

## NUMERICAL ANALYSIS AND STATISTICAL TECHNIQUES LAB

<b>Paper Code: ETMA-253</b>	<b>L</b>	<b>T/P</b>	<b>C</b>
<b>Paper: Numerical Analysis and Statistical Techniques Lab</b>	<b>0</b>	<b>2</b>	<b>1</b>

### **List of experiments:-**

1. Solution of algebraic and transcendental equation.
2. Algebra of matrices: Addition, multiplication, transpose etc.
3. Inverse of a system of linear equations using Gauss-Jordan method.
4. Numerical Integration.
5. Solution of ordinary differential equations using Runge-Kutta Method.
6. Solution of Initial value problem.
7. Calculation of eigen values and eigen vectors of a matrix.
8. Plotting of Unit step function and square wave function.

It is expected that atleast 12 experiments be performed, including the above specified 8 experiments which are compulsory. The remaining experiments may be developed by faculty and students based on applications of Mathematics in Real Life problem.

### **Text Books:**

- [T1] B.S. Grewal., "Numerical Methods in Engg. And Science", Khanna Publications  
[T2] P. Dechaumphai and N. Wansophark, "Numerical Methods in Engg.: Theories with Matlab, Fortran, C and Pascal Programs", Narosa Publications

### **Reference Books:**

- [R1] P.B. Patil and U.P. Verma, "Numerical Computational Methods", Narosa Publications  
[R2] John C. Polking and David Arnold, "Ordinary Differential Equations using MATLAB", Pearson Publications  
[R3] Rudra Pratap, "Getting Started With MatLab" Oxford University Press  
[R4] Byrom Gottfried, "Programming With C" Shaum's Outline  
[R5] Santosh Kumar, "Computer based Numerical and Statistical Techniques", S. Chand Publications.

**NOTE:- At least 8 Experiments out of the list must be done in the semester.**