

## BIO-INFORMATICS (Honors)

<b>Course Code</b>		<b>Year</b>		<b>Semester</b>	
<b>Course Category</b>	HONORS	<b>Branch</b>	IT	<b>Course Type</b>	Theory
<b>Credits</b>	4	<b>L-T-P</b>	4-0-0	<b>Prerequisites</b>	-
<b>Continuous Internal Evaluation :</b>	30	<b>Semester End Evaluation:</b>	70	<b>Total Marks:</b>	100

Course Outcomes		
<b>Upon Successful completion of course, the student will be able to</b>		
CO1	Understand the basic concepts of Bioinformatics in Biological data analysis	L2
CO2	Identify protein structures and DNA, RNA Structures	L3
CO3	Classify different types of Biological Databases and Database Mining tools	L2
CO4	Interpret various Database mining tools and Gnome analysis.	L2

Contribution of Course Outcomes towards achievement of Program Outcomes & Strength of correlations (3:High, 2: Medium, 1:Low)															
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	
CO1	3														
CO2		3													
CO3	3														
CO4	3														

Syllabus		
Unit No	Contents	Mapped CO
<b>I</b>	<b>Biology and Information:</b> Bioinformatics-A Rapidly maturing science, Computers in Biology and Medicine, Virtual doctor, Biological macromolecules as Information carriers.	<b>CO1</b>
<b>II</b>	<b>Proteins :</b> Molecular Interaction in Protein Structure, Protein functions, DNA and RNA Structure, DNA Cloning and Sequencing, Genes , Taxonomy and Evolution	<b>CO1, CO2</b>
<b>III</b>	<b>Biological Databases :</b> Biological Database Organization, Data Annotation and Database connectivity, Public Databases-National Center for BioTechnology Information(NCBI), European Bioinformatics Institute(EBI)	<b>CO1, CO3</b>
<b>IV</b>	<b>Database Mining Tools :</b> Sequence Similarity Search Tools :BLAST and FASTA, an Overview of Database Sequence Searching, Pattern Recognition Tools, Multiple Alignment and Phylogenetic Tree Analysis	<b>CO1, CO4</b>
<b>V</b>	<b>Genome Analysis:</b> The Genomic, Organization of Genes, The Genome Projects, The Human Genome, Comparative Genomes, Functional Genomes, Microarray and Bioarray Technology, Genomes as Gene Networks	<b>CO1, CO4</b>

<b>Learning Resources</b>
<b>Text Books</b>
1. Lukas K. Buehler, Hooman H. Rashidi, "Bioinformatics Basics" Applications in Biological Science and Medicine, 2/e, Taylor & Francis (CRC) Publications 2005
<b>References</b>
1. D.R. Westhead, J.H. Parish, "Bioinformatics" Viva books private limited, New Delhi (2003)
2. Att Wood, "Bioinformatics" Pearson Education, 2004
3. Bryan Bergeron, M.D, "Bioinformatics Computing" Pearson Education, 2003
<b>E-Recourses and other Digital Material</b>
1. <a href="https://nptel.ac.in/courses/102106065">https://nptel.ac.in/courses/102106065</a>