Semester Lecture Plan

Name of the college: Government college of Arts, Science and Commerce , Sanquelim Goa		
Name of Faculty: Amit H Thakur	**Subject: Mathematics**	
Paper code: MAT-100	**Program/Course: F.Y.B.Sc.**	**Division: -**
Academic year: 2024 – 2025	**Semester: II**	**Total Lectures: 30**

Course Objectives:
To develop logical reasoning among students in order to be able to organize all aspects of mathematics.

Course Learning Outcome: The students will be able to

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 system of linear equations
5) Discuss the properties of determinants

Month	Lectures From: To:	No. of lectures	Topic, Subtopic to be covered	Exercise	ICT Tools	Reference books

December	**Week 2** **09/12/24**	**14/12/24**	02	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	Problem Solving	Chalk-board	Ajit Kumar, S. Kumaresan, and B. K. Sarma: A Foundation Course in Mathematics
December	**Week 3** **16/12/24**	**21/12/24**	02	Different forms of implications, converse of implications, negating implications, and contrapositive of implications	Problem Solving	Chalk-board	Ajit Kumar, S. Kumaresan, and B. K. Sarma: A Foundation Course in Mathematics
January	**Week 4** **02/01/25**	**04/01/25**	02	Different types of proofs in mathematics	Problem Solving	Chalk-board	Ajit Kumar, S. Kumaresan, and B. K. Sarma: A Foundation Course in Mathematics
January	**Week 5** **06/01/25**	**11/01/25**	02	Operations on sets like union, intersection, set difference, and complementation	Problem Solving	Chalk-board	Ajit Kumar, S. Kumaresan, and B. K. Sarma: A Foundation Course in Mathematics
January	**Week 6** **13/01/25**	**18/01/25**	02	Identifying one-one and onto functions-I	Problem Solving	Chalk-board	Ajit Kumar, S. Kumaresan, and B. K. Sarma: A Foundation Course in Mathematics

January	**Week 7** **20/01/25**	**25/01/25**	02	Identifying one-one and onto functions-II	Problem Solving	Chalk-board	Ajit Kumar, S. Kumaresan, and B. K. Sarma: A Foundation Course in Mathematics
January-February	**Week 8** **27/01/25**	**01/02/25**	02	Finding natural bijections between given sets and finding the inverse of bijective functions	Problem Solving	Chalk-board	Ajit Kumar, S. Kumaresan, and B. K. Sarma: A Foundation Course in Mathematics
February	**Week 9** **03/02/25**	**08/02/25**	02	Inverse image of subsets under functions	Problem Solving	Chalk-board	Ajit Kumar, S. Kumaresan, and B. K. Sarma: A Foundation Course in Mathematics
February	**Week 10** **10/02/25**	**15/02/25**	02	Identifying the type of relation and obtaining equivalence classes of an equivalence relation.	Problem Solving	Chalk-board	Ajit Kumar, S. Kumaresan, and B. K. Sarma: A Foundation Course in Mathematics
February	**Week 11** **17/02/25**	**22/02/25**	02	Using induction principles to establish statements	Problem Solving	Chalk-board	Ajit Kumar, S. Kumaresan, and B. K. Sarma: A Foundation Course in Mathematics

February-March	**Week 12** **24/02/25**	**01/03/25**	02	Solving system of linear equations using elementary operations	Problem Solving	Chalk-board	W. K. Nicholson: *Linear Algebra with Applications,* 4th Edition, McGraw – Hill Ryerson Limited, 2003.
March	**Week 13** **03/03/25**	**08/03/25**	02	Reducing a matrix to row echelon form using Gaussian algorithm	Problem Solving	Chalk-board	W. K. Nicholson: *Linear Algebra with Applications,* 4th Edition, McGraw – Hill
March	**Week 14** **10/03/25**	**15/03/25**	02	Solving homogeneous system of equations	Problem Solving	Chalk-board	W. K. Nicholson: *Linear Algebra with Applications,* 4th Edition, McGraw – Hill Ryerson Limited, 2003.
March	**Week 15** **17/03/25**	**22/03/25**	02	Computing determinants using the properties of determinants	Problem Solving	Chalk-board	W. K. Nicholson: *Linear Algebra with Applications,* 4th Edition, McGraw – Hill Ryerson Limited, 2003.
March	**Week 16** **24/03/25**	**29/03/25**	02	Solving a system of equations using Cramer's rule	Problem Solving	Chalk-board	W. K. Nicholson: *Linear Algebra with Applications,* 4th

							Edition, McGraw – Hill Ryerson Limited, 2003.
March-April	**Week 17** **31/03/25**	**05/03/25**	02	Revision	Problem Solving	ChalkBoard	
April	**7/04/25**	**11/04/25**	02	Practical Exam			

*** Assessment Rubrics**

Component	Max Marks
ISA 1	**-**
ISA 2	**-**
Practical	**25**
Project	**-**
Semester End Exam	**-**