets. 	PSO2,5	KN,CN
				<ul style="list-style-type: none"> • CO2: Discuss the integration of non-negative functions. 	PSO2,5	KN,CN,AN
				<ul style="list-style-type: none"> • CO3: Analyze abstract measure spaces. 	PSO2,4,5	CN,AN
				<ul style="list-style-type: none"> • CO4: Demonstrate Hahn decomposition theorem and signed measure. 	PSO2,5	CN,AN
				<ul style="list-style-type: none"> • CO5: Compute product measure. 	PSO2,5	KN,EN
PGMJ	Topology	Local , Regional, National & Global	To get the Knowledge of Analysis in advance	<ul style="list-style-type: none"> • CO1: Analyze the fundamental concepts of general 	PSO1,2	U,KN,AN,AP

				topology.		
				<ul style="list-style-type: none"> • CO2: Determine the types of topological spaces and their properties. 	PSO2	U,KN,AN
				<ul style="list-style-type: none"> • CO3: Discuss Uryzohn's lemma and the Tietze Extension Theorem. 	PSO1,2,4	U,KN,AN,AP
				<ul style="list-style-type: none"> • CO4: Demonstrate Tychonoff theorem 	PSO2,4	U,AN,AP,KN
				<ul style="list-style-type: none"> • CO5: Compute the complete and compactness in metric spaces. 	PSO 2,4	U,AN,AP,KN,E
PGMK	Integral Equations and Transforms	Local , Regional,	To get the knowledge about	<ul style="list-style-type: none"> • CO1:Solve the linear integral equations. 	PSO1	E,AP

		National & Global	Mathematical methods to solve problems.	<ul style="list-style-type: none"> • CO2: Find the solutions of Volterra and Fredholm integral equations. 	PSO1,2	C,E
				<ul style="list-style-type: none"> • CO3: Demonstrate the variational problems on moving boundaries and fixed boundaries. 	PSO3	KN,C
				<ul style="list-style-type: none"> • CO4: Evaluate the Fourier transform, finite sine and cosine transforms. 	PSO1,2,3	U,KN,AP
				<ul style="list-style-type: none"> • CO5: Apply Fourier transform in initial and boundary value problems. 	PSO1,2,3	U,KN,AP
PGME3	Mathematical Modeling	Local, Regional,	To study the mathematical models and apply them in real life problems	<ul style="list-style-type: none"> • CO1: Create models on linear growth 	PSO1,2,3,4	U,KN,AP

		National & Global		and decay of any system.		
				<ul style="list-style-type: none"> • CO2:Form mathematical modeling in epidemics in population. 	PSO3,4	U,KN,E
				<ul style="list-style-type: none"> • CO3:Design mathematical modelling in any type of motions. 	PSO1,3,4	U,KN,C,AN
				<ul style="list-style-type: none"> • CO4:Solve problems in dynamics and genetics using modeling. 	PSO2,3	U,E
				<ul style="list-style-type: none"> • CO5: Demonstrate various real life situations through graphs. 	PSO1,3,4,5	U,CN,KN
PGME4	Optimization Techniques	Local , Regional, National & Global	Recent development and its	<ul style="list-style-type: none"> • CO1: Write the algorithms in 		

			Applications in research.	integer programming problem.	PSO1,3	KN,C
				<ul style="list-style-type: none"> • CO2: Apply the OR techniques in various models. 	PSO1,4	CN,E
				<ul style="list-style-type: none"> • CO3: Analyze the problems on decision theory and game theory. 	PSO3,4	CN,AN
				<ul style="list-style-type: none"> • CO4: Optimize solutions of inventory models. 	PSO3,4	EN,AN,AP
				<ul style="list-style-type: none"> • CO5: Interpret the concepts of non-linear programming problems. 	PSO2	AN,AP
PGML	Functional Analysis	Local , Regional, National & Global	To get the knowledge of Analysis in advance.	<ul style="list-style-type: none"> • CO1: Disuss the concept of normed linear spaces, dual 	PSO2,4	U,KN,AN

				spaces, weak convergence.		
				<ul style="list-style-type: none"> • CO2: Apply the idea of the Hahn Banach theorem and open mapping theorem. 	PSO2,3,4	U,KN,AN,E
				<ul style="list-style-type: none"> • CO3: Analyze linear operators on Hilbert space. 	PSO2,3,4,5	U,KN,AN
				<ul style="list-style-type: none"> • CO4: Evaluate orthonormal basis. 	PSO2,4	E,AN
				<ul style="list-style-type: none"> • CO5: Demonstrate the commutative Banach algebras. 	PSO 1,2,3	U,AN,C
PGMM	Probability Theory	Local , Regional, National & Global	Advancement of the application of fluid dynamics	<ul style="list-style-type: none"> • CO1: Interpret the field and σ - fields 	PSO1,3	U,CN
				<ul style="list-style-type: none"> • CO2: Analyze the 		

				probability spaces.	PSO3	CN,AN
				<ul style="list-style-type: none"> • CO3: Apply the concepts of random variables and distributions. 	PSO2	U,KN,CN
				<ul style="list-style-type: none"> • CO4: Describe the ideas of expectation and characteristic functions. 	PSO4	U,KN,CN
				<ul style="list-style-type: none"> • CO5: Demonstrate the convergence of random variables. 	PSO1,2,3	KN,CN
PGMN	Fluid Dynamics	Local , Regional, National & Global	Advancement of the application of fluid dynamics	<ul style="list-style-type: none"> • CO1:Discuss the behavior of fluids in motion. 	PSO1,2	U,C,AN
				<ul style="list-style-type: none"> • CO2: Demonstrate the changes in flow when sphere of cylinder is introduced. 	PSO1,2,3	CN,AN
				<ul style="list-style-type: none"> • CO3: Estimate the applications of two dimensional flow. 	PSO3,4	CN,EN

				<ul style="list-style-type: none"> • CO4:Apply the stress components on viscous flow. 	PSO3,4	CN, E
				<ul style="list-style-type: none"> • CO5:Solve problems in viscous flow and describe the energy dissipation. 	PSO 2,4	EN,AP
PGME5	Differential Geometry and Tensors	Local , Regional, National & Global	To apply the notion of geodesics on surfaces and their properties	<ul style="list-style-type: none"> • CO1:Discuss the concept of graphs and level sets-vector fields. 	PSO1,2	U,KN,AN
				<ul style="list-style-type: none"> • CO2:Analyze surfaces and vector field on surfaces. 	PSO 2	U,KN,AN
				<ul style="list-style-type: none"> • CO3:Apply the properties of geodesics. 	PSO1,2	U.KN,AN
				<ul style="list-style-type: none"> • CO4:Interpret the scope of developable, 	PSO1,2	U,KN,E

				minimal and ruled surfaces.		
				<ul style="list-style-type: none"> • CO5: Compute the compactness and completeness of surfaces. 	PSO1,,2,5	U,KN,AN