

DEPARTMENT OF CHEMISTRY				<i>Certificate Course</i>				
Sem	Course Type	Course Code	Course Title	Credits	Total Contact week	CIA	Ext	Total
	Certificate	21CCC03	Certificate Course in Bio-informatics	2	30	50	50	100

Objectives:

The Objective of the course is to

- i) Give Awareness about inter disciplinary science course
- ii) Support any Computation studies of a biological experimental work within the scope of course

Salient Features:

- Hands On training by experts during practical Hours
- Giving exposure about Various Data Base
- Basic Programming ability of programming language quoted in syllabus
- Course will be conducted after college regular working hours
- Giving Brief exposure about basic aspects of chemistry and Biology and Various free software

Unit I Introduction to Bioinformatics

Introduction – History – Scope and application of the bioinformatics.

Unit II Introduction to Various Biological Data Base

Major Bioinformatics data base – NCBI, Nucleotide database – Genbank, EMBL and protein database (including primary, secondary database) – PROSITE, PRINTS, Protein structural database – PDB, SCOP and CATH.

Unit III Chemistry behind bioinformatics

Types of interaction (including Covalent and Non-Covalent interaction) Basic introduction to Biomolecules such as Amino Acids, , Protein, DNA and RNA.

Unit IV Deep insight about structure of protein molecules

Primary, Secondary, Tertiary, Quaternary structures of protein molecules, DNA, RNA.

Unit V Protein Structure Prediction

Basic introduction to various types of modelling threading, evaluation of the predicted structure, Ramachandran Plot, molecular visualisation tools, Rasmol and Swiss PDB viewer introduction to docking and demonstration.

Awareness about Pearl, Python and basic commands in Linux operating system.

Books for study:

1. S.C.Rastogi et al., 2006. Bioinformatics concepts, skills and applications, 2nd Edition, CBS.
2. C.Subramanian, 2015. A text book of Bioinformatics. 1st edition, Dominant Publishers.
3. B.G.Curran et al., 2010. Bioinformatics. 1st edition, CBS Publishers and Distributors, PVT.

Books for reference:

1. Z. Ghoshand, B. Mallick. 2008. Bioinformatics: Principles and Applications. Oxford University Press, New Delhi.
2. Lesk, A.M. 2002. Introduction to Bioinformatics. Oxford University Press, London.
3. N.J.Chikale and V.S.Gomase. 2007. Bioinformatics. 1st edition. Himalaya Publishing house Ltd.
4. Vittal R. Srinivas, 2005. Bioinformatics a modern approach. Prentice Hall of India PVT. Ltd.
5. Lehninger Principles of Biochemistry: 6th edition

CIA MARK DISTRIBUTION		EXTERNAL MARK DISTRIBUTION	
Seminar	15	TEST	20
Test	10	PROJECT	30
Quiz	5		
TEST	20		
Total	50	Total	50