# INDIAN INSTITUTE OF TECHNOLOGY ROORKEE

**MIN-103: Programming and Data Structures**

**Tutorial 8**

1. Write a program to display the elements of a 1D array and the sum of these elements using **pointers**.
2. Write a function **void transpose (double\*\* A, const int n)** that prints the transpose of a square matrix A of size n. Write the main() function to ask user to enter the size and elements of a square matrix and call transpose function to print the transpose of the matrix.
3. Write a program that uses **pointers** to read elements of the arrays that contains roll numbers, and marks in five different subjects of 10 students. The program then uses pointers to print class average in each subject, and also displays the average marks of each student.
4. Write a program that takes the size n of an array from the user. It then dynamically creates a one dimensional array of size n and type int. It should prompt the user to input n integer values which are then stored in the array.
5. Declare and initialize a two-dimensional array A of type double size 3 x 3 dynamically. Read the values of the elements from the user. Using pointers display the address and values of its elements.
6. Write a program that prints the sum of factorials of the first n whole numbers using the user-defined function **double sumFactn(int n, double (\*f) (double))**. (Hint: Use function pointer)