**POST GRADUATE GOVERNMENT COLLEGE FOR GIRLS**

**SECTOR-42, CHANDIGARH**

**Teaching Plan Even Semester (UG and PG)**

**Session (2022-2023)**

**Class: BSc Bioinfo(E)1st Yr**  **Name of the Teacher: Dr Vikas Sharma**

**Subject: Stats & Computer Fund, Micro Period : 3rd**

**Paper: A & B Room No : Bioinfo Lab(122)**

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| **S. No** | **Dates** | **Topics to be covered** |
| Week 1 | 16/01/2023 – 21/01/2023 | Introduction to computers, Data types |
| Week 2 | 23/01/2023-28/01/2023 | Organization of Computers, Collection & Representation of Data |
| Week 3 | 30/01/2023- 04/02/2023 | Computer Algorithms, Problems based on probability Theorem  Probability definition & Theorems |
| Week 4 | 06/02/2023-11/02/2023 | Batch oriented, Real Time, Online applications |
| Week 5 | 13/02/2023-17/02/2023 | Primary Storage, Measurement Scales  Mean, Median, Mode |
| Week 6 | 20/02/2023-25/02/2023 | Secondary Storage devices,  Baye’s Theorem |
| Week 7 | 27/02/2023-04/03/2023 | Mass Storage Devices,  Graphical methods |
| Week 8 | 06/03/2023-11/03/2023 | Introduction to Genetics, Mendel Laws |
| Week 9 | 13/03/2023-18/03/2023 | Chromosome structure & Function |
| Week 10 | 20/03/2023-25/03/2023 | Mutagenesis in Bacteria |
| Week 11 | 27/03/2023-01/04/2023 | Nutritional Classification in microorganisms |
| Week 12 | 03/04/2023-08/04/2023 | Growth curve |
| Week 13 | 10/04/2023-15/04/2023 | Taxonomy |
| Week 14 | 17/04/2023-21/04/2023 | Products of microorganisms |
| Week 15 | 24/04/2023-29/04/2023 | Transposable elements |

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**Teaching Plan Even Semester (UG and PG)**

**Session (2022-2023)**

**Class: BSc Bioinfo(E)2nd Year Name of the Teacher:Dr Vikas Sharma**

**Subject: Struct Analy, Fund Mol Bio-II Period :4th**

**Paper :A&B Room No : 122**

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| **S. No** | **Dates** | **Topics to be covered** |
| Week 1 | 16/01/2023 – 21/01/2023 | Secondary structure prediction methods |
| Week 2 | 23/01/2023-28/01/2023 | CHAU FASMAN, GOR, Neural Network |
| Week 3 | 30/01/2023- 04/02/2023 | Genscan, Glimmer, Grail. |
| Week 4 | 06/02/2023-11/02/2023 | Tertiary Structure prediction methods |
| Week 5 | 13/02/2023-17/02/2023 | Threading/Fold recognition and Ab initio methods |
| Week 6 | 20/02/2023-25/02/2023 | searching by signal, searching by content, homology based predictions |
| Week 7 | 27/02/2023-04/03/2023 | Markov models, Hidden Markov models in gene prediction |
| Week 8 | 06/03/2023-11/03/2023 | Promoter analysis and predictions for prokaryotic and eukaryotic Genomes RNA structure prediction. |
| Week 9 | 13/03/2023-18/03/2023 | The genetic code. Prokaryotic and Eukaryotic Translation |
| Week 10 | 20/03/2023-25/03/2023 | 5’ – CAP formation, 3 – end processing polyadenylation, Splicing, Nuclear export of mRNA & mRNA stability |
| Week 11 | 27/03/2023-01/04/2023 | History and scope of recombinant DNA technology |
| Week 12 | 03/04/2023-08/04/2023 | Gene cloning and need to clone a gene. |
| Week 13 | 10/04/2023-15/04/2023 | Modifying enzymes: Restriction endonuclease, exonucleases, ligases, polymerases, kinase, alkaline phosphatase, topoisomerase |
| Week 14 | 17/04/2023-21/04/2023 | Purification of DNA from bacterial, plant and animal cells. |
| Week 15 | 24/04/2023-29/04/2023 | Induced mutations in plants, animals, and microbes and their importance. |

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**SECTOR-42, CHANDIGARH**

**Teaching Plan Even Semester (UG and PG)**

**Session (2022-2023)**

**Class: BSc Bioinfo(E)3rd Year Name of the Teacher:Dr Vikas Sharma**

**Subject: Intro to Proteomics , Immuno Period :5th**

**Paper :A & B Room No : 122**

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| **S. No** | **Dates** | **Topics to be covered** |
| Week 1 | 16/01/2023 – 21/01/2023 | Chemical properties of proteins |
| Week 2 | 23/01/2023-28/01/2023 | Physical interactions that determine the property of proteins |
| Week 3 | 30/01/2023- 04/02/2023 | Short-range interactions: Electrostatic forces, Van der Waal interactions, Hydrogen bonds, Ionic bonds, Hydrophobic bonds. |
| Week 4 | 06/02/2023-11/02/2023 | Determination of sizes (Sedimentation analysis, gel filteration, SDS-PAGE) |
| Week 5 | 13/02/2023-17/02/2023 | Native PAGE. |
| Week 6 | 20/02/2023-25/02/2023 | The proteome. Analysis of proteomes. 2D-PAGE |
| Week 7 | 27/02/2023-04/03/2023 | Sample preparation, solubilization, reduction, resolution |
| Week 8 | 06/03/2023-11/03/2023 | Mass spectrometry-based methods for protein identification. |
| Week 9 | 13/03/2023-18/03/2023 | Basic Immunology: Type of immunity- innate, acquired, active and passive. |
| Week 10 | 20/03/2023-25/03/2023 | Cells and tissues of immune systems: Lymphoid cells, mononuclear cells, dendritic cells, lymphoid organs. |
| Week 11 | 27/03/2023-01/04/2023 | Primary and secondary antigens: Immunogenicity, chemical composition, immunogen dosage, haptens , adjuvants |
| Week 12 | 03/04/2023-08/04/2023 | Antibody structure, functions and types of –antibody diversity, Ig domains |
| Week 13 | 10/04/2023-15/04/2023 | cross reactions, precipitation and agglutination, Immunological techniques: Immunodiffusion, Immunol-electrophoresis Stem cell biology |
| Week 14 | 17/04/2023-21/04/2023 | MHC restriction, regulation. |
| Week 15 | 24/04/2023-29/04/2023 | Antigen presentation and processing antigen presenting cells, cell mediate subset of T-cells: helper and suppressor cells |