Course No	Course Name	L-T-P-Credits
MA 481	**NUMERICAL ANALYSIS LAB**	**0-0-3:2**

Prerequisite: NIL

Course Objectives: The course aims to provide the knowledge of computer programming to write the codes for the numerical methods learned in "Numerical Analysis" using C language and/or MATLAB.

Course Outcomes: Upon successful completion of the course, students will be able to:

1. Write computer programs to solve engineering problems with MATLAB and/or C Language
2. Implement numerical methods in MATLAB /C Language.
3. Analyze the stability of algorithm.
4. Analyze and evaluate the accuracy of common numerical methods.
5. Ability to use approximation algorithm in real world problem.

SYLLABUS

Module	Contents	Hours
I	Gaussian elimination, Jacobi, Gauss Seidel methods.	6
II	Bisection method, fixed point iteration scheme, Newton-Raphson method, secant method.	9
III	Lagrange's interpolation formula, Newton's divided difference formula.	9
IV	Trapezoidal rule, Simpson's 1/3,3/8-rules.	3
V	Euler's method modified Euler's method, Runge-Kutta method, Milne's method, Adams-predictor-corrector method.	9

Essential Readings:

1. W. H. Press, B. P. Flannery, S. A. Teukolsky, W. T. Vetterling, "*Numerical Recipes in C", Cambridge University Press*, 1st edition,1988.

Supplementary Readings:

1. M. Pal, *Numerical Analysis for Scientists and Engineers: Theory and C Programs*, Narosa, 2008.