

DAYANAND PG College, HISAR
Lesson Plan of Year 2021-2022(Odd Semester)
Department- Mathematics

Course Name- Algebra:CML-106/BAMH111

Programme Name-B.Sc(Non Med, Electronics, Comp. Science)/B.A. I

Teachers-Dr. Inderjit Singh,Mrs. Kanta,Ms Rekha,Mrs. Namrata SEM-I

Month	Week	Topic	Assignment/ Test
N O V	3rd	1.symmetric, skew symmetric	
	4th	2.Hermitian and skew-Hermitian.	
D E C	1st	1. Elementary operation on matrices, Rank of a matrix. Inverse of a matrix.	1st Assignment
	2nd	2. Linear dependence and independence of rows and columns of matrices, Row rank and column rank of a m	
	3rd	3. Eigen values, eigen vectors and the characterstic equation of a matrix, Minimal polynomial of a matrix.	
	4th	4. Cayley Hamilton theorem and its use in finding inverse of a matrix.	
J A N	1st	1. Application of matrices to a system of linear (both homogenous and non-homogenous) equations.	Minor Test
	2nd	2. Theorems on consistency of a system of linear equations	
	3rd	3. Unitary and Orthogonal Matrices,Bilinear and Quadratic forms.	
	4th	4 .Descarte's rule of signs,Relations between the roots and coefficients of general polynomial equation in one variable.	
F E B	1st	1.Solution of polynomial equations having conditions on roots,Common roots and multiple roots.	2nd Assignment
	2nd	2.Transformation of equations,Nature of the roots of an equation.	
	3rd	3.Descarte's rule of signs, Solution of cubic equations (Cardan's method).	
	4th	Revision , Test	

COURSE:CALCULUS:CML-107/BAMH112

Programme Name- B.Sc.(Non Med, Electronics, Comp. Science)/B.A I

Teacher-Ms. Kiran,Ms. Parul,Mr. Amit,Ms. Rekha Rani SEM-I

Month	Week	Topic	Assignment/ Test
NOV	3rd	Definition of the limit of a function, Basic properties of limits, Continuous functions and classification of discontinuity	
	4th	Differentiability, Successive differentiation.	
DEC	1st	Leibnitz theorem, Maclaurin and Taylor series expansions	1st Assignment
	2nd	Asymptotes in Cartesian coordinates, Intersection of curve and its asymptotes	
	3rd	Asymptotes in polar coordinates, Curvature	
	4th	Radius of curvature for Cartesian curves, parametric curves, polar curves, Newton's method	
JAN	1st	Radius of curvature for pedal curves, Tangential polar equations.	Minor Test
	2nd	Centre of curvature, Circle of curvature, Chord of curvature, evolutes	
	3rd	Tests for concavity and convexity, Point of inflexion, Multiple points, Cusps, nodes and conjugate points, Type of cusps	

	4th	Tracing of curves in Cartesian, parametric and polar co-ordinates.	
FEB	1st	Reduction formulae, Rectification.	2nd Assignment
	2nd	Intrinsic equations of curve, Quadrature (area) Sectorial area	
	3rd	Area bounded by closed curves., Volumes and Surfaces of solids of revolution	
	4th	Theorems of Pappu's and Guilden.	
		Revision	

COURSE: PRACTICAL IN PROGRAMMING IN C: CMP110/BAMH 113

Programme Name- B.Sc(Non Med, Electronics, Comp. Science)/B.A. I

Teacher- Dr. Inderjit Singh, Ms. Renu, Ms. Kiran Mr. Monu, Ms. Parul

SEM-I

Month	Week	Topics
NOV	3rd	Program To Calculate Simple Interest , Program to calculate Compound Interest .
	4th	Program To Calculate Arithmetic Mean Of Three Numbers
DEC	1st	Program To Calculate Area And Perimeter Of A Circle
		Program To Calculate Area Of Triangle By Heron's Formula
	2nd	Program To Check Whether The Number Is Odd or Even
		Program to Calculate Greatest Of Three Numbers
	3rd	Program To Find The Roots Of A Quadratic Equation
	Program to Reverse The Digits Of A Positive Number	
	4th	Program to Convert Decimal To Binary
JAN	1st	Program To Generate First n Prime Numbers
	2nd	Program to Check Whether The Number Is Prime or not
	3rd	Program To Check A Year Is Leap Or Not
	4th	Program To Find The Sum Of First n Natural Numbers
February	1st	Program to Generate Pyramid
	2nd	Program to find simple interest using switch statement
	3rd	Program to prepare Electricity Bill,
	4th	Program to Calculate Gross salary of an Employee
		Practical File Completion

COURSE NAME: NUMERICAL ANALYSIS: CML-307/BAMH202

PROGRAM NAME- B.Sc(Non Med, Electronics, Comp. Science)/B.A III

TEACHERS- Mr. Khawaish, Dr. Neeru Bala, Mr. Hitesh

SEM-III

Month	Week	Topic	Test/Assign.
NOV	3rd	Finite difference operators and their relation , finding the missing terms and effect of error in a difference tabular values	
	4th	interpolation with equal intervals : Newton 's forward and backward interpolation formulae	
DEC	1st	Newton's divided difference, Lagrange's interpolation formulae , Hermite formulae	Assignment
	2nd	central difference : Gauss forward and backward interpolation formulae, Sterling , Bessel formulae	
	3rd	Binomial , Poisson , normal distribution, Numerical differentiation	
	4th	Eigen value problems : Power method , Jacobi's method, Given's method,	
	1st	Numerical Integration: Newton -Cote's formula, trapezoidal rule , Simpson's rule	

J	2nd	Gauss quadrature formula, chebychev formula	
A	3rd	Numerical solution of ordinary differential equations: single step method	Minor Test.
N	4th	,picards method ,taylor series method	
.	4th	Euler 's method ,runge-kutta method	
F	1st	Multiple step methods, Predictor-Corrector method	
E	2nd	Modified Euler's method, Milne simpson's method	
B	3rd	Revision, Group Discussion	
B	4th	Test	

Course Name- Advanced Calculus- CML306/BAMH201

Programme Name- B.Sc.(Non Med, Electronics, Comp. Science), B.A II

Teacher- Ms. Parul, Ms. Renu, Mr. Mandeep

SEM-III

Month	Week	Topic	Test/Assign.
N O V	3rd	Continuity, Sequential continuity, properties of continuous functions, Uniform continuity.	
	4th	Chain rule of differentiability, Mean value theorems, Rolle's theorem and Lagrange's mean value theorem and their geometrical interpretations.	
D E C	1	Taylor's theorem with various form of remainders.	Assignment
	2nd	Darboux intermediate value theorem for derivatives, Indeterminate forms.	
	3rd	Limit and continuity of real valued functions of two variables.	
	4th	Partial differentiation, Total differentials.	
J A N	1st	Composite functions and implicit functions, Change of variables, Homogeneous functions.	Test
	2nd	Euler's theorem on homogeneous functions, Taylor's theorem for functions of two variables.	
	3rd	Differentiability of real valued functions of two variables. Schwarz and Young's theorem, Implicit function theorem.	
	4th	Maxima, Minima and saddle points of two variables. Lagrange's method of multipliers	
F E B	1st	Curves: Tangents, Principal normals, Binormals.	Assignment
	2nd	Serret-Frenet formulae, Locus of the centre of curvature. Spherical curvature	
	3rd	Locus of centre of Spherical curvature. Involutives, Evolutives, Bertrand curves.	
	4th	Revision and Group Discussion	

Course Name- Maths Lab-III-CMP310/BAMH203

Programme Name- B.Sc.(Non Med, Electronics, Comp. Science), B.A II

Teacher- Dr. Neeru Bala, Mr. Vikas, Ms. Kanta, Mr. Amit, Ms. Rekha Rani, Mr. Hitesh

Month	Week	Topic
S E P T	3rd	To interpolate the data using Newton's forward interpolation formula
	4th	To interpolate the data using Newton's backward interpolation formula
O C	1st	To interpolate the data using Gauss's forward interpolation formula
	2nd	To interpolate the data using Gauss's backward interpolation formula
	3rd	To interpolate the data using Lagrange's interpolation formula

T	4th	To find the roots of algebraic and transcendental equations using Bisection method
N O V	1st	To find the roots of algebraic and transcendental equations using Regula-Falsi method.
	2nd	To find the roots of algebraic and transcendental equations using Secant method.
	3rd	To find the roots of algebraic and transcendental equations using Newton-Raphson's method.
	4th	To solve the system of linear equations using Gauss -elimination method.
D E C	1st	To solve the system of linear equations using Gauss -Seidal iteration method.
	2nd	To solve the system of linear equation using Gauss –jordan method.
	3rd	To find the largest eigen value of a matrix by Power -method.
	4th	To integrate numerically using Trapezoidal rule.
J A N	1st	To integrate numerically using Simpson's one- third rule.
	2nd	To integrate numerically using Simpson's three-eighth rule.
	3rd	To find numerical solution of ordinary differential equations by Euler's method/ Modified Euler's method.
	4th	To find numerical solution of ordinary differential equations by Runge -Kutta method.

Course Name- Groups & Rings:CML-506/BAMH301

Programme Name- BA/BSc.(Non Med, Electronics, Comp. Science) III

TEACHERS- Mr. Vikas,Mrs. Namrata, Mr. Hitesh

SEM-V

Month	Week	Topic	Assignment/ Test
S E P	3rd	Definitions of a Group, Examples of Abelian and Non Abelian groups.	
	4th	The group Z_n of integers under addition modulo n & group $U(n)$, Cyclic Groups	
O C T	1st	Subgroups and Criteria, Cosets and Properties	1st Assignment
	2nd	Index of Subgroup, Coset decomposition, Lagrange's Theorem and its Consequences	
	3rd	Normal Subgroups,	
	4th	Quotient Groups, Homomorphisms	
N O V	1st	Isomorphisms, Automorphisms on Group,	Minor Test
	2nd	Permutation Groups, Alternating Groups	
	3rd	Centre of a group, Class equation of group, Introduction to Rings.	
	4th	Subrings, Integral Domains and Fields.	
D	1st	Characteristics of Ring , Ideals(Principle, Prime and Maximal)	
	2nd	Ring Homomorphism, Theorem on Ring Homomorphism	

D E C	2nd	Ring Homomorphism, Isomorphism on Ring Homomorphism	2nd Assignment
	3rd	Quotient Rings, Field of Quotients of an Integral Domain,	
	4th	Euclidean Ring	
J A N	1st	Polynomial Rings, Polynomial over Rational Field,	Revision Tests
	2nd	Eisenstein Criteria of Irreducibility	
	3rd	PID, UFD	
	4th	Test & Revision	

COURSE:SEQUENCES AND SERIES:CML-507/BAMH302

PROGRAM NAME-B.Sc(Non Med, Electronics, Comp. Science)/B.A III

TEACHERS - Mr. Vikas,Ms. Kiran,Mr. Vinesh

SEM-V

Month	Week	Topic	Test/Assign.
N O V	3rd	Topology of real numbers:boundedness,infimum,supremum,limit points,neighbourhoods	
	4th	interior points,open sets,closed sets,closure of a set	
D E C	1st	Sequences: real sequences and their convergence,theorems on limits of sequences	Assignment
	2nd	bounded and monotononic sequences,cauchy's sequences,subsequences	
	3rd	convergence and divergence of infinite series ,comparison tests,cauchy's general principle of convergence	
	4th	convergence and divergence of geometric series,hyperharmonic series ,	
J A N	1st	Rabbe's test ,De morgan test,gauss test, cauchy's nth root and condensation test	
	2nd	Alternating series ,Arbitrary series	
	3rd	Fourier's series,Dirichlet's conditions,parseval's identity for fourier series	
	4th	Fourier's series for even and odd functions,half range series,change of intervals	
F E B	1st	Riemann's integral,darboux's theorem,integrability of continuous,monotonic functions and discontinuous functions	
	2nd	The fundamental theorem of integral calculus, mean value theorems of in	
	3rd	Revision,Group Discussion	
	4th	Test	

Course -Number Theory & Trigonometry:CML-508/BAMH303

Programme Name- B.A/BSc.(Non Med, Electronics, Comp. Science)III

Teachers- Mr. Monu,Mr. Naresh,Mr. Vinesh

SEM-V

Month	Week	Topic	Test/Assign.
S P E T	3rd	Primes, Fundamental Theorem of Arithmetic	
	4th	Linear Diophantine equations in two variables.	
	1st	Linear Congruences	
	2nd	Femat's theorem, Wilson's theorem and its converse.	

O C T .	3rd	Divisibility, G.C.D.(Greatest Common Divisors), L.C.M.(Least Common Multiple).	Assignment
	4th	The number of divisors and the sum of divisors of a natural number n (The functions $d(n)$ and $s(n)$).	
N O V .	1st	Complete Residue System and Reduced Residue System modulo m , Euler ϕ function.	Test
	2nd	Euler's Generalization of Fermat's theorem,	
	3rd	Chinese Remainder Theorem, Quadratic Residues.	
	4th	Moebius Function and Moebius Inversion Formula.	
D E C .	1st	Lengendre Symbols, Lemma of Gauss	
	2nd	Gauss Reciprocity law, Greatest integer function $[x]$.	
	3rd	Expansion of trigonometrical functions. Direct circular and their properties.	
	4th	Hyperbolic functions and their properties.	
J A N .	1st	Inverse circular and hyperbolic functions and their properties, Logarithm of a complex quantity.	Assignment
	2nd	Gregory's series, Summation of trigonometric series.	
	3rd	Revision, Group Discussion	
	4th	Test	

Course Name-Business Mathematics-I:BC-105

Programme Name- BCom. I

Teachers-Ms. Renu, Ms. Rekha Rani

Sem-I

Month	Week	Topics	Assignment/Test
N O V	3rd	Logarithm	
	4th	Anti-logarithm	
D E C	1st	Arithmetic Progression	1st Assignment
	2nd	Geometric Progression	
	3rd	Simple derivative of different functions	
	4th	Rules of differentiation	
J A N	1st	Maxima and Minima of functions of one variable.	Minor Test
	2nd	Definition and Types of matrix.	
	3rd	Algebra of matrices, Properties of determinant.	
	4th	Adjoint of matrices, Elementary row and column operation, Finding inverse of matrices.	
F E B	1st	Solution of a system of linear equations having unique solution and involving not more than three variables.	2nd Assignment Revision Tests
	2nd	Certain different types of interest rates. Concept of present value And amount of sum.	
	3rd	Types of annuities, Present value and amount of an annuity.	
	4th	Valuation of simple loans and debentures, Problems relating to sinking funds.	

PROGRAMME NAME-B.B.A I

COURSE NAME:ELEMENTS OF BUSINESS MATHEMATICS:BBA-105

TEACHER-Mr. Hitesh

SEM-I

Month	Week	Topic	Test/Assign.
N O	3rd	Theory of sets- Meaning ,elements,types ,presentation and equality of sets	

U V	4th	Union ,intersection, complement and difference of sets ,venn diagram	
D E C	1st	Cartesian product of two sets ,application of set theory	Assignment
	2nd	Indices and logarithms ,arithmetic and geometric progressions and their bussiness applications	
	3rd	Sum of first n natural numbers, sum of squares and cubes of first n natural number	
	4th	Permutations	
J A N	1st	Combinations	Minor test
	2nd	Binomial theorem ,Quadratic equations	
	3rd	Matrices-Types,Properties,Addition,Multiplication,Transpose,Inverse	
	4th	Properties of determinants, solution of simultaneous linear equation	
F E B	1st	Differentiation and Integration	
	2nd	Bussiness application of Matrices	
	3rd	Revision,Group Discussion	
	4th	Test	

Programme Name-M.Sc. I
Teacher- Mr. Vikas

Course Name- Algebra-MAL:511
Sem-I

Month	Week	Topic	Assignment/ Test
N O V	3rd	Zassenhaus's lemma,normal and subnormal series, composition series	
	4th	Scheiers theorem ,Jordan -Holder theorem, commutators and their prop	
D E C	1st	Three subgroup lemma of P.Hall,central series, nilpotent groups	Assignment
	2nd	Upper and Lower central series and their properties ,invariant and chief series	
	3rd	Solvable groups , derived series , field theory ,Prime fields	
	4th	Extension fields,Algebraic and Transcendental extensions and their theorems	
J A N	1st	Algebraically closed field,Conjugate elements	Minor Test
	2nd	Normal extensions ,Separable and Inseparable extensions	
	3rd	Perfect fields,Construction with ruler and compass	
	4th	Finite Fields, Roots of unity ,Cylotomic polynomial , Primitive elements	
F E B	1st	Automorphisms of extensions ,Galois extension ,Fundamental theorem of Galois theory	
	2nd	Solutions of polynomial equations by radicals ,insolvability of the general equation of degree five by radicals	
	3rd	Group Discussion, Revision	
	4th	Doubt session	

Programme Name-M.Sc. I
Teacher-Mr. Monu

Course Name- Real Analysis-MAL:512
Sem-I

Month	Week	Topic	Assignment/ Test
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N O V	3rd	Definition and existence of Reimann-Stieltjes integral ,properties of the integral , Integration and differentiation	
	4th	Fundamental theorem of calculus ,integration of vector valued function	
D E C	1st	Sequences and series of function , pointwise and uniform convergence, cauchy criterion for uniform convergence	Assignment
	2nd	Weierstrass M-Test, Abel's and Dirichlet's tests , Uniform convergence and continuity	
	3rd	Uniform convergence and Reimann-Stieltjes Integration ,Weierstrass Approximation theorem	
	4th	Power series, Uniqeness theorem for power series , Abel's Theorems	
J A N	1st	Functions of several variables, linear transformations,derivatives in an open subset,partial derivatives,derivatives of higher orders	Minor Test
	2nd	Taylor's theorem,Inverse function theorem,Implicit function theorem,Jacobians,Lagrange'smultiplier method	
	3rd	extremum problems with constraints,Set functions	
	4th	Intuitive idea of measure ,Elementary properties of measure ,Measurable sets and their fundamental properties	
F E B	1st	Lebesgue measure of sets of real numbers,algebra of measurable sets, Borel sets	
	2nd	Equivalent formulation of measurable sets in tems of open ,closed,Non Measurable sets	
	3rd	Group Discussion, Revision	
	4th	Doubt session	

Programme Name-M.Sc. I
Teacher-Mr. Khawaish

Course Name- MECHANICS-MAL:513
SEM-I

Month	Week	Topic	Assignment/ Test
N O V	3rd	Moments and products of Inertia,Theorems of parallel and perpendicular axes,principal axes	
	4th	The momental ellipsoid,Equipomental systems,Coplanar distributions,G	
D E C	1st	Holonomic and non holonomic systems,Scleronomic and Rheonomic systems,Lagrange's equations for a holonomic system	Assignment
	2nd	Lagrange's equations for a conservative and impulsive forces,Kinetic energy as quadratic function of velocities,Generalized potential,Hamilton's variables	
	3rd	Hamilton's variables , Donkin's theorem,Hamilton canonical equations,Cyclic coordinates,Routhj's equations,Jacobi-Poisson theorem	
	4th	Hamilton's Principle ,Principle of least action,Poincare Cartan integral invariant,Whittaker's equations,Hamilton-Jacobi equation,method of seperation of variables	

J A N	1st	Lagrange's brackets, condition of canonical character of transformation in terms of Lagrange brackets and poisson brackets	Minor Test
	2nd	Invariance of Lagrange brackets and poisson brackets under canonical transformations	
	3rd	Gravitation : Attraction and potential of rod ,disc,spherical shells and sp	
	4th	Laplace and Poisson equations ,Work done by self attracting systems	
F E B	1st	Distributions for a given potential ,Equipotential surfaces ,surface and solid harmonics	
	2nd	surface density in terms of surface harmonics	
	3rd	Group Discussion, Revision	
	4th	Doubt session	

Programme Name-M.Sc. I
Teacher- Mrs. Namrata

COURSE NAME: ORDINARY DIFFERENTIAL EQUATIONS-MAL:514
SEM-I

Month	Week	Topic	Assignment/ Test
N O V	3rd	Initial value problem and the equivalent integral equation, ε -approximate solution,Cauchy -Euler construction of an ε -approximate solution,Ascoli-Arzela theorem	
	4th	Cauchy-Peano existence theorem ,Lipschitz condition,Picard-Lindelof the	
D E C	1st	solution of initial-value problems by Picard method,Approximate methods of solving first-order equations:Power series method ,Numerical methods	Assignment
	2nd	Continuation of solutions,maximum interval of existence,Extension theorem,Dependence of solutions on initial conditions	
	3rd	Matrix method for homogeneous first order systems,nth order equations	
	4th	Total differential equations:Conditions of integrability , methods of solution	
J A N	1st	Gronwall's differential inequality ,comparison theorems involving differential inequalities	Minor Test
	2nd	Zeroes of solutions,Sturms seperation and comparison theorems, Oscillatory and non oscillatory equations	
	3rd	Riccati's equations and its solution,Pruffer transformation	
	4th	Sturm-Liouville boundary value problems	
F E B	1st	Lagrange's identity and green's formula for second order equation	
	2nd	properties of eigen values and eigen functions	
	3rd	Group Discussion, Revision	
	4th	Doubt session	

Programme Name-M.Sc. I
Teacher- Mr. Naresh

COURSE NAME: COMPLEX ANALYSIS-I-MAL:515
Sem-I

Month	Week	Topic	Assignment/ Test
N O V	3rd	Cauchy Riemann equations,Analytic functions,Reflection principle	
	4th	Complex Integration ,Antiderivatives,Cauchy-Goursat theorem	
D E C	1st	Simply and multiply connected domains,Cauchy Integral formula,Higher order derivatives	Assignment
	2nd	Morera's theorem,Cauchy's inequality,Liouville's theorem	
	3rd	The fundamental theorem of Algebra,Maximum Modulus principle,Schwarz lemma	
	4th	Poisson's formula,Taylor's series, Laurent's series	
J A N	1st	Isolated singularities, Meromorphic functions,Argument principle	Minor Test
	2nd	Rouche's theorem, Residues , Cauchy's residue theorem	
	3rd	Evaluation of integrals,Mittag-Leffler's expansion theorem	
	4th	Branches of many valued functions with special reference to $\arg z$, $\log z$	
F E B	1st	Bilinear transformations,their properties and classification	
	2nd	Examples of conformal mapping	
	3rd	Group Discussion, Revision	
	4th	Doubt session	

Programme Name-M.Sc. I
Teacher- Mr. Mandeep

COURSE NAME: PROGRAMMING WITH FORTRAN (THEORY)-MAL:516
Sem-I

Month	Week	Topic	Assignment/ Test
N O V	3rd	Computer Programming in FORTRAN 90/95:Numerical constants and variables,arithmetic expressions ,implicit declaration,named constants,input/output	
	4th	list directed input /output statements,Format specifications	
D E C	1st	Declaration including KIND specifications,use of complex variables	Assignment
	2nd	Logical expressions and control flow,conditional flow,IF structure,Block DO loop	
	3rd	Counted controlled loops,arrays, input/output of arrays,arrays with variable size using ALLOCATABLE statement	
	4th	arrays handling functions,multidimensional arrays	
J A N	1st	Strings ,declaration of character variables,character handling functions	Minor Test
	2nd	operators on strings,Subprograms,Types of Subprograms	
	3rd	Significance functions,subroutines,procedures with array arguments,Rec	
	4th	Derived types,Elements of derived type, arrays and derived type Processing files	
F E B	1st	Sequential file,Direct Access file,creating and closing a file	
	2nd	Pointers and Accessing elements using pointers with example	
	3rd	Group Discussion, Revision	
	4th	Doubt session	

Programme Name- MScI

COURSE :PROGRAMMING WITH FORTRAN (PRACTICAL)-MAL:517

Teacher- Mr. Mandeep

SEM-I

Month	Week	Topics
N O V	3rd	Program To find area of circle
	4th	Program to find area of triangle by Heron's formula
D E C	1st	Program To check leap year
		Program To find sum of digits of a number
	2nd	Program To find sum of sine series
		Program to Calculate Greatest Of Three Numbers
	3rd	Program To Find The Roots Of A Quadratic Equation
		Program to generate Fibonacci Series
J A N	4th	Program to find sum of cosine series
	1st	Program to find the sum of matrix
	2nd	Program to Check Whether The Number Is Prime or not
	3rd	Program To find transpose of a matrix
F E B	4th	Program To Find The trace of a matrix
	1st	Program to find product of matrix
	2nd	Program to generate first n prime numbers
	3rd	Revision

Programme Name-M.Sc. II

COURSE NAME: TOPOLOGY-MAL631

Teacher- Ms. Renu

Sem-III

Month	Week	Topic	Assignment/ Test
N O V	3rd	Definitions and examples of topological spaces,Closed sets,Closure,Dense subsets,Neighbourhoods,Interior ,Exterior and boundary points of a set	
	4th	Accumulation points and derived sets,Bases and subbases,Subspaces	
D E C	1st	Alternate methods of defining a topology in terms of Kuratowski Closure operator and neighbourhood systems,continuous functions and homeomorphisms	Assignment
	2nd	Compactness,Continuous functions and compact sets ,basic properties of compactness ,compactness and finite intersection property	
	3rd	Sequentially and countably compact sets ,Local compactness and one point compactification	
	4th	Compactness in metric spaces ,Equivalence of compactness ,countable compactness and sequential compactness in metric spaces	
J A N	1st	Connected spaces ,Connected spaces on the real line ,Components,Locally connected spaces	Minor Test
	2nd	First and second Countable spaces ,Lindelof's theorem,Seperable spaces ,Second countabilityand searability	
	3rd	Seperation axioms, T_0 , T_1 and T_2 spaces, Their characterisation and prope	
	4th	Regular and normal spaces ,Urysohn's Lemma , T_3 and T_4 spaces ,complete regularity and normality	

F E B	1st	Product topological spaces ,Projection topological spaces ,Projection mapping	
	2nd	Tychonoff product topology in terms of standard sub base and its characterisations	
	3rd	Group Discussion, Revision	
	4th	Doubt session	

Programme Name-M.Sc. II
Teacher- Ms. Kiran

COURSE NAME: PARTIAL DIFFERENTIAL EQUATIONS-MAL632
Sem-III

Month	Week	Topic	Assignment/ Test
N O V	3rd	Solution of Partial Differential Equations Transport Equation -Initial value Problem	
	4th	Non -homogeneous Equation,Laplace's Equation - Fundamental solution	
D E C	1st	Mean value formulas ,Properties of Harmonic functions ,Green's function, Energy methods	Assignment
	2nd	Wave Equation -solution by spherical means ,Non -homogeneous equations	
	3rd	Energy methods ,Poisson's formula,Kirchoff's formula	
	4th	D.Alembert's formula ,uniqueness of solution domain of dependence of solution	
J A N	1st	Heat Equation-Fundamental solution,Solution of initial value problem ,Non homogeneous equation	Minor Test
	2nd	Mean value formula , Nonlinear First order PDE - Complete Integrals,Envelopes,Characteristics	
	3rd	Hamilton -Jacobi Equations,Hamilton's ODE ,Hopf-Lax formula,Weak sol	
	4th	Representation of solutions- Seperation of variables,Similarity solutions	
F E B	1st	Fourier and Laplace Transform ,Hopf-Cole transform	
	2nd	Hodograph and Legendre Transforms,Potential functions	
	3rd	Group Discussion, Revision	
	4th	Doubt session	

Programme Name-M.Sc. II
Teacher- Mr. Mandeep

COURSE NAME: MECHANICS OF SOLIDS-I-MAL633
Sem-III

Month	Week	Topic	Assignment/ Test
N O V	3rd	Cartesian Tensor: Coordinate transformation,Cartesian Tensor of different order ,Sum or difference and product of two tensors,Contraction theorem,Kroneckor tensor,alternate tensor	

	4th	Scalar invariant of second order tensor, Quotient law	
D E C	1st	symmetric and skew symmetric tensors, Eigen values & vector of a symmetric second order tensor, gradient, divergence, curl of a tensor field	Assignment
	2nd	Analysis of strain: affine transformations, infinitesimal affine deformation, Geometrical interpretation of the components of strain	
	3rd	Strain quadric of cauchy, principal strains and invariants, General infinitesimal deformation, Saint-Venant's equations of compatibility	
	4th	Analysis of stress: Stress tensor, equations of equilibrium, transformation of coordinates	
J A N	1st	Stress of quadric of cauchy, principal stress and invariants	Minor Test
	2nd	Maximum normal and shear stresses	
	3rd	Equations of elasticity: Generalised Hooke's law, homogenous isotropic r	
	4th	Elastic moduli for isotropic media, equilibrium and dynamic equations for an isotropic elastic solid	
F E B	1st	Strain energy function and its connection with Hooke's law	
	2nd	Beltrami-Michell compatibility equations, Saint-Venant's principle	
	3rd	Group Discussion, Revision	
	4th	Doubt session	

COURSE: COMPUTING LAB II (MATLAB PROGRAMMING & APPLICATIONS)-MAP634

Programme Name-M.Sc. II

Teacher- Mr. Amit

Sem-III

Month	Week	Topic	Assignment/ Test
N O V	3rd	User defined functions and function files: Main features of a function file, saving a function file, using a user defined function, comparison between script files and function files	
	4th	Anonymous and Inline functions, using function handles for passing a fu	
D E C	1st	Using a function name for passing a function into a function, sunfunctions, nested functions	Assignment
	2nd	Polynomials : Value of a polynomial, roots of a polynomial, addition, multiplication and division of polynomial, derivatives of polynomials	
	3rd	Curve fitting with polynomials, the polyfit function, curve fitting with functions other than polynomials	
	4th	Applications in numerical analysis: Solution of an equation with one variable, numerical integration, ordinary differential equations	
J A N	1st	Three dimensional plots : Line plots, mesh and surface plots, plots with special graphics, the view command	Minor Test
	2nd	Symbolic math: Solving algebraic equations, differentiation, integration, solving an ODE	
	3rd	Plotting symbolic expressions, numerical calculations with symbolic expr	

	4th	Numerical methods-Interpolation:Lagrange's interpolation formula, Newton Gregory Forward and backward interpolation formula	
F E B	1st	Solution of a system of linear equations:Gauss Elimination method,Gauss Jordan method	
	2nd	Solution of ordinary differential equations:Euler's method, Euler's Modified method,Runge-Kutta 2nd & 4th order method	
	3rd	Group Discussion, Revision	
	4th	Doubt session	

Programme Name-M.Sc. II
Teacher- Mrs. Kanta

COURSE NAME: ANALYTIC NUMBER THEORY-MAL635
Sem-III

Month	Week	Topic	Assignment/ Test
N O V	3rd	Primes in certain arithmetical progression, Fermat numbers	
	4th	Mersenne numbers, Approximation of irrational numbers by rationals	
D E C	1st	Hurwitz's theorem, Irrationality of e & π	Assignment
	2nd	System of linear congruences Chinese remainder theorem, Quadratic residues and non-residues	
	3rd	Legendre's Symbol, Gauss Lemma and its applications	
	4th	Quadratic law of reciprocity Jacobi's symbol	
J A N	1st	Riemann Zeta function $\xi(s)$ and its convergence, application in prime numbers	Minor Test
	2nd	$\xi(s)$ as Euler's product, evaluation of $\xi(2)$ and $\xi(2k)$, Dirichlet series with simple properties, Introduction to modular function	
	3rd	Dirichlet series as analytic function & its derivative,Euler's products	
	4th	Euler's summation formula and some elementary asymptotic formula,Average order of the arithmetical functions $d(n)$, $\sigma_a(n)$, $\phi(n)$, $\mu(n)$ and $\Lambda(n)$	
F E B	1st	Partial sums of a Dirichlet product and their application to $\mu(n)$ and $\Lambda(n)$, Chebyshev's functions $\Psi(x)$ and $\psi(x)$ and relation between them	
	2nd	Shapiro's Tauberian theorem and its applications, partial sums of the Mobius function, Selberg's asymptotic formula	
	3rd	Group Discussion, Revision	
	4th	Doubt session	

Programme Name-M.Sc. II
Teacher- Mr. Amit

COURSE NAME: ADVANCED DISCRETE MATHEMATICS-MAL637
SEM-III

Month	Week	Topic	Assignment/ Test
N O V	3rd	Formal Logic - Statements, Symbolic, Representation and Tautologies, Quantifiers	
	4th	Proposition Logic. Lattices - Lattices as partially ordered sets, Their properties, Lattices as Algebraic systems	

D E C	1st	Some special Lattices, e.g., complete, complemented and Distributive Lattices.	Assignment
	2nd	Sets Some Special Lattices e.g., Bounded, Complemented & Distributive Lattices.	
	3rd	Boolean Algebra - Boolean Algebra as Lattices, Various Boolean Identities,	
	4th	The Switching Algebra example, Join - irreducible elements, Atoms and Minterms, Boolean Forms and Their Equivalence, Minterm Boolean Forms,	
J A N	1st	Sum of Products canonical Forms, Minimization of Boolean Functions, Applications of Boolean Algebra to Switching Theory	Minor Test
	2nd	Graph Theory - Definition of Graphs, Paths, Circuits, Cycles and Subgraphs, Induced Subgraphs, Degree of a vertex, Connectivity,	
	3rd	Planar Graphs and their properties, Euler's Formula for Connected Planar Graph, Complete and Complete Bipartite Graphs	
	4th	Trees, Spanning Trees, Minimal Spanning Trees, Matrix Representation of Graphs	
F E B	1st	Euler's theorem on the Existence of Eulerian Paths and circuits, Directed Graphs, Indegree and outdegree of a vertex,	
	2nd	Weighted undirected Graphs, Strong Connectivity and Warshall's Algorithm, Directed Trees, Search Trees, Tree Traversals.	
	3rd	Group Discussion, Revision	
	4th	Doubt session	

Programme Name- MScII
Teacher- Mr. Mandeep

COURSE :PROGRAMMING WITH MATLAB (PRACTICAL)-MAP634
SEM-III

Month	Week	Topics
N O V	3rd	Program for calculating roots, polynomial value at a point
	4th	Program to find addition, multiplication and division
D E C	1st	Program To find derivative of a polynomial
		Program for solving a non-linear equation
	2nd	Program To find maximum and minimum values of a polynomial
	3rd	Program To calculate numerical integration of function
		Program to fit a polynomial of degree three & plot it
4th		Program for curve fitting with function other than polynomials
J A N	1st	Program to find value of y between points using interpolation
	2nd	Program to find coordinates x, y, z are given as function of parameter t
	3rd	Program To convert temperature from Fahrenheit to Celsius
	4th	Program To solve ODE using Euler's method
F E B	1st	Program to solve the function using Runge Kutta method
	2nd	Program to solve a 1st order ordinary differential equation
	3rd	Revision

Programme Name-BCA I
Teacher- Mrs. Namrata

COURSE: ELEMENTS OF MATHEMATICAL FOUNDATIONS-BCA-PC(L)112
SEM-I

Month	Week	Topic	Assignment/ Test
N O V	3rd	Sets, subsets and operations on sets	
	4th	Venn-Diagram of sets, power sets, equivalence relations on sets	
D E C	1st	Partition of a sets, partially ordered sets, boolean algebra	1st Assignment
	2nd	Basic properties of limits, continuous functions and classification of discontinuities	
	3rd	Derivatives of a functions, derivatives of logarithmic, exponential, trigonometric, inverse trigonometrically and hyperbolic functions	
	4th	higher order derivatives	
J A N	1st	Addition , multiplication of matrices, laws of matrix algebra	Minor Test
	2nd	Singular and non singular matrices , inverse and rank of a matrix	
	3rd	Rank of the product of two matrices , system of linear equation	
	4th	Characteristic equations of a square matrix, Cayley Hamilton theorem	
F E B	1st	Eigen values and eigen vectors	2nd Assignment
	2nd	Eigen values and eigen vectors of symmetric and skew-symmetric, hermitian and skew-hermitian	
	3rd	Group Discussion, Revision	
	4th	Doubt session	

Even Semester

COURSE-ORDINARY DIFFERENTIAL EQUATIONS & LAPLACE TRANSFORMS-CML206/BAMH121

Programme Name-B.Sc(Non Med, Electronics, Comp. Science) /B.A I

Teachers-Dr. Inderjit Singh, Mrs. Kanta, Ms. Namrata, Ms. Rekha Rani

SEM-II

Month	Week	Topic	Assignment/ Test
M A Y	1st	Geometrical meaning of a differential equation. Exact differential equations, integrating factors.	1st Assignment
	2nd	First order higher degree equations solvable for x, y, p Lagrange's equations,	
	3rd	Clairaut's equations. Equation reducible to Clairaut's form. Singular solutions.	
	4th	Orthogonal trajectories: in Cartesian coordinates and polar coordinates. Self orthogonal family of curves.	
J U N E	1st	Linear differential equations with constant coefficients.	Minor Test
	2nd	Homogeneous linear ordinary differential equations. Equations reducible to homogeneous.	
	3rd	Linear differential equations of second order. Reduction to normal form.	
	4th	Transformation of the equation by changing the dependent variable/ the independent variable.	
J	1st	Solution by operators of non-homogeneous linear differential equations.	
	2nd	Reduction of order of a differential equation. Method of variations of	

U L Y	2 nd	parameters.	2nd Assignment
	3 rd	Laplace transform of derivatives and integrals, Differentiation and integration of Laplace transforms, Convolution theorem	
	4 th	Revision	

Course Name- VECTOR CALCULUS AND GEOMETRY: CML 207/BAMH122

Programme Name-B.Sc(Non Med,Electronics,Comp. Science) /B.A I

Teachers-Ms. Kiran, Ms. Parul, Ms. Ritu,Ms. Rekha Rani

SEM-II

Month	Week	Topic	Test/Assign.
M A Y	1st	Scalar and vector product of three vectors, product of four vectors. Reciprocal vectors.	Assignment
	2nd	Vector differentiation Scalar Valued point functions, vector valued point functions, derivative along a curve, directional derivatives. Gradient of a scalar point function, geometrical interpretation of $\text{grad } \phi$.	
	3rd	Divergence and curl of vector point function. Gradient, divergence and curl of sums and product and their related vector identities. Laplacian operator.	
	4th	Vector integration: Indefinite Integral, Definite Integral, Standard results of Integration.	
J U N E	1st	Line integral, Surface integral, Volume integral. Gauss Divergence Theorem, Divergence Theorem in Cartesian Co-ordinates, Green Theorem, Stoke's Theorem(Relation between line Integral Surface Integral).	Test
	2nd	Stoke's Theorem in Cartesian form. Green's Theorem in Plane as special case of Stoke's Theorem.	
	3rd	General equation of second degree. Tracing of conics, System of conics, confocal conics. Tangent a any point to the conic, chord of contact,	
	4th	pole of line to the conic, director circle of conic, Polar equation of a conic, tangent and normal to the conic.	
J U L Y	1st	Sphere: Plane section of a sphere. Sphere through a given circle.	Assignment
	2nd	Intersection of two spheres, radical plane of two spheres. Co-axial system of spheres, Cones: Right circular cone. Enveloping cone and reciprocal cone.	
	3rd	Cylinder: Right circular cylinder and enveloping cylinder.	
	4th	Test and Revision	

COURSE: MATHEMATICS LAB-II-CMP210/BAMH213

Programme Name-B.Sc(Non Med,Electronics,Comp. Science) /B.A I

Teachers-Dr. Inderjit Singh, Ms. Renu, Ms. Kiran, Mr. Amit Kumar, Ms. Parul, Mr. Hitesh

SEM-II

Month	Week	Topic
M	1st	Program to add two matrices.
	2nd	Program to multiply two matrices.

M A Y	2nd	Program to multiply two matrices.
	3rd	Program to find the inverse of a matrix.
	4th	Program to find transpose of a matrix.
J U N E	1st	Program to find the sum of a series. Trigonometric series: $\sin(x)$, $\cos(x)$, $\tan(x)$, etc.
	2nd	Program to sort an entire array using bubble sort
	3rd	Program to find trace of 3X3 Matrix.
	4th	Program to find largest of three numbers using function.
J U L Y	1st	Program to find factorial of a number using recursion, Program to generate n fibonacci terms using recursion.
	2nd	Program to count number of vowels and consonants in a given sentence.
	3rd	Program to print a salary chart for employee of a company.
	4th	Practical File Completion

Course- Partial Differential Equations And Special Functions-CML406/BAMH204

Programme Name-B.Sc(Non Med,Electronics,Comp. Science) /B.A II

Teachers-Mr. Mandeep, Ms.Renu, Mr.Amit Kumar,Ms. Parul

SEM-IV

Month	Week	Topic	Assignment/ Test
A P R I L	1st	Partial differential equations: Formation, order and degree, Linear and Non-Linear Partial differential equations of the first order	1st Assignment
	2nd	Complete solution, singular solution, General solution, Solution of Lagrange's linear equations,	
	3rd	Charpit's general method of solution. Compatible systems of first order equations, Jacobi's method.	
	4th	Linear partial differential equations of second and higher orders, Linear and non-linear homogeneous and nonhomogeneous equations with constant	
M A Y	1st	Partial differential equation with variable coefficients reducible to equations with constant coefficients, their complimentary functions and particular	Minor Test
	2nd	Method of separation of variables: Solution of Laplace's equation, Wave equation (one and two dimensions), Diffusion (Heat) equation (one and two	
	3rd	Classification of linear partial differential equations of second order, hyperbolic, parabolic and elliptic types	
	4th	Reduction of second order linear partial differential equations to Canonical (Normal) forms and their solutions, Solution of linear hyperbolic equations	
J U N E	1st	Legendre function and its properties-Recurrence Relations and generating functions.Characteristic equations and characteristic curves of second order	2nd Assignment
	2nd	Class Discussion, Test & Revision	

COURSE NAME:MECHANICS-I-CML407/BAMH205

Programme Name-B.Sc(Non Med,Electronics,Comp. Science) /B.A II

TEACHERS-Dr.Neeru Bala,Mr.Khawaish,Mr.Hitesh

SEM-IV

Month	Week	Topic	Assignment/ Test
A P R I L	1st	Forces in two dimension, triangle law and polygon law of forces, lami's theorem, condition of equilibrium of concurrent forces	1st Assignment
	2nd	Parallel forces, Resultant and centre of parallel forces, moments	
	3rd	Couples, forces in three dimension, Poinsot's central axis, equation of central axis, wrenches	
	4th	Resultant wrench of two wrenches, locus of the central axis of the wrenches, null lines and null planes	
M A Y	1st	Velocity and acceleration along a plane curve, component of velocity and acceleration in radial, transverse, tangential and normal direction	Minor Test
	2nd	Relative velocity and acceleration, simple harmonic motion	
	3rd	Newton's laws of motion	
	4th	Central orbits, differential equation of central orbits in polar and pedal form, areal velocity, elliptic, hyperbolic and parabolic orbit	
J N U E	1st	Kepler's laws of planetary motion, equivalence of Kepler's laws of planetary motion and Newton's law of gravitation, motion under inverse square law	2nd Assignment
	2nd	Class Discussion, Test & Revision	

Course Name- Mathematics Lab-IV-CMP410/BAMH206

Programme Name-B.Sc(Non Med, Electronics, Comp. Science) /B.A II

SEM-IV

Teachers- Dr. Neeru Bala, Mr. Vikash, Ms. Kanta, Mr. Naresh, Ms. Ritu, Ms. Rekha Rani, Mr. Khawaish, Mr. Hitesh

Month	Week	Topic
A P R I L	1st	To solve the system of linear equations using Gauss -elimination method.
	2nd	To solve the system of linear equations using Gauss -Seidal iteration method.
	3rd	To solve the system of linear equation using Gauss -jordan method.
	4th	To find the largest eigen value of a matrix by Power -method
M A Y	1st	To integrate numerically using Trapezoidal rule.
	2nd	To integrate numerically using Simpson's one- third rule, three-eighth rule.
	3rd	To find numerical solution of ordinary differential equations by Runge -Kutta method
	4th	To find numerical solution of ordinary differential equations by Euler's method/ Modified Euler's
J N U E	1st	To find numerical solution of ordinary differential equations by Euler's method/ Modified Euler's
	2nd	File Completion

Course Name- Linear Algebra-CML605/BAMH304

Programme Name-B.Sc(Non Med, Electronics, Comp. Science) /B.A III

SEM-VI

Teachers-Dr. Inderjit Singh, Mr. Vikash, Mrs. Namrata, Mr. Hitesh

Month	Week	Topic	Test/Assign.
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M A Y	1st	Vector spaces, subspaces, Sum and Direct sum of subspaces	Assignment
	2nd	Linear span, Linearly Independent and dependent subsets of a vector space. Finitely generated vector space, Existence theorem for basis of a finitely generated vector space	
	3rd	Finite dimensional vector spaces, Invariance of the number of elements of bases sets	
	4th	Dimensions, Quotient space and its dimension.	
J U N E	1st	Homomorphism and isomorphism of vector spaces ,Linear transformations and linear forms on vector spaces	Test
	2nd	Vector space of all the linear transformations, Null Space	
	3rd	Range space of a linear transformation, Rank and Nullity Theorem	
	4th	Algebra of Linear Transformation, Minimal Polynomial of a linear transformation,Singular and non-singular linear transformations	
J U L Y	1st	Matrix of a linear Transformation, Change of basis, Eigen values and Eigen vectors of linear transformations.	Assignment
	2nd	Inner product spaces, Cauchy-Schwarz inequality	
	3rd	Orthogonal vectors, Orthogonal complements, Orthogonal sets and Basis	
	4th	Test & Rivision	

Course Name- Real And Complex Analysis-CML607/BAMH306

Programme Name-B.Sc(Non Med,Electronics,Comp. Science) /B.A III

Teachers-Mr. Amit Kumar, Mr. Naresh, Mr. Vinesh, Mrs.Namrata

SEM-VI

Month	Week	Topic	Test/Assign.
M A Y	1st	Definition and examples of metric spaces, Neighbourhoods, Limit points, Interior points.	Test
	2nd	Open and closed sets, Closure and interior, Boundary points.	
	3rd	Subspace of a metric space, Equivalent metrics, Cauchy sequences, Completeness.	
	4th	Integral as a function of a parameter, Continuity.	
J U N E	1st	Cantor 's intersection theorem, Baire 's category theorem, Contraction Principle.	Test
	2nd	Continuous functions, uniform continuity.Connectedness, Components	
	3rd	Compact metric spaces, Sequential compactness.Bolzano-Weierstrass property,Total boundedness	
	4th	Improper integrals and their convergence.Comparison tests, Abel's and Dirichlet's tests, Frullani's integral.	
J U L Y	1st	Stereographic projection of complex numbers. Continuity and differentiability of complex functions.	Assignment
	2nd	Analytic functions, Cauchy-Riemann equations, harmonic conjugates, harmonic functions.	
	3rd	Construction of analytic functions: direct method and Milne-Thomson method.	
	4th	Revision,Group Dicussion	

COURSE NAME:MECHANICS-II-CML606/BAMH305

Programme Name-B.Sc(Non Med,Electronics,Comp. Science) /B.A III

TEACHERS-Mr.Vikas,Ms. Kiran,Mr. Vinesh,Ms. Rekha Rani

SEM-VI

Month	Week	Topic	Assignment/ Test
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A P R I L	1st	Analytical conditions of equilibrium of coplanar forces :equilibrium of three forces , conditions of equilibrium ,trigonometric theorems	1st Assignment
	2nd	Friction,problems based on equilibrium of rods and ladders,centre of gravity :basic concept and definitions	
	3rd	Centre of gravity of uniform rod ,thin uniform lamina in the form of parallelogram,triangle ,quadrilateral ,trapezium ,centre of gravity of a body	
	4th	Motion of a particle attached to an elastic string ,Hooke's law,motion of horizontal and vertical elastic strings	
M A Y	1st	Work ,Power and Energy,Work done in stretching an elastic string ,Principle of work and energy ,conservative system of forces	Minor Test
	2nd	Principle of conservation of energy ,impulse of constant forces and variable forces	
	3rd	Motion of a particle on smooth curves, motion on the outside and inside of a smooth vertical circle ,cycloidal motion ,motion on a rough curve under	
	4th	Projectile motion of a particle in a plane ,velocity at any point of the trajectory,range and time of flight on an inclined plane	
J N U E	1st	Directions of projection for a given velocity and range ,range and time of flight down an inclined plane	2nd Assignment
	2nd	Class Discussion, Test & Revision	

COURSE NAME:SOLID GEOMETRY(II)-CMS608/BAMH307

Programme Name-B.Sc(Non Med,Electronics,Comp. Science) /B.A III

TEACHERS-Mr.Khawaish,Ms. Renu,Ms. Rekha Rani

SEM-VI

Month	Week	Topic	Assignment/ Test
A P R I L	1st	central conicoids:equation of tangent plane	1st Assignment
	2nd	Director sphere, Normal to the conicoids	
	3rd	Polar plane of a point	
	4th	Enveloping cone of conicoids	
M A Y	1st	Enveloping cylinder of a conicoid	Minor Test
	2nd	Paraboloids: Circular section	
	3rd	Plane sections of conicoids	
	4th	Generating lines, Confocal conicoid	
J N U E	1st	Reduction of second degree equations	2nd Assignment
	2nd	Class Discussion, Test & Revision	

PROGRAM NAME-BCA I

TEACHER-Mrs.Namrata

COURSE:ELEMENTS OF COMPUTER ORIENTED NUMERICAL METHODS-BCA-PC(L)122

SEM-II

Month	Week	Topic	Assignment/ Test
A	1st	Computer arithmetic:Floating point representation of numbers, arithmetic operations with normalised floating point numbers and their consequences	

A P R I L	2nd	Significant figure, error in number representation, inherent error, truncation, absolute, related, percentage and round off errors	1st Assignment
	3rd	Iterative methods: Bisection, False position, Newton-Raphson method, Iteration method, discussion of convergence	
	4th	Solution of simultaneous linear equations and ordinary differentialequations:Gauss elimination method, Pivoting	
M A Y	1st	Ill conditioned equation, refinement of solutions, Gauss Sediel-Iterative method	Minor Test
	2nd	Euler method, Euler modified method,Taylor-series method, Runge-Kutta methods	
	3rd	Predictor- Corrector method, Interpolation and approximation:Polynomial Interpolation	
	4th	Newton,Lagrange Difference tables, Approximation of functions by Taylor-series	
J N U E	1st	Numerical Differentiation and integration:Differentiation formula based on polynomialfit, Pitfalls in differentiation, Trapezoidal, Simpson rules	2nd Assignment
	2nd	Class Discussion, Test & Rivision	

PROGRAM NAME-M.SC I

COURSE NAME:ABSTRACT ALGEBRA-MAL521

TEACHERS-Mr.Vikas

SEM-II

Month	Week	Topic	Assignment/ Test
A P R I L	1st	Canonical forms- similarity of linear transformations,Invariant subspace,Reductionto triangular forms	Assignment
	2nd	Niltpotent transformations,Index of nilpotency, Invariants of nilpotent transformations	
	3rd	The primary decompostion theorem, Jordan Blocks & Jordan forms	
	4th	Rational Canonical forms,generalised Jordan form over any field	
M A Y	1st	Cylic modules, free modules, simple modules, semi simple modules	Minor Test
	2nd	Schur's Lemma , Noetherian and artinian modules and Rings ,Hilbert's basis theorem	
	3rd	Wedderburn - Artin theorem, Uniform module, primary modules, Noether-Lasker theorem	
	4th	Smith normal form over a principal ideal domain and rank	
J N U E	1st	Fundamental structure theorem for finitely generated abelian groupsand its application to finitely generated abelian groups	
	2nd	Class Discussion, Test & Revision	

PROGRAM NAME-M.SC I

COURSE:MEASURE AND INTEGRATION THEORY-MAL522

TEACHERS-Mr.Amit Kumar

SEM-II

Month	Week	Topic	Assignment/ Test
	1st	Measurable functions and their equivalent formulations , properties of measurable fumctions, approximation of measurable function by sequences of simple functions	

A P R I L	2nd	Measurable functions as nearly continuous functions, Egoroff's theorem, Lusin's theorem , convergence in measure and F. Riesz theorem for convergence in measure , almost uniform convergence	Assignment
	3rd	Vitali's covering lemma , Differentiation of monotonic functions, functions of bounded variations and its representation as difference of monotonic functions	
	4th	differentiation of indefinite integral, fundamental theorem of calculus , absolutely continuous functions and their properties	
M A Y	1st	Shortcomings of Reimann integral, Lebesgue integral of bounded function over a set of finite measure and its properties, Lebesgue integral as a generalisation of Reimann integral, bounded Convergence theorem	Minor Test
	2nd	Lebesgue theorem regarding points of discontinuities of Reimann integrable functions, Fatou's Lemma, Monotone Convergence theorem, general Lebesgue integral	
	3rd	Convex functions, Jensen's inequalities	
	4th	The Holder and Minkowski's inequalities	
J N U E	1st	Riesz -Fisher theorem , Bounded linear functional ,Riesz Representation theorem	
	2nd	Class Discussion, Test & Revision	

PROGRAM NAME-M.SC I
TEACHERS-Mr. Khawaish

COURSE:METHODS OF APPLIED MATHEMATICS-MAL523
SEM-II

Month	Week	Topic	Assignment/ Test
A P R I L	1st	Fourier transforms- Definition and properties, Fourier transforms of some elementary functions	Assignment
	2nd	Convolution theorem,application of Fourier transforms to solve Ordinary and Partial differential equation	
	3rd	Curvilinear - coordinates: coordinate transformatio, orthogonal coordinates, change of coordinates	
	4th	Cartesian , cylindrical and spherical coordinates, expression for velocity and acceleration, ds,dv,ds^2 in orthogonal coordinates, areas , volumes and surface area in a few simple cases	
M A Y	1st	Grad, Div, Curl ,Laplacian in orthogonal coordinates, contravariant and co-variant components of a vector , metric coefficients and the volume element	Minor Test
	2nd	Sample spaces, Random variables, mathematical expectation and moments	
	3rd	Binomial, poisson , geometric , uniform and exponential distribution	
	4th	Normal & Gamma distributions, multiple regression, partial and multiple correlation	
J N U E	1st	t,F and Chi-square distributions, weak law of large numbers and central limit theorem	
	2nd	Class Discussion, Test & Revision	

PROGRAM NAME-M.SC I
TEACHERS-Mrs. Namrata

COURSE:ORDINARY DIFFERENTIAL EQUATIONS-2-MAL524
SEM-II

Month	Week	Topic	Assignment/ Test
A P R I L	1st	Linear systems, Fundamental set and fundamental matrix of a homogeneous system , Wronskian of a system	Assignment
	2nd	Abel- Liouville formula, Adjoint systems , Reduction of the order of a homogeneous system	
	3rd	Systems with constants coefficients , method of variation of constants for a non homogeneous system , periodic solutions, Floquet theory for periodic system	
	4th	Linear Differential equations of order n , Lagrange's identity, Green's formula	
M A Y	1st	Non linear Differential equations, Plane autonomous systems and their critical points , classification of critical point- rotationpoints, focii, nodes, saddle points, stability	Minor Test
	2nd	Asymptotical stability and unstability of critical points, almost linear systems, perturbations, simple critical points, dependence on a parametre, Liapunov funvction and method	
	3rd	limit cycles , Bendixson non existence theorem,statement of Poincare - Bendixson theorem	
	4th	motivating problems of calculus of variation, shortest distance, minimum surface of revolution, Brachistochrone problem, isoperimetric problem, geodesic	
J U N E	1st	Fundamental lemma of calculus of variations , Euler's equation for one dependent function &its generalisation to " n" dependent function and to higher order derivatives, conditional extremum under geometric constraints	
	2nd	Class Discussion, Test & Revision	

PROGRAM NAME-M.SC I
TEACHERS-Mr.Naresh

COURSE:COMPLEX ANALYSIS-II-MAL525
SEM-II

Month	Week	Topic	Assignment/ Test
A P R	1st	Analytic Continuation; Spaces of Analytic functions, Hurwitz's theorem, Montel's theorem, Uniqueness of direct analytic continuation	Assignment
	2nd	Uniqueness of analytic continuation along a curve, power series method of analytic continuation. Monodromy theorem and its consequences,	

I L	3rd	Exponent of Convergence	
	4th	Order of an entire function, Jensen's formula, Borel's theorem. Hadamard's factorization theorem, Hadamard's three circles theorem.	
M A Y	1st	The range of an analytic function. Bloch's theorem. The Little Picard theorem. Montel Caratheodory and the Great picard theorem.	Minor Test
	2nd	Schottky's theorem. Montel Caratheodory and the Great picard theorem.	
	3rd	Conformal mapping; Riemann mapping theorem, Harmonic function on a disk problem. Green's function. Harnack's inequality and theorem, Univalent	
	4th	Dirichlet problem. Green's function. Harnack's inequality and theorem, Univalent functions.	
J U N E	1st	Bieberbach's conjecture (Statement only) and the 1/4 theorem. Meromorphic Function; Gamma function and its properties, Riemann Zeta function, Riemann's functional equation. Runge's theorem, Poisson-Jensen formula.	
	2nd	Class Discussion, Test & Revision	

PROGRAM NAME-M.SC I
TEACHERS-Mr. Mandeep

COURSE:COMPUTING LAB-MATLAB-MAP527
SEM-II

Month	Week	Topic	Assignment/ Test
A P R I L	1st	MATLAB Basics : working in the command window, Arithmetic Operations , Elementary Math Built-in Functions, Variable names, script files, Matrices and Arrays,	Assignment
	2nd	Input to a script file Output commands: the disp Command, the print Command, the save and load commands	
	3rd	Importing and Exporting data. two-dimensional plots, formatting a plot. Multiple plots on the same page.	
	4th	Operations with Arrays: Creating, Concatenating, and Expanding Matrices, Removing Rows or Columns from a Matrix Rearranging Arrays,	
M A Y	1st	Reshaping and Rearranging Arrays, Multidimensional Arrays, Array Indexing, Mathematical Operations with Arrays, Systems of Linear Equations and solutions.	Minor Test
	2nd	Programming in MATLAB: Relational and logical operators, Conditional statements	
	3rd	if-else-end, if-elseif-else-end Structures. The switch-case Statement . LOOPS: if-else-end, if-elseif-else-end Structures. The switch-case Statement . LOOPS: for-end, whileend loops, Nested loops and nested conditional statements, the break and continue commands.	
	4th	Creating a function file, local and global variables. Symbolic math: Symbolic objects and symbolic expressions, Creating symbolic objects	
J		creating symbolic expressions. the find svm command and the default	

U N E	1st	Creating symbolic expressions, the find sym command and the assign symbolic variable ,Changing the form of an existing symbolic expression	
	2nd	Class Discussion, Test & Revision	

Programme Name- MScI
Teacher- Mr. Mandeep

COURSE :PROGRAMMING WITH MATLAB (PRACTICAL)
SEM-II

Month	Week	Topics
A R P I L	3rd	Program to operate arithmetic operation on matrices
	4th	Program to find Inverse of a Matrix
M A Y	1st	Program to operate arithmetic operation on vectors
	2nd	Program to find the solutions of n linear equations
	3rd	Program to find out the mean,median and standard deviation
		Program to find the mean, median, Standard deviation using frequency distribution
	4th	Program to find mean using sum function
J U N E	1st	Program to find mean using shortcut method
	2nd	Program to find mean using for loop
	3rd	Program to find mean using frequency distribution
	4th	Program to draw multiple graph on same plot

PROGRAM NAME-M.SC I
TEACHERS-Mr. Mandeep

COURSE:ADVANCED NUMERICAL METHODS-MAL526
SEM-II

Month	Week	Topic	Assignment/ Test
A P R I L	1st	Interpolation and Approximation Interpolation: Introduction of Gauss' Central Difference Formulae, Stirling's Formula, Bessel's Formula without proof, Everett's Formula, Relation between Bessel's and Everett's Formulae. Hermite's Interpolation Formula, Divided Differences and Their Properties, Newton's General Interpolation	Assignment
	2nd	Formula, Interpolation by Iteration, Inverse Interpolation, Double Interpolation. Approximation: Norms of functions – Best Approximations: Least squares polynomial approximation– Approximation with Chebyshev polynomials – Piecewise Linear & Cubic Spline approximation.	
	3rd	Numerical Differentiation and Integration Numerical Differentiation: Errors in Numerical Differentiation, Cubic Splines Method, Differentiation Formulae with Function Values, Maximum and Minimum Values of a Tabulated Function	
	4th	Numerical Integration: Boole's and Weddle's rules, use of Cubic splines, Romberg integration, Newton- Cotes integration formula, Euler-Maclaurin formula, Adaptive Quadrature method. Gaussian integration, Numerical evaluation of Singular integrals,	
	1st	Numerical evaluation of double and triple integrals with constant and variable limits and its application, Solution of integral equations.	
		Iterative Methods for Linear and Nonlinear System Iterative Method for	

M A Y	2nd	System of Linear Equations: General iterative method. Jacobi and Gauss-Seidel method. Relaxation method. Necessary and sufficient conditions for convergence. Speed of convergence.	Minor Test
	3rd	S.O.R. and S.U.R. methods. Determination of eigenvalue by iterative methods. Ill conditioned system. Solution of tridiagonal system, Iterative Method for System of Non-linear Equations: Complex root of non-linear equation, solution of simultaneous non-linear equations.	
	4th	Numerical solution of ordinary differential equations Initial value problems: Runge Kutta methods of fourth order, Multistep method- The Adams-Moulton method, stability, Convergence and Truncation error for the above methods. Milne's method, Cubic spline method, Simultaneous and higher order equations,	
J N U E	1st	Boundary Value Problems: Second order finite difference, Shooting method and Cubic spline methods, Numerov's method, Mixed BVPs.	
	2nd	Class Discussion, Test & Revision	

PROGRAM NAME-M.SC II
TEACHERS-Mr. Vinesh

COURSE:FUNCTIONAL ANALYSIS-MAL641
SEM-IV

Month	Week	Topic	Assignment/ Test
A P R I L	1st	Normed linear spaces, metric on normed linear spaces, Holder's and Minkowski's Inequality, completeness of quotient spaces of normed linear	Assignment
	2nd	Bounded linear transformation. Equivalent formulation of continuity. Spaces of bounded linear transformation. Continuous linear functional,	
	3rd	Hahn Banach extension theorem (Real and Complex form), Riesz Representation theorem for bounded linear functionals on LP	
	4th	Second Conjugate spaces, Reflexive spaces, uniform boundedness principle and its consequence, open mapping theorem and its application, projections, Equivalent norms, weak and strong convergence, their equivalence in finite dimensional spaces.	
M A Y	1st	Compact operators and its relation with continuous operators, compactness of linear transformation on a finite dimensional space, properties of compact	Minor Test
	2nd	inner product spaces, Hilbert spaces, Schwarz's inequality, Hilbert space as	
	3rd	normed linear space, convex sets in Hilbert spaces	
	4th	convex sets in Hilbert spaces. Projection theorem, orthonormal sets, Bessel's inequality	
J N U E	1st	Parseval's identity, Conjugate of a Hilbert space.	
	2nd	Class Discussion, Test & Revision	

PROGRAM NAME-M.SC II
TEACHERS-Ms. KIRAN

COURSE:DIFFERENTIAL GEOMETRY-MAL642
SEM-IV

Month	Week	Topic	Assignment/ Test
	1st	Curves with torsion: Tangent, Principal Normal, Curvature, Binormal, Torsion,	

A P R I L	1st	Serret	Assignment
	2nd	Frenet formulae (Relevant sections of Weatherburn's book)	
	3rd	Locus of centre of Curvature, Locus of centre of Spherical Curvature, Surfaces, Tangent plane	
	4th	Normal, Envelope, Characteristics, Edge of regression	
M A Y	1st	Curvilinear Co-ordinates, First order magnitudes, Directions on a surface	Minor Test
	2nd	The Normal, Second order magnitudes, Derivative of unit normal	
	3rd	Principal directions and curvatures, First and Second curvatures	
	4th	Equations of geodesics, Surface of revolution	
J N U E	1st	Torsion of a geodesic	
	2nd	Class Discussion, Test & Revision	

PROGRAM NAME-M.SC II
TEACHERS-Mr. Mandeep

COURSE:MECHANICS OF SOLID-II-MAL643
SEM-IV

Month	Week	Topic	Assignment/ Test
A P R I L	1st	Two-dimensional Problems: Plane stress. Generalized plane stress. Airy stress function.	Assignment
	2nd	General solution of Biharmonic equation. Stresses and displacements in terms of complex Potentials	
	3rd	The structure of functions of $\phi(z)$ and $\psi(z)$. First and second boundary value problems in plane elasticity, Thick-walled tube under external and internal	
	4th	Viscoelasticity: Spring & Dashpot, Maxwell & Kelvin Models, Three parameter solid	
M A Y	1st	Correspondence principle & its application to the Deformation of a viscoelastic Thick-walled tube in Plane strain	Minor Test
	2nd	Torsion: Torsion of cylindrical bars. Torsional rigidity. Torsion and stress functions. Lines of shearing stress. Simple problems related to circle, ellipse	
	3rd	Waves: Propagation of waves in an isotropic elastic solid medium. Waves of dilatation and distortion. Plane waves. Elastic surface waves such as Rayleigh	
	4th	Variational methods - Theorems of minimum potential energy. Theorems of minimum complementary energy. Reciprocal theorem of Betti and Rayleigh	
J N U E	1st	Deflection of elastic string and elastic membrane. Solution of Euler's equation by Ritz, Galerkin and Kantorovich methods.	
	2nd	Class Discussion, Test & Revision	

PROGRAM NAME-M.SC II
TEACHERS-Mrs. Kanta

COURSE:INTEGRAL EQUATIONS-MAL644
SEM-IV

Month	Week	Topic	Assignment/ Test
A P R	1st	Definition of Integral Equations and their classification. Relation between integral and differential equations Fredholm integral equations of second	
	2nd	An approximate Method. Method of successive approximations. Iterative	

F R I L	2nd	scheme. Condition of convergence and uniqueness of series solution.	Assignment
	3rd	Solution of Volterra's integral equations by iterative scheme. Successive approximation. Resolvent kernel. Integral transform methods: Fourier Laplace transform, Convolution integral, Application to Volterra integral	
	4th	equations with Convolution type kernels, Abel's equations.	
M A Y	1st	Symmetric kernel. Complex Hilbert space. Orthonormal system of functions, Fundamental properties of eigen values and eigen functions for symmetric	Minor Test
	2nd	Expansion in eigen function and bilinear form, Hilbert Schmidt theorem, Solution of integral equations with symmetric kernels	
	3rd	Singular Integral Equations - Inversion formula for singular integral equation with kernel of type $(h(s) - h(t) - a, 0 < a < 1)$	
	4th	Dirac Delta Function. Green's function approach to reduce boundary value problems of a self-adjoint differential equation with	
J N U E	1st	Auxiliary problem satisfied by Green's function. Modified Green's function.	
	2nd	Class Discussion, Test & Revision	

PROGRAM NAME-M.SC II

COURSE:ALGEBRAIC CODING THEORY-MAL647

TEACHERS-Ms. Renu

SEM-IV

Month	Week	Topic	Assignment/ Test
A P R I L	1st	The Communication channel. The Coding Problem. Types of Codes. Block Codes. Error Detecting and Error-Correcting Codes. Linear Codes.	Assignment
	2nd	The Hamming Metric. Description of Linear Block Codes by Matrices. Dual Codes.	
	3rd	Standard Array. Syndrome. Step-by-Step Decoding Modular Representation. Error Correction Capabilities of Linear Codes. Bounds on Minimum Distance	
	4th	Plotkin Bound. Hamming Sphere packing Bound. Varshamov-Gilbert-Sacks Bound. Bounds for Burst-Error Detecting and Correcting Codes	
M A Y	1st	Important Linear Block Codes. Hamming Codes. Golay Codes. Perfect Codes. Quasi -perfect Codes. Reed-Muller Codes	Minor Test
	2nd	Codes derived from Hadamard Matrices. Product Codes. The Algebra of Polynomial residue Classes.	
	3rd	Galois Fields. Multiplicative group of a Galois field. Cyclic Codes. Cyclic Codes as Ideals.	
	4th	Matrix Description of Cyclic Codes. Hamming and Golay Codes as Cyclic Codes. Error Detection with Cyclic Codes	
J N U E	1st	Error Correction procedure for Short Cyclic Codes. Short-ended Cyclic Codes. Pseudo Cyclic Codes. Code Symmetry	
	2nd	Class Discussion, Test & Revision	

Programme Name- MScII

COURSE :COMPUTING LAB-III-MAP648

Teacher- Mr. Amit

SEM-IV

Month	Week	Topics
A P R I L	3rd	Program using multicolumn command
		Program to make title for an article
	4th	Program for nested table

M A Y	1st	Program in form of table
		Program to write a letter
	2nd	Program using array and eqnarray command
	3rd	Program for sum, product and signum function
		Program for section and subsection
	4th	Program to create matrix equation
J U N E	1st	Program to express differentiation
	2nd	Program to express integration
	3rd	Program to use enumerate list environment
	4th	Program to express itemize list environment