

M.C.A. SEM – V
MCA – EL3 : Bioinformatics

Teaching Scheme (per week)		EXAMINATION SCHEME					
		INT		EXT		TOTAL	
Th. (hours)	Pr. (hours)	Th. (marks)	Pr. (marks)	Th. (marks)	Pr. (marks)	Th. (marks)	Pr. (marks)
4	-	30	-	70	-	100	-

UNIT I

(25%)

Introduction to Bioinformatics : Introduction, Historical Overview and Definition, Bioinformatics Applications, Major Databases in Bioinformatics, Data Management & Analysis, Molecular Biology & Bioinformatics, Central Dogma of Molecular Biology

The Cell & General Physiology : Cells as Living Unit of Body, **Structure of Cell :** Plasma Membrane, Nucleus, Cytoplasm, **Functions of Cell :** Diffusion, Osmosis, Filtration, Protein Synthesis, Transcription, Translation, Regulation of Protein Synthesis, **Cell Life Cycle :** Interphase, Cell Division, Meiosis

UNIT II

(25%)

DNA Sequence Analysis : Introduction, DNA Sequence Database, Importance of DNA Analysis, Gene structure of DNA, Features, Issues in interpretation of EST searches, Expression profile of a Cell, DNA libraries and ESTs, Approaches to EST analysis, Effects of EST data on DNA databases.

Geonomics : Genome Analysis & Mapping, Gene Identification & Prediction, Gene Expressions & Micro arrays

UNIT III

(25%)

Proteomics : Protein Classification and Structure Visualization, Protein Structure Prediction, Proteomics

UNIT IV

(25%)

Introduction to Drug Discovery – Technology & Strategies : Introduction, Areas Influencing Drug Discovery, Pharmacogenetics & Pharmacogenomics Applications, Analysis of Single Nucleotide Polymorphism, Important Parameters in Drug Discovery, Cell Cycle : Key to Drug Discovery, Technologies & Strategies, Strategy to Identify Possible Drug Target Molecules

Books :

- Unit 1,3 & 4 : BIOINFORMATICS Methods and Applications : S. C. Rastogi (PHI)
- Unit 2: Introduction to Bioinformatics : T. K. Attwood (PEARSON)

Question Paper Scheme:

Section – I

Section – II

Q.1 - Objective Type Unit I & II (11) Marks	(11) Marks	Q.4 - Objective Type Unit III & IV (11) Marks
Q.2 - Unit-I OR Q.2 Unit-I (12) Marks	(12) Marks	Q.5 - Unit-III OR Q.5 Unit-III (12) Marks
Q.3 - Unit-II OR Q.3 Unit-II (12) Marks	(12) Marks	Q.6 - Unit-IV OR Q.6 Unit-IV (12) Marks