

Department of Mathematics, GMGC

**ACADEMIC CALENDAR (CCF & CBCS)
(2023-2024)**

**MATHEMATICS HONOURS
&
MATHEMATICS GENERAL**

Dr. Gokul Saha
(HEAD OF THE DEPARTMENT)

ACADEMIC CALENDAR (2023-2024)

MATHEMATICS HONOURS (CCF)

ODD SEMESTER, 2023-'24

SEMESTER-1 MTMA(CCF)											
COURSES Full Marks :100 (Theory-75 Tutorial-25)	Syllabus to be covered	Aug'23 to Oct'23			Nov'23 to Dec'23			Jan'24 to Feb'24			End Semester Examination
		Topic	Lectures	Faculty	Topic	Lectures	Faculty	Topic	Lectures	Faculty	2 nd WEEK of February, 2023
CORE-COURSE 1 Calculus, Geometry & Vector Analysis	Unit-1 : Calculus	Hyperbolic fns... Differentiability	15	GS	Leibnitz rule and Indeterminate form	10	GS	Red.formulae...area & surface of rev.	10	GS	
	Unit-2 : Geometry	Rotation of axes Classification of Quadrics	15	JR	Spheres, Cylindrical surfaces. Central conicoids	10	JR	Generating lines, ellipsoid, hyperboloid	10	JR	
	Unit-3 : Vector Analysis	Triple product, Theory of Couples ...System of parallel forces.	6	MB	Introduction to vector functions... continuity of vector fns.	6	MB	Differentiation & integration of vector functions	3	MB	
SEC1-1-Th C Language Mathematical Applications		Compiler, Assembler, Constants, Variables and Data type of C-Program:	25	JR	Character set. Constants and variables data types, expression, assignment	20	JR	Operation and Expressions: Arithmetic operators, relational operators, logical operators. if statement, if-else statement, control Statements: While statement	20	JR	
IDC1-1-Th Theory-50 Tutorial-25 Mathematical Logic		General Notions. Propositional Logic	25	JR	Modal Propositional Logic Predicate Logic	20	JR	Fuzzy Logic Applications	20	JR	

SEMESTER-3 MTMA(CBCS)

COURSES Full Marks :100 (Theory-65 Tutorial-15 Int. Assess.-20) SEC-A (Theory.-80, Int. Assess.- 20)	Syllabus to be covered	September'23 to October '23			November'23 to December '23			January '24			End Semester Examination
		Topic	Lect ures	Facu lty	Topic	Lect ures	Facu lty	Topic	Lect ures	Facu lty	2ND WEEK of JANUARY, 2024
CORE-COURSE 5 Theory of Real Functions	Unit-1 : Limit & Continuity of functions	Limits of functions & continuity of functions	20	GS	Bounded functions..., Discontinuity of functions.	20	GS	Uniform Continuity.	5	GS	
	Unit-2 : Differentiability of functions	Diff. of fun. at a pointmean value theorem respectively	15	MB	Expansion ... Hospital's & conseq.	15	MB	Pt. of local Extremum.. geom. problems	5	MB	
CORE-COURSE 6 Ring Theory & Linear Algebra-I	Unit-1 : Ring theory	Definition and examples of rings..character istics of a ring	15	GS	Idealthird isomorphism theorem	15	GS	Corresponde nce theorem .. , congruences on rings.	5	GS	
	Unit-2 : Linear algebra	Vector spaces,..signifi cance of subspace.	15	GS	Linear Transformati ons isomorphism	20	GS	EigenValues inverse of a matrix	5	GS	
CORE-COURSE 7 ODE & Multivariate Calculus-I	Unit-1 : Ordinary differential equation	1st order d.e... uniqueness theorem of Picard's	15	MB	Linear equations.... variation of parameters	15	MB	System of Linear d.e's...power series soln.	10	MB	
	Unit-2 : Multivariate Calculus-I	Concept of nbd... closed set in R_n ($n > 1$).	10	MB	Functions from R_n ... tangent planes.	15	MB	Extrema of functions... optimization problems	10	MB	
Skill Enhancement Course-A SEC-A	SEC-A1: C Programming Language	An overview of theoretical computers.. importance of C programming	10	JR	Constants, Variables... control statements.	15	JR	Arrays,..., User-defined functions..., Introduction to library functions	5	JR	

SEMESTER-5 MTMA(CBCS)

COURSES & ELECTIVES Full Marks :100 (Theory-65 Tutorial-15 Int. Assess.-20)	Syllabus to be covered	September'23 to October '23			November'23 to December '23			January '24			End Semester Examination
		Topic	Lect ures	Facu lty	Topic	Lect ures	Facu lty	Topic	Lect ures	Facu lty	2ND WEEK of JANUARY, 2024
CORE-COURSE -11 Probability & Statistics	Probability: UNIT-1 UNIT-2 UNIT3 Statistics: UNIT-4 UNIT-5	UNIT-1, UNIT-2	16	MB	UNIT-2, UNIT-3, UNIT-4	16	JR	UNIT-4, UNIT-5	14	JR	
CORE-COURSE-12 Group Theory-II & Linear Algebra-II	Unit-1 : Group theory	Automorphism cyclic gps..	15	GS	Appl. of factor groups Ext. direct product.. int. direct product,	15	GS	converse of Lagrange's theorem... Fundamenta l th. of finite abelian gps	5	GS	
	Unit-2 : Linear algebra	Inner product spaces... basic properties	15	GS	Bilinear and quadratic forms... signature	15	GS	Dual spaces... canonical forms	10	GS	
Discipline Specific Elective- A DSE-A(1)-1 Advanced Algebra	Unit-1: Group Theory Unit-2: Ring Theory	Unit-1	20	GS	Unit-1, Unit-2	28	GS	Unit-2	27	GS	
Discipline Specific Elective- B DSE-B(1)-2 Linear Programming & Game Theory	UNIT-1 UNIT-2 UNIT3 UNIT4	UNIT-1, UNIT-2	20	MB	UNIT-2, UNIT-3	25	MB	UNIT-4	30	MB	

EVEN SEMESTER, 2024

SEMESTER-2 MTMA(CCF)

COURSES Full Marks :100 (Theory-75 Tutorial-15 Int. Assess.-20)	Syllabus to be covered	Feb'24 to March'24			April'24			May'24			End Semester Examination
		Topic	Lectures	Faculty	Topic	Lectures	Faculty	Topic	Lectures	Faculty	2ND WEEK OF JULY, 2024
CORE-COURSE 2 <i>Algebra</i>	Unit-1	polar rep. of complex nos... Transformation of equations	15	MB	Descartes rule .. Cauchy-Schwarz inequality	10	MB	linear difference equations. (upto 2nd order)	5	MB	
	Unit-2	Relation... mapping end	15	GS	Well ordering principle .. fundamental Th. of Arithmetic.	10	GS	Chinese remainder and their properties.	5	MB	
	Unit-3	Rank of a matrix... Systems of linear equations	15	JR	--	--	--	...			
SEC2.1-2-Th <i>Python Programming and Introduction to Latex</i>	Group A: Python Programming	Python Programming Language, features, Installing Python. Running Code in the Processing Errors.	20	GL	Data types and expressions Loops and selection statements Design with functions SymPy	20	GL	:	6	GL	
	Group B: Introduction to Latex	Introduction to LATEX	10	GL							
IDC2-2-Th Financial Mathematics Full marks: 75 (Theory: 50 and Tutorial: 25)		Profit, Loss and discount, Dividend, Calculation of income tax, , Bar graphs, Pie charts, Line graphs. Introduction Financial Markets	15	MB	Time Value of Money and Bonds:	15	JR	Portfolio Theory	10	JR	

SEMESTER-4 MTMA(CBCS)

COURSES Full Marks :100 (Theory-65 Tutorial-15 Int. Assess.-20) SEC-B (Theory.-80, Int. Assess.- 20)	Syllabus to be covered	February'24 to March'24			April'24			May'24			End Semester Examination
		Topic	Lectures	Faculty	Topic	Lectures	Faculty	Topic	Lectures	Faculty	3 rd WEEK of JUNE
CORE-COURSE -8 Riemann Integration & Series of Functions	Unit-1 : Riemann integration Unit-2 : Improper integrals Unit-3 : Series of functions	Unit-1 : Partition.. Example of Riemann integrability of sums	30	GS	Unit-1 contd. , Unit-2 & Unit 3	5 + 10 15	GS	Unit-3 contd	15	GS	
CORE-COURSE 9 PDE & Multivariate Calculus-II	Unit-1 : Partial differential equation	PDEs of 1st order.. Laplace eqn.	15	MB	Classificationcanonic form Cauchy Prob...free end	5 10	MB JR	Eqns with non- homogene ous ... heat cond. prob.	10	MB	
	Unit-2 : Multivariate Calculus-II	Multiple integral .. change of order of integration	10	JR	Triple integral .. divergence and curl	20	JR	Line integrals .. Divergence theorem	5	JR	
CORE-COURSE 10 Mechanics	Unit-1 (Statics)	Coplanar forces in general	4	JR	An arbitrary force system in space	8	JR	Equilibrium in the presence of sliding Friction force	3	JR	
	Unit-2 (Statics)	-	-	JR	Virtual work	5	JR	Stability of equilibrium	5	JR	
	Unit-3, 4, 5 (Dynamics)	Unit-3	20	MB	Unit-4	20	MB	Unit-5	10	MB	
Skill Enhancement Course-B SEC-B	SEC-B1 Mathematical Logic	Unit-1	20	JR	Unit-2	20	JR	Unit-3	10	JR	

SEMESTER-6 MTMA(CBCS)

COURSES & ELECTIVES Full Marks :100 (Theory-65 Tutorial-15 Int. Assess.-20)	Syllabus to be covered	February'24 to March'24			April'24			May'24			End Semester Examination
		Topic	Lectures	Faculty	Topic	Lectures	Faculty	Topic	Lectures	Faculty	3 rd WEEK of JUNE 1
CORE-COURSE -13 Metric Space & Complex Analysis	Unit-1 : Metric space	Definition and examples of metric spaces ... Subspace of a metric space.	10	GS	Convergent sequence.. compact sets.	20	GS	Concept of connectedness.... application to ordinary differential equation	10	GS	
	Unit-2 : Complex analysis	Stereographic projection.Continuity of functions of complex variables.	10	GS	Derivatives Uniqueness of power series	15	GS	Contours,.. . Cauchy integral formula.	10	GS	
CORE-COURSE-14 Numerical Methods	Numerical Methods Unit-1,2,3,4,5,6	Unit-1, 2	5+5	MB	Unit-2 (contd.), 3, 4	10+ 10+1 0		Unit-5, 6	10+5	MB	
Core Course-14 Practical Numerical Methods Lab	1 - 9 Practical Topics	1-2	10	JR	3-6	25	JR	7-9	15	JR	
Discipline Specific Elective- A DSE-A(2)-1 Differential Geometry	Mathematical Modelling Unit-1,2,3	Unit-1, 2	10+10	MB & S.L	Unit-2 contd., Unit-3	25 + 15	S.L	Unit-3 (contd.)	15	MB, S.L.	
Discipline Specific Elective- B DSE-B(2)-1 Point Set Topology	1.Point Set Topology Unit-1,2,3	Unit-1	15	GS	Unit-1 (contd.), Unit-2, Unit-3	20 + 15 + 5	GS	Unit-3 (contd.)	20	GS	

S.L. .. SPECIAL LECTURE

ACADEMIC CALENDAR (2023 - 2024)

MATHEMATICS GENERAL –

ODD SEMESTER, 2023-24

SEMESTER-1 MTMG(CCF)											
COURSE Full Marks :100 (Theory-65 Tutorial-15 Int. Assess.-20)	Syllabus to be covered (with marks)	Aug'23 to Oct'23			Nov 23- Dec'23			Jan'24			End Semester Examination
		Topic	Lectures	Faculty	Topic	Lectures	Faculty	Topic	Lectures	Faculty	3 rd WEEK of February, 2024
MINOR 1 Calculus, Geometry & Vector Analysis	Unit-1 : Calculus	Hyperbolic fns... Differentiability	15	GS	Leibnitz rule and Indeterminate form	10	GS	Red.formula e...area & surface of rev.	10	GS	
	Unit-2 : Geometry	Rotation of axes Classification of Quadrics	15	JR	Spheres,Cylindrical surfaces. Central conicoids	10	JR	Generating lines, ellipsoid, hyperboloid	10	JR	
	Unit-3 : Vector Analysis	Triple product,. Theory of Couples ...System of parallel forces.	6	MB	Introduction to vector functions... continuity of vector fns.	6	MB	Differentiation & integration of vector functions	3	MB	
SEMESTER-3 MTMG(CBCS)											
COURSE Full Marks :100 (Theory-65 Tutorial-15 Int. Assess.-20)	Syllabus to be covered (with marks)	September'23 to October '23			November'23 to December '23			January '24			3 rd WEEK of JANUARY Y, 2024
		Topic	Lectures	Faculty	Topic	Lectures	Faculty	Topic	Lectures	Faculty	
		Evaluation of definite integrals, Integration as the limit of a sum	4	GS	Reduction formulae .. double integral.	3	GS	Applications	3	GS	
	Unit-2 : Numerical Methods	Approx. numbers, operators	8	JR	Interpolation	7	JR	Numerical Integration ...Numerical Problems	10	JR	
	Unit-3 : Linear Programming	Motivation of Linear Programming problem.... Non- degenerate B.F.S	10	MB	The set of all feasible solutions.u pto Dual problems with equality	10	MB	Transportationsolutions	5	MB	

EVEN SEMESTER, 2024

SEMESTER-2 MTMG(CCF)

COURSES Full Marks :100 (Theory-65 Tutorial-15 Int. Assess.-20)	Syllabus to be covered	March'24			April'24			May'24			End Semester Examination
		Topic	Lectures	Faculty	Topic	Lectures	Faculty	Topic	Lectures	Faculty	
Minor-2 <i>Algebra</i>	Unit-1	polar rep. of complex nos... Transformation of equations .	15	MB	Descartes rule .. Cauchy-Schwarz inequality	10	MB	linear difference equations. (upto 2nd order)	5	MB	FIRST WEEK OF July 2024
	Unit-2	Relation... mapping end	15	GS	Well ordering principle .. fundamental Th. of Arithmetic.	10	GS	Chinese remainder and their properties.	5	MB	
	Unit-3	Rank of a matrix... Systems of linear equations	15	JR	--	--	--	...			

SEMESTER-4 MTMG(CBCS)

COURSES Full Marks :100 (Theory-65 Tutorial-15 Int. Assess.-20)	Syllabus to be covered	February'24 to March'24			April'24			May'24		
		Topic	Lect-ures	Fac-ulty	Topic	Lect-ures	Facu- lty	Topic	Lectur- es	Fac- ulty
Generic Elective-4	Unit-1 : Algebra-II	Introduction of Group Theory... subgroups	3	GS	Defn. & ex... sub field, concept of vector space	4	GS	Real Quadratic Form..... Cayley - Hamilton Theorem	3	GS
	Unit-2 : Computer Science & Programming	Computer Science and Programming hardware and Software.	10	JR	Positional Number System... PASCAL, etc.	9	JR	Algorithms and FlowCharts ... Fortran Expression.	6	JR
	Unit-3 : Probability & Statistics	Elements of probability Theory, Theoretical Probability Distribution	5	MB	Elements of Statistical Methods, Sampling,.. F -distribn.	5 10	MB SB	Estimation and Test of Significance Regression lines.	5	MB

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