**MSc. In Inter-disciplinary Biosciences**

**Syllabus for Laboratory Courses: (Laboratory I)**

**Coordinator: Tapas K Kundu**

**Instructor: Dr. Pakaj Sharma.**

**Plasmid isolation:** Preparation of competent cells, Transformation, Plasmid isolation, and relaxation assay using recombinant Topoisomerase I. (Agarose gel electrophoresis, estimation of DNA by different methods)

**Protein purification:** Recombinant protein purification from bacteria by Ni-NTA beads. Characterization of the protein by SDS PAGE and Mass spectrometry (demonstration by a special workshop for the MSc students only).

**Studies on macromolecule ligand interactions**

**Characterization of the interaction between different proteins and self-association of proteins**

**Denaturation of proteins and denaturation of nucleic acids.**

**Studies of interaction between proteins and nucleic acids.**

**Western blotting**

**Immunohistochemistry analysis and basic microscopy**

**In situ hybridization**

**PCR and RT-PCR**

**Cloning and expression of gene**