Lecture Plan

Name of the College: Government College of Arts, Science and Commerce, Sanquelim-Goa

Name of Faculty: Samrudhi Uday Vaigankar	**Subject:** Mathematics	
Paper code: MAT -100 Foundational Mathematics(Practical)	**Program:** B.Sc.	**Division: -**
Academic year: 2025-26	**Semester:** II	**Total Lectures: 27**

Course Objectives:

To develop logical reasoning among students in order to be able to organize all aspects of mathematics in such a way that at the base are the most fundamental concepts, assumptions and principles, and the other aspects depend on this base.

Expected Course Outcome:

1) Infer the truth of various sentences and its equivalents and outline various properties of sets.
2) Examine and Identify the types of relations and functions.
3) Make use of the strong and weak induction.
4) Solve systems of linear equations.
5) Discuss the properties of determinants.

Student Learning Outcome: Student will be able to

1) Recollect the basic definitions and theorems in foundations and explain the various proofs and concepts involved.
2) Apply the concepts of linear equations and determinants to explain proofs and solve problems effectively.

Month	Lecture From	Lecture To	No. of lectures allotted	Topic, Subtopic to be covered	Exercise/ Assignment	ICT Tools	Reference books
December	01/12/2025	06/12/2025	0 Datta Jayanti, Field Trip				
	08/12/2025	13/12/2025	2	Identifying and using quantifiers, Negating statements with single and multiple quantifiers, Compound statements with quantifiers, Conjunction and disjunction of statements, and Negation of a compound statement.		Chalk board	Ajit Kumar, S. Kumaresan, and B. K. Sarma: A Foundation Course in Mathematics
	15/12/2025	20/12/2025	1 Goa Liberation day	Different forms of implications, Converse of implications, Negating implications, and Contrapositive of implications.		Chalk board	Ajit Kumar, S. Kumaresan, and B. K. Sarma: A Foundation Course in Mathematics
	22/12/2025	27/12/2025	0 Christmas break (24/12/2025 to 01/01/2026)				
December-January	29/12/2025	03/01/2026	1 Christmas break	Different types of proofs in mathematics.		Chalk board	Ajit Kumar, S. Kumaresan, and B. K. Sarma: A Foundation Course in Mathematics

January	05/01/2026	10/01/2026	2	Operations on sets like union, intersection, set difference, and complementation.		Chalk board	Ajit Kumar, S. Kumaresan, and B. K. Sarma: A Foundation Course in Mathematics
	12/01/2026	17/01/2026	2	Identifying one – one and onto functions – I.		Chalk board	Ajit Kumar, S. Kumaresan, and B. K. Sarma: A Foundation Course in Mathematics
	19/01/2026	24/01/2026	2	Identifying one – one and onto functions – II.		Chalk board	Ajit Kumar, S. Kumaresan, and B. K. Sarma: A Foundation Course in Mathematics
	26/01/2026	31/01/2026	2	Finding “natural” bijections between given sets and finding the inverse of a bijective function.		Chalk board	Ajit Kumar, S. Kumaresan, and B. K. Sarma: A Foundation Course in Mathematics
February	02/02/2026	07/02/2026	2	Inverse image of subsets under functions. Identifying the type of relation and Obtaining equivalence classes of an equivalence relation.		Chalk board	Ajit Kumar, S. Kumaresan, and B. K. Sarma: A Foundation Course in Mathematics
	09/02/2026	14/02/2026	2	Using induction principles to establish statements.		Chalk board	Ajit Kumar, S. Kumaresan, and B. K. Sarma: A Foundation Course in Mathematics
	16/02/2026	21/02/2026	2	Solving systems of linear equations using elementary operations.		Chalk board	W. K. Nicholson: Linear Algebra with Applications

	23/02/2026	28/02/2026	2	Reducing a matrix to row – echelon form using Gaussian algorithm.		Chalk board	W. K. Nicholson: Linear Algebra with Applications
March	02/03/2026	07/03/2026	2	Solving homogeneous systems of equations.		Chalk board	W. K. Nicholson: Linear Algebra with Applications
	09/03/2026	14/03/2026	2	Solving homogeneous systems of equations.		Chalk board	W. K. Nicholson: Linear Algebra with Applications
	16/03/2026	21/03/2026	2	Computing determinants using the properties of determinants.		Chalk board	W. K. Nicholson: Linear Algebra with Applications
	23/03/2026	28/03/2026	1 Ram Navami	Solving a system of equations using Cramer's rule.		Chalk board	W. K. Nicholson: Linear Algebra with Applications

*** Assessment Rubrics**

Component	Max Marks
ISA 1	7.5
ISA 2	7.5
Practical	25
Project	Nil
Semester End Exam	60