

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	
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	2nd WEEK of February, 2023
	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
		<i>Topic</i>	<i>Lect ures</i>	<i>Facu lty</i>	<i>Topic</i>	<i>Lect ures</i>	<i>Facu lty</i>	<i>Topic</i>	<i>Lect ures</i>	<i>Facu lty</i>	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 : Differentiabili ty 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				
		<i>Topic</i>	<i>Lect ures</i>	<i>Facu lty</i>	<i>Topic</i>	<i>Lect ures</i>	<i>Facu lty</i>	<i>Topic</i>	<i>Lect ures</i>	<i>Facu lty</i>	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		2ND WEEK of JANUARY, 2024			
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			2ND WEEK of JANUARY, 2024		
	Unit-2 : Linear algebra	Inner product spaces... basic properties	15	GS	Bilinear and quadratic forms... signature	15	GS	Dual spaces... canonical forms	10	GS				2ND WEEK of JANUARY, 2024	
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					2ND WEEK of JANUARY, 2024
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 Examinati on
		Topic	Lectur es	Facul ty	Topic	Lectu res	Facul ty	Topic	Lect ures	Facu lty	
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	2ND WEEK OF JUIY, 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	--	--	--	...			
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 <i>Financial Mathematics</i> 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 Semeste r Examina- tion
		Topic	Lectu res	Facul ty	Topic	Lect ures	Facul ty	Topic	Lectu res	Facul ty	
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	3rd WEEK of JUNE
		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	
CORE-COURSE 9 PDE & Multivariate Calculus-II	Unit-1 : Partial differential equation 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	
		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	
CORE-COURSE 10 Mechanics	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 Mathematic al 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	
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	3 rd WEEK of JUNE 1
	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+10		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.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	
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, 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	Transportation ...solutions	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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