# Department of Mechanical Engineering
# Indian Institute of Technology Kanpur
# ME685A: Home Assignment 2

Due: on or before August 21, 2021

This assignment must be your own work. Taking help from others or helping others are not allowed.

Consider a nonsingular $n \times n$ matrix **A** and an $n$-dimensional column vector **b**. Using Gaussian elimination, we wish to solve for the $n$-dimensional column vector **x** where $\mathbf{Ax} = \mathbf{b}$

1. Write a computer program for the naive Gaussian elimination.

2. Use the program to solve

$$
\begin{bmatrix} 4 & 1 & 1 & 1 \\ 1 & 4 & 1 & 1 \\ 1 & 1 & 4 & 1 \\ 1 & 1 & 1 & 4 \end{bmatrix}
\begin{bmatrix} x_1 \\ x_2 \\ x_3 \\ x_4 \end{bmatrix}
=
\begin{bmatrix} 7 \\ 7 \\ 7 \\ 7 \end{bmatrix}
$$

Write your name and roll no at the top of each page. Also write your name and roll no in the computer program (duly commented). Put all documents in a folder. Name the folder as $< name > \_ < roll > \_ < hw1 >$. Zip the folder and upload in MooKit.

Your program file must be a plain text file. The file extension should be as per your programming language (*.c, *.cpp,*.f90,*.py etc.)