

**SHRIMATHI DEVKUNVAR NANALAL BHATT VAISHNAV COLLEGE FOR
WOMEN (AUTONOMOUS)**

CHROMEPET, CHENNAI 600 044

DEPARTMENT OF MATHEMATICS: SYLLABUS



ACADEMIC YEAR 2016-2017

B.Sc MATHEMATICS- I YEAR

Subject	Instructional Hrs.		CIA	ESE	Max. Marks	No. of Credits	Exam Duration (Hrs.)
	Theory	Practical					
SEMESTER-I							
Language-I	6	-	25	75	100	3	3
English-I	4	-	25	75	100	3	3
Major Paper 1 Trigonometry & Analytical Geometry of 2 Dimensions	5	-	25	75	100	4	3
Major Paper 2 Differential Calculus	5	-	25	75	100	4	3
Allied I- Physics-I	4	2	15	60	75	4	3
Soft Skill-I Essentials of Language and Communication Skills	2	-	40	60	100	3	Viva-voce Exam
Non Major Elective-I	2	-	40	60	100	2	2
Total	28	2				23	
SEMESTER-II							
Language-II	6	-	25	75	100	3	3
English-II	4	-	25	75	100	3	3
Major Paper-3 Classical Algebra	5	-	25	75	100	4	3
Major Paper-4-Integral Calculus and Fourier series	5	-	25	75	100	4	3
Allied I- Physics-II	4		15	60	75	4	3
Allied Physics Practical	-	2	10	40	50	2	3
Soft Skill-II Essentials of Spoken and Presentation Skills	2	-	40	60	100	3	Viva-voce Exam
Non Major Elective-II	2	-	40	60	100	2	2
Total	28	2				25	
Allied Mathematics offered to B.Sc. Statistics, BSc. Chemistry, BSc. Physics and B.Sc. Computer science in Semester I & II	24 Hrs. 6 Hrs. (each)	-	25	75	100	5	3

II YEAR

Subject	Instructional Hrs.		CIA	ESE	Max. Marks	No. of Credits	Exam Duration (Hrs.)
	Theory	Practical					
<i>SEMESTER-III</i>							
Language-III	6	-	25	75	100	3	3
English-III	4	-	25	75	100	3	3
Major Paper 5 Differential Equations and Laplace Transforms	5	-	25	75	100	4	3
Major Paper 6 Three Dimensional Geometry	5	-	25	75	100	4	3
Allied II- Mathematical Statistics I	4	2	15	60	75	4	3
Environmental Studies	-	-	40	60	100	3	Online Exam
Total	28	2				23	
<i>SEMESTER-IV</i>							
Language-IV	6	-	25	75	100	3	3
English-IV	6	-	25	75	100	3	3
Major Paper-7 Vector Calculus, Fourier Transforms and Z Transforms	5	-	25	75	100	4	3
Major Paper 8 Statics	5	-	25	75	100	4	3
Allied II- Mathematical Statistics II	4		15	60	75	4	3
Allied Practical	-	2	10	40	50	2	3
Skill Based Elective	2	-	40	60	100	3	2
Total	28	2				25	

III YEAR

Subject	Instructional Hrs.		CIA	ESE	Max. Marks	No. of Credits	Exam Duration (Hrs.)
	Theory	Practical					
<i>SEMESTER-V</i>							
Major Paper 9 Modern Algebra	6	-	25	75	100	4	3
Major Paper 10 Real Analysis	6	-	25	75	100	4	3
Major Paper 11 Dynamics	6	-	25	75	100	4	3
Major Paper 12 Graph Theory	6	-	15	60	75	4	3
Elective I Any one from the given list	6	-	40	60	100	5	3
Total	30	-				21	
<i>SEMESTER-VI</i>							
Major Paper-13 Linear Algebra	6	-	25	75	100	4	3
Major Paper 14 Complex Analysis	6	-	25	75	100	4	3
Major Paper 15 Programming Language C	4		15	60	75	3	3
Practicals in C	-	2	10	40	50	1	3
Elective II Any one from the given list	6	-	25	75	100	5	3
Elective III Any one from the given list	6		25	75	100	5	3
Total	28	2				22	

Title of the Course/ Paper	PAPER - 1 : Trigonometry and Analytical Geometry of Two Dimensions		L	T	P
			3	2	0
Core	I Year	I Semester	Credit: 4 Sub. Code: UMA/CT/1001		
Course outline	Unit-	Expansions of $\sin^n \theta, \cos^n \theta, \tan^n \theta, \sin^n \theta, \cos^n \theta, \sin \theta, \cos \theta, \tan \theta$ in powers of θ . Chapter 3: Sections: 1,2,3,4,5			
	Unit-2:	Relation between circular and hyperbolic functions, Inverse hyperbolic functions. Chapter 4: Sections: 1,2			
	Unit-3:	Logarithm of complex numbers; General value of complex quantities. Chapter 5: Sections: 5.1,5.2			
	Unit-4:	Summation of trigonometric series using complex quantities – C+iS form, Gregory series. Chapter 6: Sections: 3,3.1			
	Unit-5:	Polar of a point (x_1, y_1) with respect to a Parabola. Equation of the pair of tangents to the Parabola. Equation of the chord of the Parabola having (x_1, y_1) as its middle point. Polar of the point (x_1, y_1) with respect to the Ellipse. The pole of the line with respect to the Ellipse. Equation of the pair of tangents to the Ellipse. Equation of a chord in terms of its middle point to the Ellipse. Chapter 6: Sections: 6,7,13 Chapter 7: Sections: 7,8,14			
Books for Study	Trigonometry S.Narayanan and T.K.Manicavachagam pillai, S.Viswanathan (printers and publishers)Pvt.Ltd. A Text Book of Analytical Geometry (part I- 2D) T.K.Manicavachagam pillai, T.Natarajan				
Books for Reference	1.	Algebra and Trigonometry – I &II by A.Singaravelu and R.Ramaa, A.R. Publications			
	2.	Mathematics - Volume I & II – P.Kandasamy and K.Thilagavathy, S.Chand and company limited			

Title of the Course/ Paper	PAPER - 2 : Differential Calculus		L T P 3 2 0
Core	I Year	I Semester	Credit: 4 Sub. Code: UMA/CT/1002
Course outline	Unit-1:	Successive Differentiation - n^{th} derivative, standard results, Leibnitz Theorem (without proof) and its applications. Chapter 3: Sections: 1.1 to 1.6, 2.1, 2.2	
	Unit-2:	Jacobians, Maxima and Minima of functions of 2 variables– Necessary and Sufficient conditions (without proof), Lagrange’s method of undetermined multipliers(without proof). Chapter 6: Sections: 1.1,1.2 Chapter 8: Sections: 4.1,5	
	Unit-3:	Definition of a curvature, Cartesian formula for the radius of curvature. Chapter 6: Sections: 1.1,1.2 Chapter 8: Sections: 4.1, 5	
	Unit-4:	Co-ordinates of the centre of curvature, Radius of curvature in polar coordinates, p-r equations, Pedal equation of a Curve. Chapter 10: Sections: 2.4,2.6,2.7	
	Unit-5:	Definition of Asymptotes - Asymptotes parallel to the axis, $F_n+P_{n-2}=0$ form, Special cases (proofs are not included) Asymptotes by inspection. Chapter 11: Sections: 1,2,3,4,5,6	
Books for Study		Calculus – Volume I by S.Narayanan and T.K.Manicavachagam pillai, S.Viswanathan (printers and publishers) Pvt.Ltd.	
Books for Reference	1.	Calculus by P.R. Vittal , Margham publications	
	2.	Calculus & co-ordinate geometry of 2 Dimensions(Paper II) by A,Singaravelu, R.Ramaa, Meenakshi Agency,Chennai	

Title of the Course/ Paper	PAPER - 3 : Classical Algebra		L T P 3 2 0
Core	I Year	II Semester	Credit: 4 Sub. Code: UMA/CT/2003
Course outline	Unit-1:	Summation of Binomial, Exponential and Logarithmic series (Theorems without proof) Vol.1: Chapter 3 :Section 10, Chapter 4 :Section 3&9	
	Unit-2:	Theory of Equations: Polynomial equations - Imaginary and irrational roots, Relation between roots and coefficients, Increasing or decreasing the root by a given number. Vol.1: Chapter 6 :Sections 9,10,11	
	Unit-3:	Theory of Equations (Contd.): Reciprocal equations, Transformations of equations. Vol.1: Chapter 15,16,17	
	Unit-4:	Matrices: Types of Matrices - Symmetric, Skew-symmetric, Hermitian, Skew-Hermitian, Orthogonal, Unitary matrices.. Cayley-Hamilton theorem (without proof) Verification and Computation of Inverse of a Matrix, Eigen values and Eigen vectors. Vol.2: Chapter 2 :Sections 6.1-6.3, 9.1&9.2, 16	
	Unit-5:	Number Theory: Prime number, Composite number, Divisors of a given number N, Euler's function $\phi(N)$, Congruence's, Fermat's and Wilson's theorem (without proof). Vol.2: Chapter 5:Sections 1,7,8,12,16,17	
Books for Study	Algebra - Volume I & II by T.K.Manicavachagam Pillay, T.Natarajan,K.S.Ganapathy S.Viswanathan (Printers&Publishers) Pvt. Ltd.		
Books for Reference	1.	'Classical Algebra - Volume I & II' - A.Singaravelu, Meenakshi Agency, Chennai	
	2.	. 'Higher Algebra' - H.S. Hall and S.R. Knight (HM publications-1994)	

Title of the Course/ Paper	PAPER - 4 : Integral Calculus and Fourier Series		L T P 3 2 0
Core	I Year	II Semester	Credit: 4 Sub. Code: UMA/CT/2004
Course outline	Unit-1:	Reduction formulae $\int x^n e^{ax} dx$, $\int x^n \cos ax dx$, $\int x^n \sin ax dx$, $\int \sin^m x \cos^n x dx$ (m,n being positive integers) $\int x^m (\log x)^n dx$, $\int \cos^m x \cos nxdx$ $\int \cos^m x \sin nxdx$, Bernoulli's formula, Integrals of the form $\int e^{ax} \sin bxdx$, $\int e^{ax} \cos bxdx$ Vol II: Chapter 13 :Sections 13.1,13.2,13.5.13.10 Chapter 14, Chapter 15	
	Unit-2:	Double integrals, Change of order of integration, Triple integrals Vol II: Chapter 5:Sections: 2.1,2.2, 3.1, 4	
	Unit-3:	Beta, Gamma functions Vol II: Chapter 7:Sections: 2.1,2.2.2.3, 3, 4, 5	
	Unit-4:	Fourier series of periodic functions of period 2π , Fourier series of odd and even functions. Vol III: Chapter 6: Sections: 1, 2, 3	
	Unit-5:	Half range Fourier series, Change of Interval Vol III: Chapter 6: Sections: 4,5,6	
Books for Study	Calculus Volume – II & III, by S.Narayan and T.K.Manicavachagom Pillay, S.Viswanathan Pvt.Ltd 2008.		
Books for Reference	1.	Calculus & co-ordinate geometry of 2 Dimensions(Paper II) by A,Singaravelu, R.Ramaa, Meenakshi Agency, Chennai	
	2.	Calculus by P.R. Vittal , Margham publications	

Title of the Course/ Paper	PAPER-5 DIFFERENTIAL EQUATIONS & LAPLACE TRANSFORMS		L T P
			3 2 0
Core	II Year	III Semester	Credit: 4 Sub. Code: UMA/CT/3005
Course outline	Unit-1	Ordinary Differential Equations: differential equations solvable for p, solvable for x, solvable for y, Clairauts form - Simple problems	
	Unit-2:	Second Order Equations with constant coefficients Particular integral for $e^{ax}V$, where V is x^m , $\cos mx$, $\sin mx$ (m is a positive integer). Second order differential equation with variable coefficients of the form $Ax^2 (d^2y/dx^2) + Bx(dy/dx) + Cy = Q$. Method of variation of parameters, Total differential equation of the form $Pdx + Qdy + Rdz = 0$ - Simple problems.	
	Unit-3:	Partial Differential Equation: Formation of Partial Differential Equation by eliminating arbitrary constants and arbitrary functions. Complete, singular and general integral solution of standard types: $f(p, q) = 0$, $f(x, p, q) = 0$, $f(y, p, q) = 0$, $f(z, p, q) = 0$, $f(x, p) = f(y, q)$; Lagrange's equation $Pp + Qq = R$, Charpit's method - Simple problems.	
	Unit-4:	Laplace Transforms: Laplace and inverse Laplace transforms - Simple problems.	
	Unit-5:	Application of Laplace Transforms Application of Laplace transform to solution of first and second order linear differential equations with constant coefficient - Simple problems.	
Books for Study		'Calculus - Volume III' - S.Narayanan and .K.Manicavachagam pillay, S.Viswanathan (Printers and Publishers)Pvt.Ltd.	
Books for Reference	1.	1.'Differential equations and Laplace Transforms ' - A.Singaravelu	
	2.	Differential Equations and Laplace Transforms - S.Sankarappan and Dr.G.Arulmozhi Vijay Nicole Imprints Private Limited, Chennai	

Title of the Course/ Paper	PAPER - 6 : Three Dimensional Geometry		L T P 3 2 0
Core	II Year	III Semester	Credit: 4 Sub. Code: UMA/CT/3006
Course outline	Unit-	Planes and Straight lines _Basic concepts and definitions of planes and straight lines - Simple problems.	
	Unit-2:	Spheres Equation of a sphere: Center and Radius form, Diametric form and General form. Equation of circle as a section of a sphere by a plane, Finding the centre and radius, Tangent plane, Radical plane, Coaxial system of spheres, Orthogonal systems - Simple problems.	
	Unit-3:	Cone Equation of cone with vertex at the origin, Equation of a quadratic cone given the vertex and the guiding curve, Condition for a general second degree equation to represent a cone - Simple problems.	
	Unit-4:	Right Circular Cone Equation of a right circular cone with given vertex, Axis and semi-vertical angle - Simple problems.	
	Unit-5:	Cylinder Equation of a cylinder: General form, Equation of a Right circular cylinder, when axis and radius are given - Simple problems.	
Books for Study	‘AnalyticalGeometry-3Dimension’ - T.K.Manickavachagam Pillai T.Natarajan, S.Viswanathan (Printers & Publsers) PVT.LTD.		
Books for Reference	1.	Solid Geometry’ - H.K. Dass, H.C.Saxena and M.D.Raisinghanian. First Edition 1999 ,S.Chand & Company Ltd.	
	2.	Co-ordinate Geometry of three dimensions, P.R.Vittal Malini	

Title of the Course/ Paper	PAPER -7 - VECTOR CALCULUS, FOURIER TRANSFORMS AND Z TRANSFORMS		L	T	P
			3	2	0
Core	II Year	IV Semester	Credit: 4 Sub. Code: UMA/CT/4007		
Course outline	Unit-1	Vector Differentiation: Definition, Gradient, Divergence, Curl, Directional derivative, Unit normal to surfaces, Tangent and normal planes to surfaces - Simple problems.			
	Unit-2:	Vector Integration: Line and Surface integrals, Green's theorem (without proof) - Simple problems.			
	Unit-3:	Volume integrals, Gauss theorem, Stoke's theorem (without proof) - Simple problems			
	Unit-4:	Fourier Transform: Infinite Fourier transform (Complex form without derivation), sine and cosine transform, Simple properties of Fourier Transforms. Convolution theorem, Parseval's Identity - Simple problems.			
	Unit-5:	Z-Transform: Definition of Z-transform, Z-transform of some well-known sequences, Properties of Z-transform- Simple problems.			
Books for Study	Vector Calculus, Fourier series and Fourier Transforms' - S. Sankarappan and G.Arulmozhi, Vijay Nicole Private limited (2006) . 'Engineering Mathematics III' - D.J.Prabhakaran, Asir Amirtham Enterprises, Chennai.				
Books for Reference	1.	'Vector Analysis' - P.Duraipandian and Laxmi Duraipandian, Emerald Publishers.			
	2.	'Engineering Mathematics' - M.K.Venkataraman (Volume III), National Publishing Co. 'Higher Engineering Mathematics' - H.K.Dass, S. Chand and Co.			

Title of the Course/ Paper	PAPER - 8: STATICS		L T P 3 2 0
Core	II Year	IV Semester	Credit: 4 Sub. Code: UMA/CT/4008
Course outline	Unit-1	Forces: Forces, Newton's laws of motion, Resultant of two forces on a particle, Resultant of several forces acting on a particle, Resultant of three forces related to a triangle acting at a point, Resultant of several forces acting on a particle - Simple problems Chapter 2	
	Unit-2:	Equilibrium of a particle: Laws of Friction, Equilibrium of a particle under three or more forces, Equilibrium of a particle on an inclined plane - Simple problems. Chapter 3	
	Unit-3:	Forces on a rigid body : Moment of a force, Definition of a rigid body , Conditions following equilibrium of a rigid body (statement only), Equivalent systems of forces, Parallel forces, Point of application of resultant of many parallel forces, Varignon's theorem , Forces along the sides of a triangle - Simple problems.	
	Unit-4:	Couples: Couples, Moment of a couple, Arm and Axis of a couple, Resultant of several coplanar forces, Moment of a certain couple as an area, Resultant of an couple and a force, Equilibrium of a rigid body under three coplanar forces - Simple problems. Chapter 4 (From sec 4.6 to sec) (Except 4.2.1, 4.2.3 and 4.4.3)	
	Unit-5:	Centre of mass: Centre of mass of simple uniform bodies, Triangular lamina, Rods forming a triangle, Trapezium, circular arc, Segment of a circular lamina, Elliptic quadrant, Solid and hollow hemisphere , Solid and hollow cone - Simple problems. Chapter 6 (Except 6.2.3 and 6.3)	
Books for Study		Mechanics' - P. Duraipandian <i>et al.</i> - Sixth Revised Edition 2005.	
Books for Reference	1.	Statics' – K.Viswanatha naik and others, S.Chand & Co.	
	2.	'Statics' – S.Narayanan and others, S.Chand & Co. 'Statics' – A.V.Dharmapadam, (S.Viswanathan & Co.)	

Title of the Course/ Paper	PAPER - 9 : MODERN ALGEBRA		L T P 5 1 0
Core	III Year	V Semester	Credit: 4 Sub. Code:
Course outline	Unit-1:	Definition of a Group, Some examples of Groups, Some Preliminary Lemmas, Subgroups, A Counting principle , Normal subgroups and Quotient Groups. Chapter: 2 Sections 2.1 - 2.6	
	Unit-2:	Homomorphisms, Automorphisms , Cayley's theorem, Permutation Groups. Chapter: 2 Sections 2.7- 2.10	
	Unit-3:	Definition and examples of rings, Some special classes of rings, Homomorphisms. Chapter: 3 Sections 3.1 – 3.3	
	Unit-4:	Ideals, Maximal Ideals and Quotient Rings. Chapter: 3 Sections 3.4 & 3.5	
	Unit-5:	The field of Quotients of an Integral Domain, Euclidean Rings. Chapter: 3 Sections 3.6 & 3.7	
Books for Study		'Topics in Algebra' I.N.Herstein, Second Edition, Wiley India Pvt. Ltd ., New Delhi. Reprint : 2014	
Books for Reference	1.	'Modern Algebra' , M.L.Santiago, Tata McGraw-Hill Publishing Co.,Ltd, 2009.	
	2.	'Modern Algebra' , S.Arumugam, A.Thangapandi Isaac, Scitech Publications(India) Pvt.Ltd. 4 th Reprint, June 2006	

Title of the Course/ Paper	PAPER - 10 : REAL ANALYSIS		L T P 5 1 0
Core	III Year	V Semester	Credit: 4 Sub. Code:
Course outline	Unit-1:	Equivalence, Countability, Real Numbers, Least Upper Bounds. Sequences of Real Numbers: Definition of a sequence and subsequence, Limit of a sequence, Convergent sequences, Divergent sequences, Bounded sequences, Monotone sequences. Chapter :1 Sections 1.5 - 1.7 Chapter :2 Sections 2.1-2.6	
	Unit-2:	Sequences of Real Numbers, Limit superior and Limit inferior, Cauchy sequences. Series of Real Numbers: Convergence and divergence, Series with non-negative terms, Alternating series, Conditional convergence and absolute convergence, Tests for absolute convergence, Series whose terms form a non-increasing sequence. Chapter :2 Sections 2.9 & 2.10 Chapter :3 Sections 3.1-3.4, 3.6, 3.7	
	Unit-3:	Limits and Metric spaces: Limit of a function on a real line, Metric spaces, Limits in metric spaces. Chapter: 4 Sections 4.1-4.3	
	Unit-4:	Continuous functions on Metric spaces: Functions continuous at a point on the real line, Reformulation, Functions continuous on a metric space, Open sets, Closed sets, Discontinuous functions on \mathbb{R}^1 . Chapter: 5 Sections 5.1 - 5.6	
	Unit-5:	Calculus: Sets of measure zero, Definition of the Riemann integral, Existence of the Riemann integral (only Statement), Derivatives, Rolle's theorem, The Law of the mean, Fundamental theorems of calculus. Chapter: 7 Sections 7.1-7.3, 7.5 - 7.8	
Books for Study		'Methods of Real Analysis' , Richard. R. Goldberg (Oxford and IBH Publishing Co. Pvt. Ltd., New Delhi), 1970.	
Books for Reference	1.	'Real Analysis' - S. G. Venkatachalapathy, Margham Publications.	
	2.	'Real Analysis Volume I and II' - Dr. K. Chandrasekhara Rao, Dr. K.S. Narayanan, S.Viswanathan (Printer &Publishers) Pvt.Ltd.	

Title of the Course/ Paper	PAPER - 11 : DYNAMICS		L T P 4 2 0
Core	III Year	V Semester	Credit: 4 Sub. Code:
Course outline	Unit-1:	Kinematics: Velocity – Velocity of a particle describing a circle, Resultant velocity, Relative velocity. Acceleration - Rectilinear motion, Rectilinear motion with a constant acceleration. Coplanar motion -Velocity and acceleration in a coplanar motion, Angular velocity, Relative angular velocity – Simple problems. Chapter : 1	
	Unit-2:	Rectilinear motion under varying force: Simple Harmonic Motion, Simple Harmonic Motion along a horizontal line, Simple Harmonic Motion along a vertical line - Simple problems. Chapter : 12 Sections 12. 1- 12. 3	
	Unit-3:	Projectiles: Forces on a projectile-Nature of trajectory, Results pertaining to the motion of a projectile, Maximum horizontal range for a given velocity, Projectile projected horizontally, Projectiles projected on an inclined plane-Maximum range on an inclined plane - Simple problems. Chapter : 13 Sections 13.1.1 to 13.1.4, 13.1.6 & 13.2.1	
	Unit-4:	Impact: Impulsive force-Conservation of linear momentum, Impact of Sphere- Laws of impact, Direct impact of two smooth spheres, Direct impact of a smooth sphere on a plane - Simple problems. Chapter : 14 Sections 14. 1 to 14.3,14.4.1	
	Unit-5:	Moment of Inertia: Perpendicular and Parallel axes theorems, Moment of Inertia of a rod, Triangular lamina, Circular lamina, Elliptic lamina, Circular ring, Right circular cylinder(hollow and solid),Solid right circular cone and Sphere (hollow and solid) – Simple problems. Chapter : 17	
Books for Study	‘Mechanics’ P. Duraipandian et al. –S.Chand & Co. Ltd, New Delhi, Sixth Revised Edition, Reprint 2011		
Books for Reference	1.	‘Dynamics’ , K.Viswanatha Naik and M.S. Kasi, Emerald Publishers,1992.	
	2.	‘Dynamics’ , A.V.Dharmapadam, (S.Viswanathan Publishers).	

Title of the Course/ Paper	PAPER - 12:GRAPH THEORY		L T P
			5 1 0
Core	III Year	V Semester	Credit : 4 Sub.Code:
Course outline	Unit-1:	Graphs and subgraphs, Isomorphism and degrees, Walks and Connected graphs, Cycles in graphs, Cut vertices and Cut edges. Chapter : 1 Sections :1.1, 1.3 to 1.7	
	Unit-2:	Eulerian graphs, Hamiltonian graphs and weighted graphs. Chapter ; 2 Sections :2.1, 2.3, 2.4	
	Unit-3:	Bipartite graphs, Marriage problem, Trees, Connector problems. Chapter : 3 Sections : 3.1, 3.2, 3.3 Chapter : 4 Section 4.1	
	Unit-4:	Planar graphs, Euler formula, Dual of a plane graph, Characterization of planar graphs. Chapter : 5 Sections :5.1, 5.2, 5.4, 5.5	
	Unit-5:	Vertex colouring, Edge colouring and an algorithm for vertex colouring. Chapter : 6 Sections:6.1, 6.2, 6.3	
Books for Study		‘A First course in Graph Theory’ , S.A. Choudum-MacMillan India limited. Reprint 2007.	
Books for Reference	1.	‘ Invitation to Graph theory ’ , S.Arumugam , S.Ramachandran , SCITECH Publications(India) Pvt . Ltd., Chennai, 2002.	
	2.	‘ Graph theory with Applications to Engineering and Computer Science’ , Narsingh Deo, , Prentice Hall of India Pvt., Ltd., 2005	

Title of the Course/ Paper	PAPER - 14:LINEAR ALGEBRA		L	T	P
			5	1	0
Core	III Year VI Semester		Credit: 4 Sub. Code:		
Course outline	Unit-1:	Vector spaces : Elementary Basic Concepts, Linear Independence and Bases. Chapter: 4 Sections 4.1, 4.2 (upto Corollary 3 of Theorem 4.2.1))			
	Unit-2:	More on Bases, Dual Spaces. Chapter: 4 Sections 4.2(from lemma 4.2.4), 4.3			
	Unit-3:	Inner Product Spaces. Chapter: 4 Section 4.4			
	Unit-4:	Linear transformations: The Algebra of Linear Transformations, Characteristic roots. Chapter: 6 Sections 6.1 & 6.2			
	Unit-5:	Matrices, Canonical forms: Triangular form. Chapter: 6 Sections 6.3 & 6.4			
Books for Study	'Topics in Algebra' I.N.Herstein, Second Edition, Wiley India Pvt. Ltd .,New Delhi. Reprint : 2014				
Books for Reference	1.	'Modern Algebra' , M.L.Santiago, Tata McGraw-Hill Publishing Co,Ltd, 2009.			
	2.	'Modern Algebra' , S.Arumugam, A.Thangapandi Isaac,Scitech Publications(India) Pvt.Ltd. 4 th Reprint,June 2006			

Title of the Course/ Paper	PAPER – 15 : COMPLEX ANALYSIS		L T P 5 1 0
Core	III Year VI Semester		Credit: 4 Sub. Code:
Course outline	Unit-1:	Regions in the complex plane, Functions of a complex variable, Limits, Limits involving the point at infinity, Continuity, Derivatives, Differentiation formulas, Cauchy-Riemann Equations, Sufficient conditions for Differentiability, Cauchy-Riemann equations in polar form, Analytic Functions and Harmonic Functions - Simple problems. Chapter : 1 Section 10 Chapter : 2 Sections 11,14,16,17,18,19,20,21,22,23 & 25	
	Unit-2:	Definite Integrals of Functions w(t) , Contours, Contour Integrals, Examples, Upper Bounds for Moduli of Contour Integrals, Cauchy-Goursat theorem (only statement) ,Simply and Multiply Connected Domains and Cauchy Integral formula - Simple problems. Chapter 4: Sections 37,38, 39,40,41,44,46,47.	
	Unit-3:	Derivatives of Analytic Functions, Liouville’s theorem and the Fundamental theorem of Algebra, Taylor series, Laurent series - Simple problems. Chapter :4 Sections 48 &49. Chapter :5 Sections 53 & 55 .	
	Unit-4:	Residues, Cauchy’s Residue Theorem, Using a single Residue, The three types of isolated singular points, Residues at Poles, Examples - Simple problems. Chapter: 6 Sections 62,63,64,65,66,67.	
	Unit-5:	Linear Transformation, The transformation $w = \frac{1}{z}$, Mappings by $\frac{1}{z}$, Linear fractional transformations, An implicit form, Mappings of the upper half plane, The transformation $w = \sin z$ and Mapping by z^2 and branches of $z^{\frac{1}{2}}$,Applications of Conformal mapping -Two dimensional fluid flow. Chapter : 8 Sections 83,84,85,86,87,88,89,90. Chapter :10 Section 106.	
Books for Study	‘Complex Variables and Applications’ James Ward Brown, Ruel.V.ChurChill, McGraw-Hill, Inc., Seventh Edition, 2003.		
Books for Reference	1.	‘Theory and Problems of Complex Variables ’ - Murray. R.Spiegel, Schaum outline series.	
	2.	‘Complex Analysis’ - Dr.P.Duraipandian.	

Title of the Course/ Paper	PAPER – 16: PROGRAMMING LANGUAGE C		L	T	P
			5	1	0
Core	III Year	VI Semester	Credit : 3 Sub.Code:		
Course outline	Unit-1:	The character set of C, Data types, Identifiers, Reserved words, Variables, Constants, Key words, C operators. Input and Output functions: The putchar() and getchar() functions, The clrscr() statement, The getc() and putc() functions, The gets() and puts() functions and scanf() and printf() functions. Chapters : 3 & 4			
	Unit-2:	Control statements: Unconditional control statement - goto, Conditional control statement - if, nested if statements, looping or the iteration process, while, do-while and for statements, nested loops and comma operator, selection, switch, break and continue statements. Chapter : 5			
	Unit-3:	Functions: The return statement, Library functions, User-defined functions, Recursion, Data storage type. Chapter : 6			
	Unit-4:	Arrays : Definition of an array, Initialization of an array, Unsized arrays, String and character arrays, Sorting an array, Two dimensional arrays and Multidimensional arrays. Passing arrays to the function Chapter : 7			
	Unit-5:	Pointers : Pointer operators, Declaring a pointer variable, Initialization of pointers, Passing pointers to a function, Call by value, Call by reference, Pointers and Arrays. Definition of a structure, Declaring a structure, The period operator, Initializing a structure, Structure operations, Array of structures, Arrays within structures, Structures within structures, Structures and pointers, Structures and functions. Chapter : 8			
Books for Study		'Programming Language C with Practicals' - Ananthi Sheshasaayee and G. Sheshasaayee- Margham Publications, Chennai ,Reprint 2002.			
Books for Reference	1.	E. Balagurusamy, <i>Programming in ANSI C</i> , Tata Mcgraw Hill pub.Co.Ltd., New Delhi,2008.			
	2.	P.Pandiarajan, <i>Programming in C</i> ,vijay Nicole Imprints Pvt.Ltd., Chennai,2005.			

Title of the Course/ Paper	PRACTICALS IN C		<i>L T P</i> <i>0 0 2</i>
Core	III Year VI Semester		Credit: 1 Sub. Code:
Course outline	<p>1. Write a program that asks the user to enter two integers and prints all the prime numbers between them.</p> <p>2. Generate the series for the following functions and check the result using the corresponding built-in function: (i) $\sin x$, (ii) $\cos x$, (iii) e^x.</p> <p>3. Perform (i) Transpose of a Matrix, (ii) Determinant of a Matrix. Write a program to compute the roots of a quadratic equation $ax^2+bx+c = 0$</p> <p>4. Develop code for function Fibonacci() to find the n-th Fibonacci number for an integer n. Use recursion and the ternary operator.</p> <p>5. Write a program to compute the binomial coefficient nC_r, where n and r are positive integers using user-defined function .</p> <p>6. To add complex numbers using functions</p> <p>7. Sorting a given set of numbers in the ascending order.</p> <p>8. Write a function that exchanges two character strings via pointers.</p> <p>9. To create an unnamed structure 'student' to contain the following (i) Name (ii) Ten test scores (iii) Final grade</p> <p>10. Write a program to read the name, grade and ten test scores into the structure and print them out along with the high, low and average.</p>		
Books for Study	<p>'Programming Language C with Practicals' - Ananthi Sheshasaayee and G. Sheshasaayee- Margham Publications, Chennai ,Reprint 2002.</p>		

Paper 13, Paper 17, Paper 18

LIST OF OPEN ELECTIVES for III year

From 2014-2017 Batch Students Onwards

1. Numerical Methods
2. Formal Languages and Automata Theory
3. Operations Research
4. Discrete Mathematics
5. Fuzzy subsets and their Applications

Title of the Course/ Paper	ELECTIVE I : NUMERICAL METHODS		L T P 4 2 0
Elective	III Year	V Semester	Credit: 5 Sub. Code: UMA/CE/5001
Course outline	Unit-1:	Algebraic and Transcendental equations: Introduction, Errors in numerical computation, Iteration method, Bisection method, Regula-falsi method, Newton-Raphson method. Chapter :3 Sections 3.0 to 3.5	
	Unit-2:	Simultaneous equations: Introduction, Simultaneous equations, Back substitution, Gauss Elimination method, Gauss –Seidel iteration method. Chapter :4 Sections 4.0 to 4.3, 4.8 Finite Differences: Introduction, Forward, Backward and Central difference operators, Fundamental theorem for finite differences, Shift Operator, Relation between operators. Chapter :6 Sections 6.0 , 6.1(upto Theorem 6.1) & 6.2	
	Unit-3:	Interpolation : Introduction, Newton’s interpolation formulae, Lagrange’s interpolation formula, Divided differences, Newton’s divided difference formula, inverse interpolation. Chapter :7 Sections 7.0,7.1, 7.3 to 7.6	
	Unit-4:	Numerical Differentiation : Introduction, Derivatives using Newton’s Forward and Backward formulae. Numerical Integration : Newton’s Cotes’ quadrature formula, Trapezoidal rule, Simpson’s one - third rule, Simpson’s three - eighth rule. Chapter: 8 Sections 8.0 to 8.2, 8.5	
	Unit-5:	Numerical solutions of Ordinary differential equations: Introduction, Taylor’s series method, Picard’s method, Euler’s method and Runge-kutta methods, Predictor Corrector method, Milne’s method, Adams-Bashforth method. Chapter 10: Sections 10.0 to 10.7	
Books for Study	1.	‘Numerical Methods’, S. Arumugam, A. Thangapandi Isaac, A.Somasudaram, Scitech Publications(INDIA) Pvt. LTD.2002.	
Books for Reference	1.	‘Numerical methods’, First edition, P.Kandasamy, K. Thilagavathy, K.Gunavathi, Chand & Company Ltd, New Delhi, 1997.	
	2.	‘Numerical methods’, V.N.Vedamurthy, N.Ch.S.N. Iyengar, Vikas Publishing House Pvt Ltd, New Delhi, 1998.	

Title of the Course/ Paper	ELECTIVE-II : FORMAL LANGUAGES AND AUTOMATA THEORY		L T P 5 1 0
Core	III Year	V Semester	Credit: 5 Sub. Code: UMA/CE/6002
Course outline	Unit-1:	Introduction, Phrase Structure Languages, Chomsky hierarchy. Chapter: 1,2	
	Unit-2:	Closure properties, Context-free Language, Derivation tree, Ambiguity. Chapter: 3 Chapter: 4 Sections 4.1 to 4.4	
	Unit-3:	Context-free Languages, Reduced grammar, Chomsky normal form, Greibach normal form. Chapter: 1, 2.	
	Unit-4:	Finite automata: Finite state systems, Basic definitions, Non-deterministic finite automata, Finite automata with ϵ - moves. Chapter: 2 Sections 2.1 to 2.4	
	Unit-5:	Regular expressions, Pumping lemma for regular sets Chapter: 2 Sections 2.5 Chapter: 3 Sections 3.1	
Books for Study	Units I, II, III: 'Formal Languages and Automata theory', Dr.Rani Siromoney, CLS Publishers, Chennai, Revised Edition 1984 Units IV and V: 'Introduction to Automata theory', Languages and Computation' John E. Hopcroft and Jeffery D. Ullman, Narosa Publishing House. Nineteenth Reprint 2002		
Books for Reference	1.	'An Introduction to Formal languages and Automata', Peter Linz, Narosa Publishing House, Reprint 2011	
	2.	' Introduction to Formal languages and Automata theory and Computation', Kamala Krithivasan, R.Rama, Pearson Publication, 2009	

Title of the Course/ Paper	<i>ELECTIVE-III: OPERATIONS RESEARCH</i>		L	T	P
			5	1	0
Core	III Year	VI Semester	Credit: 5 Sub.Code: UMA/CE/6003		
Course outline	Unit-1:	Introduction, Formulation of Linear Programming Problem, Graphical solution. Chapter: 1, 2 Sections 1.1 to 1.9, 2.1to 2.8.			
	Unit-2:	Solving Linear Programming Problem by Simplex method. Solving Linear Programming Problem by Artificial variable method and Two- phase-method. Chapter: 3 Sections 3.1 & 3.2			
	Unit-3:	Transportation problem, Assignment problem. Chapter: 7, 8 Sections 7.1 to 7.4, 8.1to 8.9.			
	Unit-4:	Sequencing Problem: Introduction, n jobs through 2 machines, n jobs through 3 machines, 2 jobs through m machines and n jobs through m machines. Chapter: 14 Sections 14.1 to 14.7.			
	Unit-5:	CPM: Introduction, Basic terminologies, Rules for constructing network, Network computation (CPM), Floats. PERT: Program Evaluation Review Technique (PERT). Basic difference between PERT and CPM. Chapter: 15 Sections 15.1 to 15.7			
Books for Study	1.	'Resource Management Techniques'(Operations Research)' Prof,V.Sundaresan, K.S.Ganapathy Subramanian & K.Ganesan, A. R. Publications, Fourth Edition,2007.			
Books for Reference	1.	Linear programming' - Gauss.S.I., McGraw-Hill book company.			
	2.	'Problems in Operation Research' - Gupta. P.K. and Hira. D. S.,S.Chand& co.,			

Title of the Course/ Paper	ELECTIVE-IV: DISCRETE MATHEMATICS		L	T	P
			5	1	0
Elective	III Year	VI Semester	Credit: 5		
			Sub.Code:		
Course outline	Unit-1:	Logic: Introduction, TF-Statements, Connectives, Atomic and Compound Statements, Well formed Statement Formulae, Truth Table of a formula, Tautology, Tautological Implications and Equivalence of formulae , Replacement process. Chapter IX : Sections :1 to 9			
	Unit-2:	Normal forms, Principal Normal forms, Theory of Inference. Chapter IX : Sections:11 to 13			
	Unit-3:	Open statement, Quantifiers, Valid Formulae and Equivalence, Theory of inference for Predicate Calculus Chapter IX : Sections :14 to 17			
	Unit-4:	Lattices, Some properties of Lattices, New Lattices , Modular and Distributive Lattices. Chapter X : Sections: 1 to 4			
	Unit-5:	Boolean Algebras, Boolean Polynomials, Karnaugh Map and Switching Circuits Chapter X : Sections :5 to 8			
Books for Study	1.	“Discrete Mathematics”, M.K.Venkataraman, N. Sridharan, N. Chandrasekaran, The National Publishing Company, September 2000.			
Books for Reference	1.	Discrete Mathematics,V.Sundaresan, K.S.Ganapathy Subramanian, K.Ganesan, A.R. Publications, Second Edition 1998 (Revised).			
	2.	Discrete Mathematics,K.Chandrasekhara Rao,Norosa Publishing House Pvt.Ltd., 2012			

Title of the Course/ Paper	ELECTIVE-V: FUZZY SETS AND THEIR APPLICATIONS		L	T	P
			5	1	0
Elective	III Year	VI Semester	Credit: 5 Sub.Code:		
Course outline	Unit-1:	Fundamental Notions: Introduction, Review of the notion of membership, The concept of a fuzzy subsets, Dominance relations, Simple operations on Fuzzy subsets-sets of Fuzzy subsets for E and M finite. Chapter : 1: Sections: 1 to 6			
	Unit-2:	Fuzzy Graphs: Introduction-Fuzzy graphs, Fuzzy relation-Composition of two Fuzzy relation, Fuzzy subsets induced by a mapping, Conditioned Fuzzy subsets, Properties of Fuzzy binary relation, Transitive closure of Fuzzy binary relation. Chapter : 2 : Sections: 10 to 17			
	Unit-3:	Fuzzy Relation : Relation of Fuzzy pre order, Relation of similitude, antisymmetry, Dissimilitude relations, Resemblance relation - similitude and resemblance. Chapter 2 : Sections: 19 to 27 (Omit Sec 23 , 24)			
	Unit-4:	Fuzzy Logic : Introduction characteristic function of a Fuzzy subsets, Polynomial forms, Analysis of a function of Fuzzy variables, Logical structure of a function of fuzzy variables, composition of intervals. Chapter- 3 : Sections: 31 to 36			
	Unit-5:	The Laws of Fuzzy Composition: Introduction, Review of the notion of a law of composition, Law of Fuzzy internal composition, Fuzzy Groupoids, Principal properties, Concerning Fuzzy Groupoids, Fuzzy monoids Chapter 4: Sections: 43 to 47			
Books for Study	1.	A . Kaufman , Introduction to the theory of fuzzy subsets, Vol 1			
Books for	1.	H. J. Zimmermann-Fuzzy set theory and its applications			

Reference	2.	George J. Klir and Bo Yuan , Fuzzy sets and Fuzzy Logic- theory and applications
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ALLIED MATHEMATICS SYLLABUS

FOR

I B.Sc. COMPUTER SCIENCE, I B.Sc. CHEMISTRY,

I B.Sc. STATISTICS & II B.Sc. PHYSICS

Title of the Course/ Paper	Paper - 1 : ALLIED MATHEMATICS-I		L	T	P
			3	3	0
Allied	I Year	I Semester	Credit: 5 Sub. Code: UCS/AT/1AM1		
Course outline	Unit-1:	Algebra : Summation of Binomial, Exponential and Logarithmic series(without proof) Vol 1: Chapter 2: Sections: 2.1.3, 2.2.1,2.3.3			
	Unit-2:	Matrices: Symmetric, Skew symmetric, Orthogonal and Unitary matrices, Eigen roots & Eigen vectors, Cayley-Hamilton theorem (without proof), verification and computation of inverse matrix. Vol 1: Chapter 4: Sections: 4.1.1 to 4.1.6, 4.5.1 to 4.5.3			
	Unit-3:	Trigonometry :Expansions $\sin n\theta$, $\cos n\theta$, $\sin^n \theta$, $\cos^n \theta$, $\sin \theta$, $\cos \theta$, $\tan \theta$. Vol 1: Chapter 6: Sections: 6.1.1 to 6.1.3.			
	Unit-4:	Laplace Transforms: Laplace transforms of standard functions and properties Vol 2: Chapter 7: Sections: 7.1.1 to 7.1.6			
	Unit-5:	Inverse Laplace Transforms: Inverse Laplace transforms of standard functions and properties. Vol 2: Chapter 7: Sections: 7.2.1, 7.2.3			
Books for Study	Allied Mathematics- Volumes I &II ” by P. Duraipandian and Dr. S. Udayabaskaran, Muhil publishers,Chennai .				
Books for Reference	1.	Allied Mathematics by A.Abdul Rasheed, Vijay Nicole Imprints Private Limited, Chennai			
	2.	Allied Mathematics by Dr.A.Singaravelu, Meenakshi Agency , Chennai			

Title of the Course/ Paper	Paper - 2 : ALLIED MATHEMATICS-II		L T P 3 3 0
Allied	I Year	II Semester	Credit: 4 Sub. Code: UCS/AT/2AM2
Course outline	Unit-1:	Solving algebraic and transcendental equation by Bisection method, Iteration method, Regula-Falsi method and Newton-Raphson method Chapter 1: Sections: 1.1.1 to 1.4.3	
	Unit-2:	Forward differences, backward differences, shift operator, relation between operators, Interpolation with equal intervals: Newton's forward and backward interpolation formulae Chapter 3: Sections: 3.1	
	Unit-3:	Interpolation with unequal intervals: Divided differences and their properties, Newton's divided difference formula, Lagrange's formula for interpolation Inverse Interpolation: Lagrange's method Chapter 4: Sections: 4.1 to 4.6	
	Unit-4:	Numerical Differentiation : Numerical Differentiation upto second order solution using Newton's Forward and Backward formulae Numerical Integration : Trapezoidal rule, Simpson's one-third rule, Simpson's Three - eighth rule. Chapter 6: Sections: 6.1 to 6.7	
	Unit-5:	Numerical solution of Ordinary differential equations: Taylor's series, Euler method and Runge - Kutta method of fourth order. Chapter 7: Sections: 7.1 to 7.3,7.6 to 7.9,7.13,7.14	
Books for Study	Calculus of Finite Differences and Numerical Analysis by P.Kandasamy and K. Thilagavathy, S.Chand Publishers		
Books for Reference	1.	Numerical Analysis by B.D.Gupta, Konark Publishers Pvt Ltd.	
	2.	'Numerical methods' , V.N.Vedamurthy, N.Ch.S.N. Iyengar, Vikas Publishing House Pvt Ltd, New Delhi, 1998.	

Title of the Course/ Paper	Paper - 1 : ALLIED MATHEMATICS-I		L	T	P
			3	3	0
Allied	I Year	I Semester	Credit: 5		
			Sub. Code: UST/AT/1AM1		
Course outline	Unit-1:	Algebra : Summation of Binomial, Exponential and Logarithmic series(without proof) Chapter 2: Sections: 2.1.3, 2.2.1, 2.3.3			
	Unit-2:	Differential Calculus: n th derivative, Leibnitz's formula for the n th derivative of a product(without proof) Chapter 1: Sections: 1.1.1 & 1.1.2			
	Unit-3:	Differential Calculus: Jacobians, Maxima and Minima of function of two variables Chapter 1: Sections: 1.2 & 1.3.1			
	Unit-4:	Trigonometry : Expansions $\sin n\theta$, $\cos n\theta$, $\sin^n \theta$, $\cos^n \theta$, $\sin \theta$, $\cos \theta$, $\tan \theta$. Chapter 6: Sections: 6.1.1-6.1.3.			
	Unit-5:	Integral Calculus: Reduction formula : $\int \sin^n x dx$, $\int \cos^n x dx$, $\int \sin^m x \cos^n x dx$, $\int x^n e^{ax} dx$, $\int x^n \cos ax dx$, $\int x^n \sin ax dx$, $\int x^m (\log x)^n dx$, $\int_0^{\frac{\pi}{2}} \cos^m x \cos nx dx$, $\int_0^{\frac{\pi}{2}} \cos^m x \sin nx dx$ Chapter 2: Sections: 2.9 (Related to only above formulae)			
Books for Study	Allied Mathematics-Volumes I&II by P. Duraipandian and Dr. S. Udayabaskaran, Muhil publishers, Chennai .				
Books for Reference	1.	“ Allied Mathematics” by A.Abdul Rasheed, Vijay Nicole Imprints Private Limited, Chennai			
	2.	“ Allied Mathematics” by Dr.A.Singaravelu, Meenakshi Agency , Chennai			

Title of the Course/ Paper	Paper - 1 : ALLIED MATHEMATICS-II		L	T	P
			3	3	0
Allied	I Year	II Semester	Credit: 5		
			Sub. Code: UST/AT/2AM2		
Course outline	Unit-1:	Functions, Real valued functions, Equivalence, Countability, Real numbers. Chapter 1: Sections: 1.3 to 1.6			
	Unit-2:	Sequences of real numbers: Definition of Sequence and subsequence, Limit of a sequence, Convergent sequences, Divergent sequences, Bounded Sequences and Monotone sequences. Series of real numbers: Convergence and Divergence, Series with non-negative terms, Alternating series. Chapter 2: Sections: 2.1 to 2.6, Chapter 3: Sections: 3.1 to 3.3.			
	Unit-3:	Calculus: Derivatives, Rolle's theorem, The Law of the Mean, Taylor's Theorem. Chapter 7: Sections: 7.5 to 7.7 Chapter 8: Section: 8.5			
	Unit-4:	Laplace Transforms: Laplace transforms of standard functions and properties Chapter 7: Sections: 7.1.1 to 7.1.6			
	Unit-5:	Inverse Laplace Transforms: Inverse Laplace transforms of standard functions and properties. Chapter 7: Sections: 7.2.1 to 7.2.3			
Books for Study	Methods of Real Analysis by Gold Berg, R. R. Oxford and IBH Publishing company (1970)				
	Allied Mathematics- Volume I & II by P. Duraipandian and Dr. S. Udayabaskaran, Muhil publishers, Chennai .				
Books for Reference	1.	Real Analysis by S.G. Venkatachalapathy, Margham Publications, Chennai.			
	2.	Allied Mathematics by A.Abdul Rasheed, Vijay Nicole Imprints Private Limited, Chennai			

Title of the Course/ Paper	Paper - 1 : ALLIED MATHEMATICS-I		L T P 3 3 0
Allied	I Year Chemistry II Year Physics	I Semester III Semester	Credit: 5 Sub. Code: UCH/AT/1AM1(Chemistry) UPH/AT/3AM3(Physics)
Course outline	Unit-1:	Algebra : Summation of Binomial, Exponential and Logarithmic series(without proof) . Chapter 2: Sections: 2.1.3, 2.2.1,2.3.3.	
	Unit-2:	Matrices: Symmetric matrix, Skew -Symmetric matrix, Hermitian matrix , Skew- Hermitian matrix,Orthogonal matrix and Unitary matrix. Eigen values and Eigen vectors, Cayley-Hamilton theorem (without proof), Inverse of a matrix using Cayley-Hamilton theorem Chapter 4: Sections: 4.1.1 to 4.1.6, 4.5 ,4.5.2 ,4.5.3	
	Unit-3:	Trigonometry : Expansions $\sin n\theta$, $\cos n\theta$, $\tan n\theta$, $\sin^n \theta$, $\cos^n \theta$ and $\sin \theta$, $\cos \theta$, $\tan \theta$ in powers of θ . Chapter 6: Sections: 6.1.1, 6.1.2,6.1.3.	
	Unit-4:	Finite differences: Interpolation, Interpolation formulae . Chapter 5: 5.1,5.2	
	Unit-5:	Trigonometry : Hyperbolic functions, Relation between circular and hyperbolic functions, Formulae in hyperbolic functions, Real and Imaginary parts and Inverse hyperbolic functions . Chapter 6: 6.2, 6.2.1, 6.2.2, 6.2.3, 6.3.	
Books for Study	Allied Mathematics-Volume I by Prof.P. Duraipandian and Dr. S. Udayabaskaran, Muhil Publishers, Chennai .		
Books for Reference	1.	Allied Mathematics by A.Abdul Rasheed, Vijay Nicole Imprints Private Limited, Chennai	
	2.	Allied Mathematics by Dr.A.Singaravelu, Meenakshi Agency , Chennai	

Title of the Course/ Paper	Paper - 2 : ALLIED MATHEMATICS-II		L	T	P
			3	3	0
Allied	I Year Chemistry II Year Physics	II Semester IV Semester	Credit: 5 Sub. Code: UCH/AT/2AM2(Chemistry) UPH/AT/4AM4(Physics)		
Course outline	Unit-I:	Fourier Series : Fourier series, Fourier series for even and odd functions defined in $[-\pi,\pi]$ Chapter 4: Sections: 4.1,4.1.1			
	Unit-II:	Partial Differential Equation: Formation of partial differential equations, Solutions of partial differential equation. Four standard forms, Lagrange's linear equations Chapter 6: 6.1,6.2,6.3			
	Unit-III	Laplace Transforms: Laplace transforms of standard functions and properties Chapter 7: Sections: 7.1.1 to 7.1.4			
	Unit- IV:	Inverse Laplace Transforms: Inverse Laplace transforms of standard functions and properties. Chapter 7: Sections: 7.2,7.2.1 to 7.2.3			
	Unit-V	Vector Analysis : Scalar and vector point function, level surfaces, directional derivative of a scalar point function, Gradient of a scalar point function, Divergence and Curl of a vector point function, Line integrals, surface integrals, Green's theorem in the plane (without proof) Chapter 8: Sections 8.2, 8.2.1,8.2.2,8.3,8.4,8.5.1,8.5.3,8.6.1			
Books for Study		Allied Mathematics - Volume II by Prof.P. Duraipandian and Dr. S. Udayabaskaran, Muhil Publishers, Chennai .			
Books for Reference	1.	Allied Mathematics by A.Abdul Rasheed, Vijay Nicole Imprints Private Limited, Chennai			
	2.	Allied Mathematics by Dr.A.Singaravelu, Meenakshi Agency , Chennai			

Title of the Course/ Paper	Paper 1: NON-MAJOR ELECTIVE		L T P 2 0 0
Elective	Offered to other departments	Credit: 2 Sub. Code: UMA/NE/1CE1	
Course outline	Unit-I:	Problems on numbers, simplification, Average.	
	Unit-II:	Problems on ages, Surds and Indices, Percentage.	
	Unit-III	Simple interest, Inserting the missing characters.	
Books for Study		Quantitative Aptitude by R.S.Agarwal., S.Chand and Co. Ltd.	
Book for Reference		‘A Modern approach to verbal and non-verbal reasoning’ R.S.Agarwal., S.Chand Publishers	

Title of the Course/ Paper	Paper 2 : NON-MAJOR ELECTIVE		L T P 2 0 0
Elective	Offered to other departments	Credit: 2 Sub. Code: UMA/NE/2CE2	
Course outline	Unit-I:	H.C.F. and L.C.M., Decimal fractions, Square roots and cubic roots.	
	Unit-II:	Problems on Profit and Loss, Ratio and Proportion.	
	Unit-III	Time and work, Time and distance, Speed.	
Books for Study		Quantitative Aptitude by R.S.Agarwal., S.Chand and Co. Ltd.	
Books for Reference		‘A Modern approach to verbal and non-verbal reasoning’ R.S.Agarwal., S.Chand Publishers	

QUESTION PAPER PATTERN

DISTRIBUTION OF INTERNAL MARKS(25)

CAT-I	05 Marks
CAT – II	05 Marks
3 Hour Examination (Model)	05 Marks
Objective type questions	05 Marks
Seminar	05 Marks
Total	25 Marks

DISTRIBUTION OF EXTERNAL MARKS (75)

Section A	Answer any 10 out of 12 questions. (Each question carries 2 marks)
Section B	Answer any 5 out of 7 questions. (Each question carries 5 marks)
Section C	Answer any 3 out of 5 questions. (Each question carries 10 marks)
Total	75 Marks