

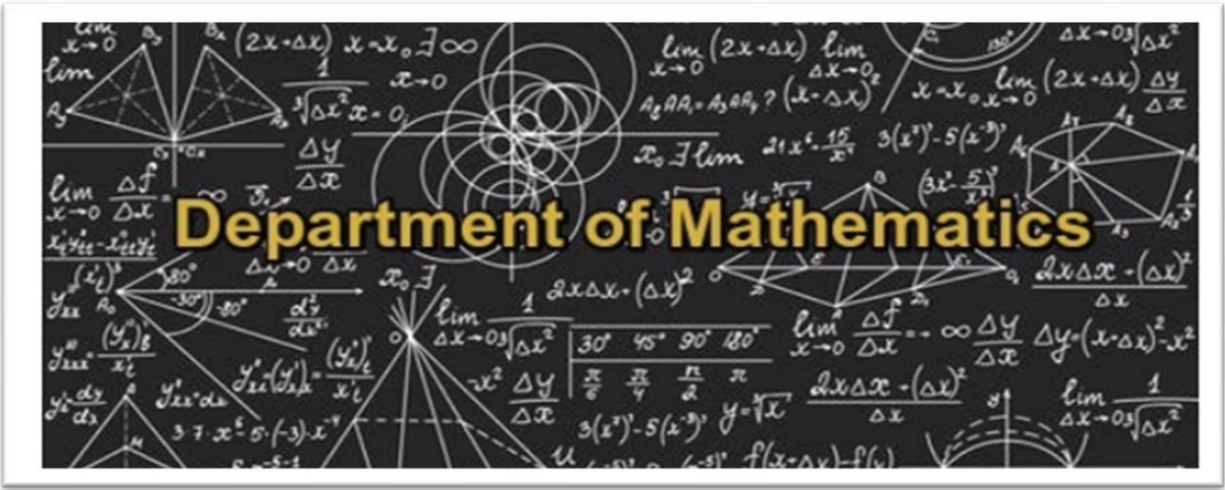
GOUR MOHAN SACHIN MANDAL MAHAVIDYALAYA



Department of Mathematics

Evaluative Report

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1. History of the Department

The Department of Mathematics is a vital component of Gour Mohan Sachin Mandal Mahavidyalaya, fostering the study and advancement of mathematical principles and applications. It was established in 2000 and offered only a general degree in mathematics. Further, in 2009, it started offering honours degrees.

The mathematics department usually offers graduate programs leading to master’s and doctoral degrees. These programs involve advanced coursework and in-depth study of the language of nature. Beyond coursework, mathematics departments provide opportunities for undergraduate and graduate students to engage in mathematical research.

2. Names of Programmes / Courses offered by this department

- Four-year (Honours & Honours with Research) (from 2023-24) under the CCF system.
- Three-year B.Sc. (Honours) (from 2018-19 to 2022-23) under the CBCS system.
- Three-year (Multidisciplinary) (from 2023-24) under the CCF system
- 3-year B.Sc. (General) (from 2018-19 to 2022-23) under the CBCS system.

Mathematics is a multidisciplinary subject. It has cross-cutting with other subjects such as Physics, Chemistry, Computer Science, Engineering, and Geography.

3. Faculty profile

Name	Qualification	Designation	Specialization	No. of Years of Experience
Saddam Hossain	M.Sc.	SACT-I	Applied Mathematics	6 years 5 months
Subhajit Kumar	M.Sc.	SACT-I	Pure Mathematics	6 years 1 month





Saddam Hossain
State-Aided College Teacher I

M.Sc.: ALIAH UNIVERSITY

Educational Qualifications:

Course	Board/University
10 th	WBBSE
12 th	WBBHSE
B.Sc/B.A/B.Com/any other equivalent	UNIVERSITY OF CALCUTTA
M.Sc/M.A./M.Com/any other equivalent	ALIAH UNIVERSITY

Courses taught/teaching: CC1, CC4, GE2, CC10, CC11, DSE(A1), DSE(A2), DSE5.1AH

Examination and Evaluation responsibilities:

- ❖ Examiner and Scrutineer for Semester I - VI of CBCS and CCF B.A. of Calcutta University



Subhajit Kumar
State-Aided College Teacher I

M.Sc.: University of Calcutta

Educational Qualifications:

Course	Board/University
10 th	WBBSE
12 th	WBCHSE
B.Sc/B.A/B.Com/any other equivalent	CU
M.Sc/M.A./M.Com/any other equivalent	CU

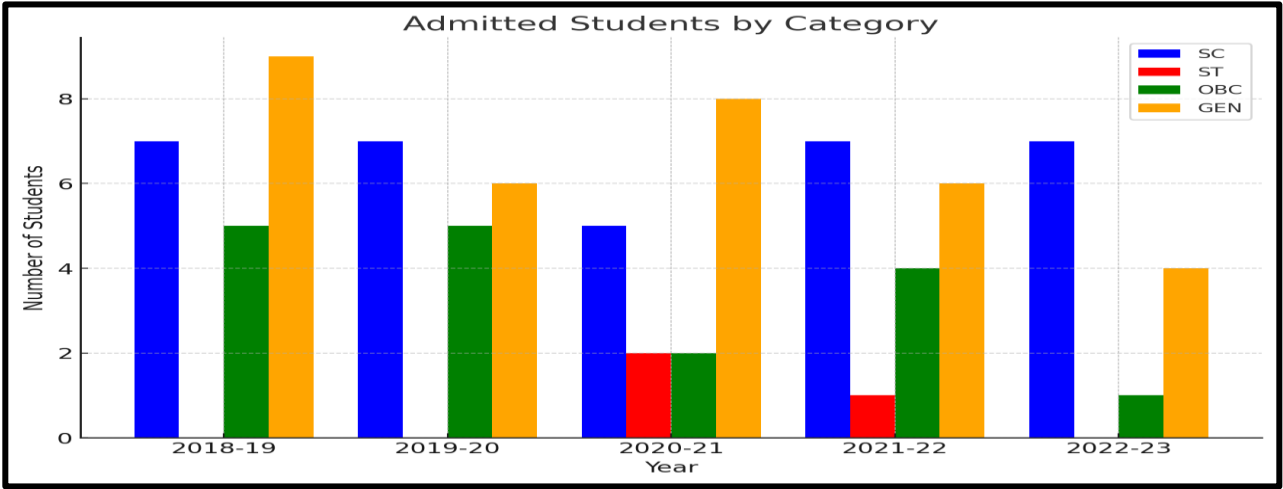
Courses taught/teaching: CC7, CC9, DSE-B (1), CC14, DSE-B (2), GE-1, GE-4, Statistics,Business Mathematics & Statistics.

Examination and Evaluation responsibilities:

- ❖ Examiner and Scrutineer for Semester I - VI of CBCS and CCF B.Sc of Calcutta University

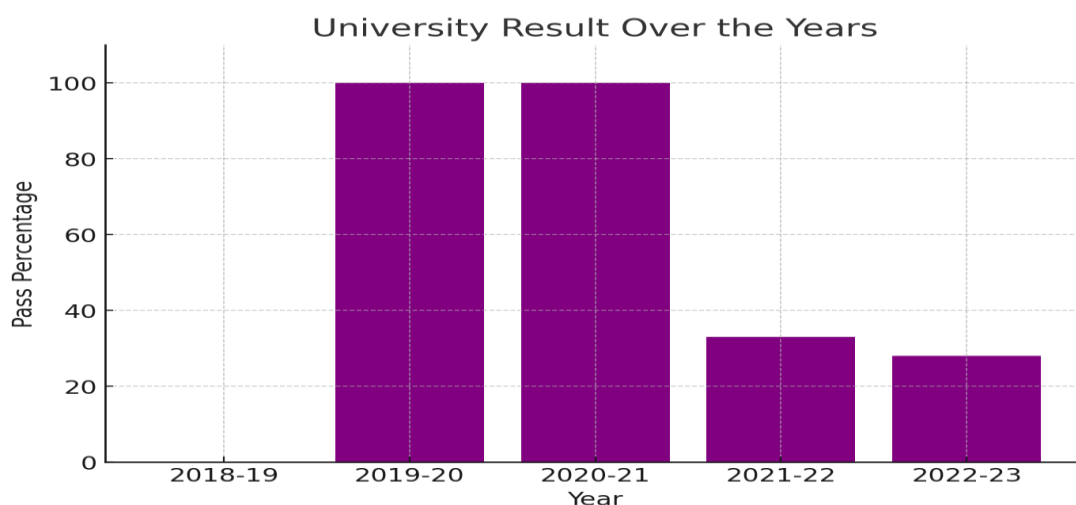
4. Student Enrolment and Profile

YEAR	PROGRAMME NAME	PROGRAME CODE	NO OF SEATS	NO OF STUDENT	NUMBER OF SEATS EARMARKED FOR RESERVED CATEGORY AS PER GOI					NUMBER OF STUDENTS ADMITTED FROM THE RESERVED CATEGORY				
					S C	S T	OB C	GE N	OTHER S	S C	S T	OB C	GEN	OTHERS
2018-19	B.Sc. MATHEMATICS HONOURS	MTMA	30		07	02	05	16	00	07	00	05	09	00
2019-20	B.Sc. MATHEMATICS HONOURS	MTMA	30		07	02	05	16	00	07	00	05	06	00
2020-21	B.Sc. MATHEMATICS HONOURS	MTMA	30		07	02	05	16	00	05	02	02	08	00
2021-22	B.Sc. MATHEMATICS HONOURS	MTMA	30		07	02	05	16	00	07	01	04	06	00
2022-23	B.Sc. MATHEMATICS HONOURS	MTMA	30		07	02	05	16	00	07	00	01	04	00



5. University Examination Results (Honours)

YEAR	PROGRAM CODE	PROGRAM NAME	NO OF STUDENTS APPEARED IN THE FINAL YEAR EXAMINATION	NO OF STUDENTS PASSED IN THE FINAL YEAR EXAMINATION	Pass %
2018-19	MTMA (PART SYSTEM)	B.Sc. MATHEMATICS HONOURS	04	00	00
2019-20	MTMA (PART SYSTEM)	B.Sc. MATHEMATICS HONOURS	08	08	100
2020-21	MTMA(CBCS)	B.Sc. MATHEMATICS HONOURS	16	16	100
2020-21	MTMA (PART SYSTEM)	B.Sc. MATHEMATICS HONOURS	05	05	100
2021-22	MTMA(CBCS)	B.Sc. MATHEMATICS HONOURS	09	03	33
2022-23	MTMA(CBCS)	B.Sc. MATHEMATICS HONOURS	07	02	28



6. Program Specific Outcomes

Under CBCS

- **PSO1.** able to recall basic facts about mathematics and should be able to display knowledge of conventions such as notations, terminology and recognize basic geometrical figures and graphical displays, state important facts resulting from their studies.
- **PSO2.** get a relational understanding of mathematical concepts and concerned structures, and should be able to follow the patterns involved, mathematical reasoning.
- **PSO3.**get adequate exposure to global and local concerns that explore them many aspects of Mathematical Sciences.
- **PSO4.**able to apply their skills and knowledge, that is, translate information presented verbally into mathematical form, select and use appropriate mathematical formulae or techniques in order to process the information and draw the relevant conclusion.
- **PSO5.** aware of history of mathematics and hence of its past, present and future role as part of our culture.

Under CCF

- **PSO1** Studying Mathematics helps in securing jobs in Statistics, Cryptography, Actuarial Science and Mathematical modelling.
- **PSO2** Students can pursue career for higher studies and research in the field of Engineering, Information Technology, Computer Science and Social Science.
- **PSO3** The course is a pre-requisite for further studies in Insurance, Economics, Astronomy, Banking and Accountancy.
- **PSO4** Students pursuing Mathematics Honours are eligible for teaching in Primary, Upper Primary, Secondary and Higher secondary schools.

7. Course Outcomes

Under CBCS

CC1: Calculus, Geometry & Vector Analysis	CO1-Realizing the concept of differentiation and integration.
	CO2 - Applications of differentiation include measuring velocity, acceleration, etc.
	CO3 - Applications of integration include estimating areas, volumes, etc.
	CO4 - Introducing the concepts of distance between two points, slope and transformations of origin.
	CO5 - Visualize various forms of straight lines, planes, conic sections.
	CO6 - It is used widely in Mechanics and Astronomy.

		CO7 - To study vectors triple product, equations and its applications in geometry and mechanics. CO8 – Basic knowledge of limits and continuity of vector functions and also its differentiation and integration.	
	CC2: Algebra	CO1 - Understanding of complex numbers, theory of equations, inequality and linear difference equations. CO2 - Linear equations are vital for solving any differential equations. CO3 - Many areas of Numerical analysis depend upon linear equations. CO4 - Specific fields of applications are computer graphics, Cryptography etc. CO5 - Introduce relation, mapping and some properties of positive integers. CO6 - Understanding of matrix operations further its applications to solve linear equations	
	CC3: Real Analysis	CO1 - It is an important part of pure mathematics to increase the knowledge of real numbers. CO2 - Understand the mathematical operations, ordering, boundedness, dense, limiting, closure and compactness properties of real numbers. CO3 - Introduce the knowledge of Bolzano- Weirstrass theorem. CO4 - To study sequences and its boundedness and convergence property. CO5 - To study series of real functions, Fourier series, half range series.	
	CC4: Group Theory-I	CO1 - Algebra is science of operations. CO2 - To understand the concept of groups, normal subgroups and permutations. CO3 - Visualize the homomorphism and isomorphism concept. CO4 - It is widely used in Computer science and I.T.	
	CC5: Theory of Real Functions	CO1 - Understand the concept of limits and continuity of functions. CO2 - Then clear the concept of differentiability of functions. CO3 - Introduce the concept of boundedness, discontinuity, uniform continuity. CO4 - Introduce the Darboux theorem, Rolle's theorem, Mean value theorems of Lagrange and Cauchy and applications. CO5 - Conditions of local extreme points and applications in geometry.	
	CC6: Ring Theory & Linear Algebra-I	CO1 - To under the structure of ring and integral domain, quotient and polynomial rings. CO2 - To learn about vector spaces, it basis and dimension. CO3 - To know about eigen values and eigen vectors. CO4 - To study linear transformations. CO5 - It is widely used in Computer science and I.T.	
	CC7: Ordinary Differential Equation & Multivariate Calculus-I	CO1 - To understand the importance of ordinary differential equation. CO2 - It is used in solving many problems of engineering and physics. CO3 - To study existence and uniqueness about solutions. CO4 - To learn about exact differential equations and various types. CO5 -To learn about second order linear differential equations. CO6 - To study series solution method to solve differential equations. CO7 – Limit and continuity of functions of two or more variables and their applications in optimization problem	

CC8: Riemann Integration & Series of Functions	CO1 - To learn basics of Reimann integration and fundamental theorems of integral calculus. CO2 - Basic concept of improper integral and its convergency test. CO3 - Knowledge of Beta and Gamma functions. CO4 - To learn value theorem of integral calculus. CO5 - To know basics of sequence of functions, and to know basic of sequence differentiability, and integrability of continuity, differentiability and integrability. CO6 - To understand the importance of Legendre polynomials. CO7 - To understand the importance of Legendre polynomial. CO8 - Concept of series of functions, fundamental theorem of power series and Fourier series are introduced	
CC9: Partial differential equation & Multivariate Calculus-II	CO1 - To understand the importance of partial differential equations. CO2 - To study about linear partial differential equations. CO3 - To learn about the simultaneous differential equations. CO4 - To understand the methods of solution for total differential equations. CO5 - To study properties of Beta and Gamma functions. CO6 - To learn about differentiation and integration of vectors. CO7 - To understand the concepts of gradient divergence and curl. CC8 - To know the importance of Stokes theorem, Gauss divergence theorem and green's theorem to interchange among the line, surface and volume integration.	
CC10: Mechanics	CO1 - It gives an introductory knowledge of relative motion, inertial, non-inertial reference frames, the motion of mechanical systems and their degrees of freedom. CO2 - Newton's laws of motion and conservation principles. CO3 - It gives a vast idea to solve problem particle dynamics in linear, planar system. CO4 - An introductory knowledge of linear and angular momentum, the energy principle, collusion of bodies.	
CC11: Probability & Statistics	CO1 - To learn classical probability, and different distributions. CO2 - It is used in real life events which follows new distributions CO3 - Understanding the process of sampling estimation of parameter of population. CO4 - To learn to test statistical hypothesis and its various aspects. CC5 - To understand various statistical measures.	
CC12: Group Theory-II & Linear Algebra-II	CO1 - To understand the concept of automorphism, external direct product. CO2 - Visualize inner product spaces and norms, Bilinear and quadratic forms. CO3 - Introduce the concept of Diagonalisation of symmetric matrices, Hessian matrix, Sylvester's law of inertia. Index, signature. CO4 - To understand the concept of dual CO5 - Eigenspaces of a linear operator, diagonalizability, and canonical forms also introduce.	
CC13: Metric Space & Complex Analysis	CO1 - To learn properties of complex numbers. CO2 - To understand the use of complex numbers in the field of Calculus. CO4 - To learn the importance of analytic functions, singularities and residues. CO5 - To apply the knowledge of residues in complex integration. CO6 - It is used in fixed point theorem and mapping principles. CO7 - To study continuous functions on metric spaces, connected metric spaces, complete metric spaces and compact metric spaces.	

CC14: Numerical Methods	CO1 - To learn how to interpolate the given set of values. CO2 - Introducing the rounding numbers, significant digits and error propagation. CO3 - It is used for solving a system of linear equations, the roots of transcendental and algebraic equations. CO4 - To understand the curve fitting for various polynomials. CO5 - To learn numerical solution of differential equations. CO6 - To learn numerical differentiation and integration. CO7 - To learn about interpolation polynomials. CO8 - It is used for solving a system of equations and used in all branches of engineering.	
DSE - A(1)-1: Advanced Algebra	CO1 - To understand the concept of group actions, Generalized Cayley's theorem, Index theorem. CO2 – Introduce Sylow's theorems and consequences. CO3 – Basic concepts of Principal ideal domain, principal ideal ring, prime element, irreducible element, greatest common divisor, least common multiple. CO4 – To learn polynomial rings, division algorithm and consequences. CO5 – To know basics of Ring embedding and quotient field.	
DSE - B(1)-2: Linear Programming & Game Theory	CO1 - Optimization techniques is a branch of Operations Research. CO2 - It deals with minimization of cost or maximization of profit. CO3 - It is used in Production engineering, Mathematics of finance, Networking, etc. CO4 - To study linear programming problems transportation and assignment problems. CO5 - To know the fundamentals of game theory. CO6 - It introduces the simplex method to solve various problems.	
DSE - A(2)-2: Mathematical Modelling	CO1 - To know Method of changing equations from one form to another easier form CO2 - It is used to solve both ordinary and partial differential equations. CO3 - Applications are in all branches of engineering. CO4 - To learn properties of Laplace transforms. CO5 - To learn properties of inverse Laplace transforms. CO6 - Overview of optimization modelling and linear programming model: geometric solution algebraic solution, simplex method, sensitivity analysis CO7 - It gives some introductory concept of Monte Calo simulating modelling. CO8 – Introduce basic models of queuing theory.	
DSE-B(2)-1: Point Set Topology	CO1 - To understand the basics of General Topology. CO2 - To know the generalisation of metric space. CO3 - To study open sets, closed sets, dense sets, compactness, connectedness, nature of continuity in a generalised set up	
SEC – A: C Programming Language	CO1 - It introduces the basic ideas of C program. CO2 - It helps to write a C program using code. CO3 - It helps to solve numerical methods using programming.	
SEC – B: Scientific computing with SageMath & R	CO1 - To know basics ideas how to use the softwares. CO2 - Some useful commands to do some basic maths, plot easily. CO3 - It helps to solve some complex numerical problems using program code.	

Under CCF

Semester I

CC1-1- MATH-H MC 1- Calculus, Geometry & Vector analysis

Upon successful completion of this course, students will be able to:

- CO 1. Compute limits, derivatives, and integrals.
- CO 2. Analyse functions using limits, derivatives, and integrals.
- CO 3. Recognize the appropriate tools of calculus to solve applied problems.
- CO 4. Describe the various forms of equation of a plane, straight line, Sphere, Cone and Cylinder.
- CO 5. Find the angle between planes, Bisector planes, Perpendicular distance from a point to a plane, Image of a line on a plane, Intersection of two lines.
- CO 6. Define coplanar lines and illustrate.
- CO 7. Compute the angle between a line and a plane, length of perpendicular from a point to a line.
- CO 8. Define skew lines, calculate the shortest distance between two skew lines.
- CO 9. Find and interpret the gradient curl, divergence for a function at a given point.
- CO 10. Interpret line, surface and volume integrals, evaluate integrals by using Green's Theorem, Stokes theorem & Gauss's Theorem.

SEC1-1 C Language with Mathematical Application

- CO 1. This course is very effective to the students because it includes from algorithms, flowcharts, basic programming in C.
- CO 2. Understand C programming language and can solve problems using C-programming software.
- CO 3. Understand the necessity of using numerical methods apply these to solve various types of problems.
- CO 4. Find roots of transcendental and polynomial equations using numerical technique.
- CO 5. Solve mathematical models using appropriate numerical methods and pursue research in the field of mathematics, engineering, computer science.
- CO 6. Constructs polynomials employing different methods and understand numerical differentiation and integration which enables them to undertake further studies in Mathematics, or its allied areas.
- CO 7. Compare the rate of convergence of different numerical formula Students will be able to

Semester 2

CC2-2-Th & MATH-H MC 2-2- Basic Algebra

- CO 1. Employ De Moivre's theorem in a number of applications to solve numerical problems.
- CO 2. Apply Cardons method (solve cubic equation) and Ferrari's method (solve Bi-quadratic equation).
- CO 3. Apply the inequality to the problems of maxima and minimum.
- CO 4. Complex functions are really helpful for understand the complex analysis.
- CO 5. Complex numbers are used in real life applications such as electricity, and also to signal processing, which is use full in cellular technology and wireless technologies, as well as radar and even biology (brain waves).
- CO 6. Anyone can judge about dependency between two rows and two columns of a matrix with the help of rank.
- CO 7. In our real life we use system of linear equations in the regards of age problem, speed related problems, wages and hourly rate problems.

SEM-I, II & III

IDC-1- Mathematics in Daily Life

- CO 1. Know Division Algorithm, Fundamental theorem of Arithmetic, Algorithm for Primality test.
- CO 2. Understand logical connectives: NOT, OR, AND and their truth tables, Tautology, logical consequence etc.
- CO 3. Formulate daily life problems as an LPP
- CO 4. Solve an LPP by graphical method
- CO 5. Know definition of Game, Examples from daily life Two person zero sum game.
- CO 6 Learn Simple interest and Compound interest, Idea of repayment of loans.

8. Departmental Activities

We the faculty members of Mathematics are upholders of knowledge, and that's why in a well-disciplined rhythm, we are nurturing our students and nurturing them to attain a bright future. We believe in man-making education.

The department of Mathematics, throughout the entire academic session organizes various educational programmes related to their courses like, students evaluation, question paper setup, test examination, result publication .

Apart from these, various co-curricular activities, we present here some of our departmental activities.

Wall Magazine

- **GANIT-SUTRA**

Our department of Mathematics publishes a wall magazine name GANIT-SUTRA. The theme of the wall magazine last time emphasized on application of mathematics formula. The theme of the magazine is decided by both students and teachers. In the entire canvas of the magazine there are touches of our student's creativity. Students of the department of mathematics provided their writings for the wall magazine in above mentioned topics.

- The greatest mathematicians of all time
- The man who knew infinity
- Father of radio science



Library

There are 266 books on mathematics in the central library. The department also has a seminar library. It contains 40 books for the reference of the students and teachers of the department.

Add-On Course

Title: Numerical Methods and its application on real life problems

- The Add-On Course on Numerical Methods provides a comprehensive introduction to computational techniques used for solving mathematical problems that are difficult to address analytically. This course covers key topics such as root-finding methods, numerical differentiation and integration, interpolation, curve fitting, and solutions to linear and nonlinear equations.

Applications in Real Life:

Numerical methods play a crucial role in various fields, including:

- Engineering: Structural analysis, fluid dynamics, and signal processing.
- Finance: Option pricing and risk assessment models.
- Physics and Chemistry: Solving differential equations in quantum mechanics and thermodynamics.
- Biology and Medicine: Modeling disease spread and medical imaging.
- Data Science & AI: Optimization techniques and machine learning algorithms.

This course is essential for students and professionals looking to enhance their computational problem-solving skills and apply them to real-world scenarios.

GOUR MOHAN SACHIN MANDAL MAHAVIDYALAYA													
DEPARTMENT OF MATHEMATICS													
Add-On Course(30hrs Duration)													
NUMERICAL METHODS AND ITS APPLICATION ON REAL LIFE PROBLEMS													
DATE: 01/04/23 TO 30/04/23 TIME: 06 P.M. TO 09 P.M.													
ATTENDANCE													
Sl.No.	Name	Date										Check by Teacher	Signature of the student
		01/04	03/04	05/04	08/04	12/04	17/04	20/04	26/04	28/04	30/04		
1	Koushik Halder	P	P	P	P	P	P	P	P	P	P	✓	Koushik Halder
2	Pranjal Halder	P	P	P	P	P	P	P	P	P	P	✓	Pranjal Halder

Seminar Report

Title: Chemical heterogeneity of non-metallic inclusions in steel making: A multi-variate population balance modeling approach

Date: 15.03.2023

Venue: Conducted online with Google link: <https://meet.google.com/fcz-xiex-kcv>

Speaker: Dr. Ashok Das, Materials Science and Engineering -Metallurgy Department, Institut Jean Lamour, Université de Lorraine, Nancy, France.

The Abstract of the Seminar

Achieving high mechanical performance in metallic materials requires precise control of the inclusion population, and the treatment of liquid steel in gas-stirred ladles is crucial for inclusion cleanliness in specialty steels. Tracking the inclusion properties, such as size, chemical composition, etc. are crucial in modelling of inclusion behaviour in liquid metal treatment. A comprehensive multi-variate population balance model (PBM) is developed to track the temporal evolution of the inclusion population inside the ladle. The model is developed by incorporating micro-mechanisms such as aggregation of inclusions, upward sedimentation of inclusions, flotation of entrapped inclusions at the surface of the bubbles, and capture of inclusions at the top slag. The model is solved using a weighted finite volume scheme to predict the chemical heterogeneity of inclusions. The simulation results, when applied to an industrial gas-stirring ladle operation, show the efficiency of this modelling approach and allow us to compare the respective roles of different mechanisms on the inclusion removal rate. Furthermore, the PBM has produced new results for multi-component inclusion system, including the distribution of inclusions with respect to their chemical components.

9. Lesson Plan:

Semester	Period of Semester	Tentative Dates of University Exam* (*Follow the latest notification by CU)	Name of the Faculty	Course Code	Paper Name	Brief Description of the Topics	Minimum No. of Lectures
						Unit-1: Calculus	25+5

Sem-1 (CC1)	July'21 – Dec.'21	Follow the latest notification by CU	Saddam Hossain	CC1- (TH+TU)	Calculus, Geometry & Vector Analysis	Unit-2: Geometry-2D	10	
Sem-1 (CC2)							Unit-2: Geometry-3D	20
							Unit-3: Vector Analysis	15
			Dr. Nilima Das	CC2- (TH+TU)	Algebra	Unit-1: Complex Number, Theory of Equation, Inequality, Linear Difference	30	
						Unit-3: Matrix Algebra, Solution of System of Linear Equations.	15	
						Unit-2: Relation, Mapping and Integers.	30	
			Sem-1 (GE1)	Dr. Nilima Das	GE1- (TH+TU)	Mathematics-GE1	Unit-1: Algebra-I	10
				Unit-2: Differential Calculus-I			20	
				Unit-3: Differential Equation-I			10	
				Unit-4: Coordinate Geometry			20	

Semester	Period of Semester	Tentative Dates of University Exam* (*Follow the latest notification by CU)	Name of the Faculty	Course Code	Paper Name	Brief Description of the Topics	Minimum No. of Lectures
Sem-2 (CC3)	Jan'22 - Jun'22	Follow the latest notification by CU	Dr. Nilima Das	CC3- (TH+TU)	Real Analysis	Unit-1: Real Numbers	30
						Unit-2: Real Sequence	30
						Unit-3: Infinite Series	10+5
Sem-2 (CC4)			Saddam Hossain	CC4- (TH+TU)	Group Theory-I	Unit-1: Group & Subgroup	30
						Unit-2: Cyclic Group	25
						Unit-3: Normal Subgroup	20
Sem-2 (GE2)			Saddam Hossain	GE2- (TH+TU)	Mathematics GE2	Unit-1: Differential Calculus-II	15
						Unit-2: Differential Equation-II	10
						Unit-3: Vector Algebra	10
						Unit-4: Discrete Mathematics	25

Semester	Period of Semester	Tentative Dates of University Exam* (*Follow the latest notification by CU)	Name of the Faculty	Course Code	Paper Name	Brief Description of the Topics	Minimum No. of Lectures
Sem-3 (CC5)	July'21 – Dec.'21	Follow the latest notification by CU	Dr. Nilima Das	CC3- (TH+TU)	Theory of Real Functions	Unit-1: Limit and Continuity of functions	40
						Unit-2: Differentiability of Functions	35
Sem-3 (CC6)			Saddam Hossain	CC4- (TH+TU)	Ring Theory & Linear Algebra-I	Unit-1: Ring Theory	35
						Unit-2: Linear Algebra	40
Sem-3 (CC7)			Subhajit Kumar	CC6- (TH+TU)	Ordinary Differential	Unit-1: Ordinary Differential Equation	40
						Unit-2: Multivariate Calculus-I	35
Sem-3 (SEC-A1)			Samare sh Pramani k	SEC-A1-TH	C-Programming Language	History of Computer, Constants, Variables & Data type of C-Program, Decision making and Branching, Control Statements, Array, User defined functions, Library functions.	30
Sem-3 (GE-3)			Subhajit Kumar	GE3- (TH+TU)	Mathematics-GE3	Unit-1: Integral Calculus	10
						Unit-2: Numerical Methods	25
						Unit-3: Linear Programming (Theory)	10
						Unit-3: Linear Programming (Theory)	15

Semester	Period of Semester	Tentative Dates of University Exam* (*Follow the latest notification by CU)	Name of the Faculty	Course Code	Paper Name	Brief Description of the Topics	Minimum No. of Lectures
Sem-4 (CC8)	Jan'22 - Jun'22	Follow the latest notification by CU	Dr. Nilima Das	CC8- (TH+TU)	Riemann Integration and Series of Functions	Unit-1: Riemann Integration	35
						Unit-3: Power Series	5
						Unit-2: Improper Integral	10
						Unit-3: Sequence of Functions, Series of Functions and Fourier Series.	25
Sem-4			Subhajit Kumar	CC9-	PDE &	Unit-1: Partial Differential	40

(CC9)				(TH+TU)	Multivariate Calculus-II	Equation.	
						Unit-2: Multivariate Calculus-II	35
Sem-4 (CC10)			Saddam Hossain	CC10- (TH+TU)	Mechanics	Unit-3: Kinematics of a Particle, Newton Laws of motion and Law of gravitation.	20
						Unit-4: Problems in particle dynamics, Planar motion of a particle, Motion of a particle in 3D.	20
						Unit-1: Coplanar forces, Force system in space, Friction	15
						Unit-2: Virtual work, Stability of equilibrium.	10
						Unit-5: Many particles system: Principle of (i) Linear momentum, (ii) Angular momentum. The Energy Principle.	10
Sem-4 (SEC-B)			Samaresh Pramanik	SEC-B-TH	Scientific Computing with Sage Math.	Numeric Computation, Plotting of functions, Programming and Applications.	30
Sem-4 (GE4)			Subhajit Kumar	GE4- (TH+TU)	Mathematics GE4	Unit-1: Algebra-II (Vector Space)	10
				GE4- (TH+TU)	Mathematics GE4	Unit-1: Algebra-II (Group Theory, Ring and Field)	10
				GE4- (TH+TU)	Mathematics GE4	Unit-2: Computer Science and Programming.	15
				GE4- (TH+TU)	Mathematics GE4	Unit-3: Probability and Statistics	25
Semester	Period of Semester	Tentative Dates of University Exam>(*Follow the latest notification by CU)	Name of the Faculty	Course Code	Paper Name	Brief Description of the Topics	Minimum No. of Lectures
Sem-5 (CC11)			Saddam Hossain	CC11- (TH+TU)	Probability & Statistics	Unit-1: Basic theory, Distribution-I, Expectation-I.	20

	July'21 – Dec.'21	Follow the latest notification by CU				Unit-2: Distribution-II, Expectation-II.	15+5
						Unit-3: Convergence in Probability.	5
						Unit-4: Sampling Distribution, Estimation of Parameters.	15
						Unit-5: Statistical Hypothesis.	15
Sem-5 (CC12)			Dr. Nilima Das	CC12- (TH+TU)	Group Theory-II & Linear Algebra-II	Unit-1: Group Theory	35
						Unit-2: Linear Algebra	40
Sem-5 (DSE-A1)			Dr. Nilima Das	DSE-A1 (TH+TU)	Bio Mathematics	Unit-1: Math. Biology and Modelling process.	25
						Unit-2: Activator and Inhibitor system model.	30
						Unit-3: Discrete models.	15+5
Sem-5 (DSE-B1)			Subhajit Kumar	DSE-B1 (TH+TU)	Linear Programming & Game Theory	Unit-1: Formulation and Basic theory of LPP.	15
						Unit-2: Simplex method, Two-phase method.	20
						Unit-3: Duality Theory and applications.	10
						Unit-4: Transportation and Assignment problems and Game Theory.	30

Semester	Period of Semester	Tentative Dates of University Exam* (*Follow the latest notification by CU)	Name of the Faculty	Course Code	Paper Name	Brief Description of the Topics	Minimum No. of Lectures
Sem-6 (CC13)	Jan'22 - Jun'22	Follow the latest notification by CU	Subhajit Kumar	CC13- (TH+TU)	Metric Space & Complex Analysis	Unit-1: Metric Space	40
						Unit-2: Complex Analysis	35
Sem-6 (CC14)			Dr. Nilima Das	CC14- (TH)	Numerical Methods	Unit-1: Error & Numerical Algorithms	5
						Unit-2: Approximation and Interpolation	15
			Unit-3: Differentiation and Integration.			10	
			Unit-4: Solution of Transcendental Equations.			10	
			Unit-5: Solution of linear system of equations.			10	
			Unit-6: Solution of ODE			5	
				CC14-P	Numerical Methods Lab	Using C Programming (Computer Lab)	20
Sem-6 (DSE-A2)			Saddam Hossain	DSE-A2	Fluid Statics & Elementary Fluid Dynamics	Unit-1: Introduction and Fundamental Concepts.	20
						Unit-2: Hydrostatics and Gas	25
						Unit-3: Kinematics of Fluid	15
						Unit-4: Conservation Equations.	15
Sem-6 (DSE-B2)			Subhajit Kumar	DSE-B2	Point Set Topology	Unit-1: Topological Space, basis up to isometry and metric invariants.	35
	Unit-2: First Countability, etc. up to Heine's continuity criterion.	15					
	Unit-3:	25					

B.Sc. CBCS HONOURS AND GENERAL: SEM-3, SEM-4, SEM-5, SEM-6

Semester	Programme	Course Code	Topic	Teachers	No. of Hours	Marks
3	Hons.	CC5	Limit & Continuity of functions	SK	40	55
			Differentiability of Functions	SH	35	45
		CC6	Ring Theory	SK	35	47
			Linear Algebra-I	SH	25	33
			Linear Algebra-I	SK	15	20
		CC7	Ordinary Differential Equation	SK	40	53
			Multivariate Calculus-I	SH	27	36
			Multivariate Calculus-I	SK	08	11
		SEC-A	C Programming Language	SP	50	100
3	General	CC3/GE3	Integral Calculus	SH	10	16
			Numerical Methods	SK	25	42
			Linear Programming	SK	25	42
		SEC-A	C Programming Language	SP	30	100
4	Hons.	CC8	Riemann Integration	SH	35	47
			Improper Integral, Series of Functions, Power Series	SK	36	47
			Fourier Series	SH	4	6
		CC9	Partial Differential Equation	SK	40	53
			Multivariate Calculus-II	SK	35	47
		CC10	Coplanar Force, Couple, Friction	SH	15	20
			Virtual Work, Stability Kinematics, Newton Laws, Particle dynamics, Planar motion of a particle, Many particles systems, Angular momentum Principle, Energy Principle	SK	60	80
		SEC-B	Scientific Computing with Sage Math &R	SP	50	100
4	General	CC4/GE4	Algebra-II	SH	10	17
			Computer Science & Programming	SP	25	41
			Probability	SH	7	12
			Statistics	SH	18	30
5	Hons	CC11	Probability and Graphical Demonstration	SH	45	60
			Statistics	SH	30	40
		CC12	Group Theory-II	SK	35	47
			Linear Algebra-II	SK	27	36
				SK	13	17

		DSE–B1	LPP	SK	75	100
5	General	DSE-A	Particle Dynamics	SH	60	100
		SEC-A	Object Oriented C++	SP	30	100
6	Hons	CC13	Metric Space	SH	40	53
			Complex Analysis	SK	35	47
		CC14	Numerical Methods	SK	55	52
			Numerical Methods Lab	SK	50	48
		DSE-A2	Differential Geometry	SH	75	100
		DSE-B2	Advanced Mechanics	SH	75	100
6	General	SEC-B	Boolean Algebra	SK	30	100
		DSE-B	Uniform Convergence of Sequence and Series of functions	SH	26	43
			Power series and radius of Convergence, Laplace Transformation	SK	30	50
			Fourier Series	SH	4	7
		DSE–A1	Group Theory	SK	25	33
			Ring Theory	SK	50	67

10. Student Progression

Student progression	Against % enrolled
UG to PG	30

11. SWOC Analysis of the Department and Future Plans:

Strength: an adequate number of books in the library

Weakness: lack of full-time faculty

Opportunity: great demand for the subject for competitive exams.

Challenge: to improve the quality of students

Future Plans: To improve infrastructural facilities