Computational Biology & Bioinformatics (LS 478)
Course Outline (each class of two hours duration)
Practical classes will be held in the classroom using wifi

Prof. Alok Bhattacharya

S. No.	Topics	Name of faculty	No. of lectures
1	Week 1 : Brief description of the Course, biological data, data mining, databases	Alok Bhattacharya	
2	Week 2 :Examples of different databases, Database searching, Boolean operators, SRS	Alok Bhattacharya	
3	Week 3 : Practical on databases and database searching	Alok Bhattacharya	
4	Week4 : Nucleic acid sequences, simple sequence features, such as GC content, skew ness, Motifs, manipulation of sequences	Alok Bhattacharya	
5	Week5 : Practical on nucleic acid sequences	Alok Bhattacharya	
6	Week6 : Amino acid sequences of proteins and their manipulation, motifs and domains	Alok Bhattacharya	
7	Week7 :Practical on previous lesson, that is proteins	Alok Bhattacharya	
8	Week 8 Concept of sequence alignment and similarity, different algorithms, global and local alignment, scoring systems	Alok Bhattacharya	
9	Week 9 : Practical on sequence alignment	Alok Bhattacharya	
10	Week10: Practical continued	Alok Bhattacharya	
11	Week11 : Multiple sequence alignment, theory and practical	Alok Bhattacharya	
12	Week12 :Phylogenetic tree construction, theory and practical	Alok Bhattacharya	
13	Week13 :Protein structure, 3D viewer, simple structure manipulation both theory and practical	Alok Bhattacharya	

If time permits secondary structure of both polypeptides and RNA prediction

Books:

1. Bioinformatics…., edited by Des Higgins and Willie Taylor; Oxford University Press
2. Bioinformatics…..by Orpita Basu and Simminder K Thukral, Oxford Higher Education
3. Introduction to Bioinformatics by Arthur M Lesk, Oxford University Press.