**PG.GOVT COLLEGE FOR GIRLS, SECTOR-42, CHANDIGARH**

**Teaching Plan Even Semester**

**Session (2018-19)**

**Class: BSc (Biotech Hons.) VI sem. Name of the Teacher: Dr Ravneet K Boparai**

**Subject: Genomics & Proteomics Period : 4th (3,5)**

**Paper : Room No : 110**

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| **S. No** | **Dates** | **Topics to be covered** |
| Week 1 | 14 /01/2019 – 19/01/2019 | --NA-- |
| Week 2 | 21/01/2019 –  25/01/2019 | Introduction to protein structure, chemical properties of proteins |
| Week 3 | 28/01/2019 –  2/02/2019 | chemical properties of proteins, physical interactions that determine the properties of proteins, short range interactions |
| Week 4 | 4/02/2019 –  9/02/2019 | Electrostatic forces, van der waals interactions, hydrogen bonds, hydrophobic interactions |
| Week 5 | 11/02/2019 –  16/02/2019 | Determination of sizes (sedimentation analysis) |
| Week 6 | 18/02/2019 –  23/02/2019 | Gel filtration, SDS-PAGE, native PAGE |
| Week 7 | 25/02/2019 –  02/03/2019 | determination of covalent structures (Edman degradation) |
| Mid Semester Exam | | |
| Week 8 | 11/03/2019 –  16/03/2019 | Introduction to proteomics, analysis of proteomes |
| Week 9 | 18 /03/2019 –  22/03/2019 | analysis of proteomes, 2-D PAGE |
| Week 10 | 25/03/2019 –  30/03/2019 | sample preparation, solubilization, reduction |
| Week 11 | 1/04/2019 –  6/04/2019 | Resolution, reproducibility of 2-D PAGE |
| Week 12 | 8/04/2019 –  12/04/2019 | Mass spectrophotometry methods for protein identification |
| Week 13 | 15/04/2019 –  20/04/2019 | Mass spectrophotometry methods for protein identification |
| Week 14 | 22/04/2019 –  27/04/2019 | *De novo* sequencing using Mass spec. data |
| Week 15 | 29 /04/2019 –  3/05/2019 | *De novo* sequencing using Mass spec. data |

**PG.GOVT COLLEGE FOR GIRLS, SECTOR-42, CHANDIGARH**

**Teaching Plan Even Semester**

**Session (2018-19)**

**Class: BSc IV sem. (Biotech elective) Name of the Teacher: Dr Ravneet K Boparai**

**Subject: Molecular Biology Period :1st (1,3-5)**

**Paper : Room No : 104**

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| **S. No** | **Dates** | **Topics to be covered** |
| Week 1 | 14 /01/2019 – 19/01/2019 | --NA-- |
| Week 2 | 21/01/2019 –  25/01/2019 | Structure of prokaryotic and eukaryotic genes |
| Week 3 | 28/01/2019 –  2/02/2019 | Structure of prokaryotic and eukaryotic genes |
| Week 4 | 4/02/2019 –  9/02/2019 | Transcription initiation, elongation |
| Week 5 | 11/02/2019 –  16/02/2019 | Elongation, termination in prokaryotes |
| Week 6 | 18/02/2019 –  23/02/2019 | Transcription in eukaryotes |
| Week 7 | 25/02/2019 –  02/03/2019 | Post transcriptional modifications |
| Mid Semester Exam | | |
| Week 8 | 11/03/2019 –  16/03/2019 | Mutations types, chemical and physical mutagens |
| Week 9 | 18 /03/2019 –  22/03/2019 | Induced mutations in plants, animals and microbes and their importance |
| Week 10 | 25/03/2019 –  30/03/2019 | Insertion elements and transposons |
| Week 11 | 1/04/2019 –  6/04/2019 | Translation initiation, elongation and termination in prokaryotes |
| Week 12 | 8/04/2019 –  12/04/2019 | Translation in eukaryotes, post translation modifications |
| Week 13 | 15/04/2019 –  20/04/2019 | post translation modifications: acetylation, glycosylation, and phosphorylation |
| Week 14 | 22/04/2019 –  27/04/2019 | Prokaryotic gene expression (lac, his, trp operons, catabolic repression) |
| Week 15 | 29 /04/2019 –  3/05/2019 | Eukaryotic gene expression (transcription factors,enhancers, insulators) |

**PG.GOVT COLLEGE FOR GIRLS, SECTOR-42, CHANDIGARH**

**Teaching Plan Even Semester**

**Session (2018-19)**

**Class: MSc (MBT) Sem. II Name of the Teacher:Dr Ravneet K Boparai**

**Subject: Molecular Biology Period :4th(1), 1st(6)**

**Paper : MBT 202 Room No : 127**

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| **S. No** | **Dates** | **Topics to be covered** |
| Week 1 | 14 /01/2019 – 19/01/2019 | --NA-- |
| Week 2 | 21/01/2019 –  25/01/2019 | DNA and its various forms, supercoilng of DNA, DNA melting |
| Week 3 | 28/01/2019 –  2/02/2019 | DNA melting, repetetitive sequences, cot and rot curves |
| Week 4 | 4/02/2019 –  9/02/2019 | Curve analysis, C-value paradox, DNA-protein interactions |
| Week 5 | 11/02/2019 –  16/02/2019 | Unit of DNA replication, enzymes involved in replication, origin and replication fork |
| Week 6 | 18/02/2019 –  23/02/2019 | Fidelity of replication, replication bacterial chromosome |
| Week 7 | 25/02/2019 –  02/03/2019 | Chromosome structure and organization of genes on chromosome, operon context |
| Mid Semester Exam | | |
| Week 8 | 11/03/2019 –  16/03/2019 | Replication of eukaryotic chromosomes, cell dividion and cell cycle |
| Week 9 | 18 /03/2019 –  22/03/2019 | cell division and cell cycle, transcription factors and machinery |
| Week 10 | 25/03/2019 –  30/03/2019 | Formation of initiation complex, RNA polymerases |
| Week 11 | 1/04/2019 –  6/04/2019 | Transcription activator and repressor |
| Week 12 | 8/04/2019 –  12/04/2019 | Elongation and termination, RNA capping |
| Week 13 | 15/04/2019 –  20/04/2019 | RNA editing, splicing and polyadenylation |
| Week 14 | 22/04/2019 –  27/04/2019 | Structure and functions of different types of RNA |
| Week 15 | 29 /04/2019 –  3/05/2019 | Non-coding RNA, RNA transport |

**PG.GOVT COLLEGE FOR GIRLS, SECTOR-42, CHANDIGARH**

**Teaching Plan Even Semester**

**Session (2018-19)**

**Class: MSc (MBT-IInd sem) Name of the Teacher: Dr. Ravneet K. Boparai**

**Subject: IPR, bioethics and entrepreneurship Period : 4th (4), 2nd (6)**

**Paper : MBT 205 T Room No : 127**

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| **S. No** | **Dates** | **Topics to be covered** |
| Week 1 | 14 /01/2019 – 19/01/2019 | NA |
| Week 2 | 21/01/2019 –  25/01/2019 | Biotechnology and hunger-challenges for Indian biotechnological research |
| Week 3 | 28/01/2019 –  2/02/2019 | Biotechnology and hunger-challenges for Indian biotechnological research and industries |
| Week 4 | 4/02/2019 –  9/02/2019 | Cartagena protocol on biosafety |
| Week 5 | 11/02/2019 –  16/02/2019 | Social and ethical application of biological weapons |
| Week 6 | 18/02/2019 –  23/02/2019 | Intersection of biotechnology with globalization, trade, poverty |
| Week 7 | 25/02/2019 –  02/03/2019 | Food security and environment sustainability |
| Mid Semester Exam | | |
| Week 8 | 11/03/2019 –  16/03/2019 | Entrepreneurship-need, scope, philosophy |
| Week 9 | 18 /03/2019 –  22/03/2019 | Classification, creativity and entrepreneurship |
| Week 10 | 25/03/2019 –  30/03/2019 | Entrepreneurship: competencies and traits, factors affecting entrepreneurship development |
| Week 11 | 1/04/2019 –  6/04/2019 | Functions of entrepreneurship, entrepreneurship with the motive of economic growth, theory of social change |
| Week 12 | 8/04/2019 –  12/04/2019 | Family structure, migration and enterprise |
| Week 13 | 15/04/2019 –  20/04/2019 | Barriers to entrepreneurship, community and entrepreneurship |
| Week 14 | 22/04/2019 –  27/04/2019 | Funding challenges for an entrepreneur, business planning and investment pitch |
| Week 15 | 29 /04/2019 –  3/05/2019 | Identify and evaluate business opportunities, risk assessment and management, opportunities for entrepreneurship in emerging markets |