Course Type	Course Code	Name of Course	L	T	P	Credit
DP	NMCC504	Numerical Linear Algebra Lab	0	0	3	1.5

Course Objective

- The audience shall be able to apply matrix factorization algorithms for real life systems for an approximate solution.

Learning Outcomes

- Matrix factorization, Numerical Solution of Linear Systems, Stability of Linear Systems, Least Square Solutions shall be the main focus and upon completion of this course, one could get the methods of best approximation and stable numerical solutions for real life systems arising in science and engineering.

Unit No.	Topics to be Covered	Contact Hours	Learning Outcome
1	Floating Point representation in numerical computations, Gaussian Elimination Algorithms, LU factorization Algorithms	9	The students shall be able to make a data structure for handling various matrix factorization and its applicability for large systems.
2	QR factorization, SVD Projection Algorithms	6	Implementation of perturbation and its variants while computing SVD algorithms
3	Least Square Solution System Algorithms	6	Normal Equation solutions
4	Numerical Matrix eigenvalue problems	6	Solution of eigenvalue problems numerically.
5	Iterative methods large and Sparse Systems	9	The student explores the stability criterion of the schemes and analyses for real life systems.
6	Practice session and Practical Lab Exam etc.	6	
	Total	**42**	

Text Books:

1. B.N. Datta: Numerical Linear Algebra and Applications, 2/3, SIAM 2010.

Reference Books:

1. R.S. Varga: Matrix Iterative Analysis, Wiley, 1990.