**Post Graduate Govt. College for Girls, Sector-42, Chandigarh**

**Teaching Plan (OddSemester) Session (2019-2020)**

**Class: BSC (BIOTECH(HONS) 1SEM Name of the Teacher: DR SMITA**

**Subject: INTRODUCTION TO BIOTECH Period: THURS. FRI (4)**

**Room No: 111**

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| **S. No** | **Dates** | **Topics to be Covered** |
| Week 1 | 23-07-2019 to 27-07-2019 | Introduction to biotechnology :Structure and function of nucleic acid |
| Week 2 | 29-07-2019 to 03-08-2019 | Fundamentals of recombinant DNA technology: Restriction Enzymes |
| Week 3 | 05-08-2019 to 10-08-2019 | Vectors and their properties |
| Week 4 | 13-08-2019 to 17-08-2019 | Bacteria as workhorses of biotechnology; E. coli as the model bacterium |
| Week 5 | 19-08-2019 to 24-08-2019 | Yeast and fungi in Biotechnology |
| Week 6 | 26-08-2019 to 31-08-2019 | Introduction to multicellular organisms as research models: Drosophila melanogaster |
| Week 7 | 02-09-2019 to 07-09-2019 | Caenorhabditis elegans, |
| Week 8 | 09-09-2019to 14-09-2019 | Daniorerio, |
| Week 9 | 16-09-2019 to 21-09-2019 | Musmusculus |
| Week 10 | 23-09-2019 to28-09-2019  ( | Youth Festival 24-09-2019 to 27-09-2019) |
| Week 11 | 30-09-2019 to 05-10-2019 | Arabidopsis thaliana as model for plant genetics, |
| Mid Semester Exams**(October 9, 2019 to October 12, 2019)** | | |
| Week 12 | 16-10-2019 to 19-10-2019 | *Role of viruses and bacteriophages in biotechnology* |
| Week 13 | 21-10-2019 to 26-10-2019 | *Role of viruses and bacteriophages in biotechnology* |
| Week 14 | 29-10-2019 to 02-11-2019 | Introduction to genomics, transcriptomics, proteomics and metabolomics; |
| Week 15 | 04-11-2019 to 09-11-2019 | Introduction to genomics, transcriptomics, proteomics and metabolomics; |
| Week 16 | 11-11-2019 to 16-11-2019 | bioinformatics and its role in biotechnology |
| Week 17 | 18-11-2019 to 23-11-2019 | bioinformatics and its role in biotechnology |
| Week 18 | 25-11-2019 to 30-11-2019 | Revision |

**Post Graduate Govt. College for Girls, Sector-42, Chandigarh**

**Teaching Plan (OddSemester) Session (2019-2020)**

**Class: BSC 3 RD SEM Name of the Teacher: DR SMITA**

**Subject: GENETICS Period: MON, TUE, FRI SAT (2)**

**Room No: 104/127**

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| **S. No** | **Dates** | **Topics to be Covered** |
| Week 1 | 23-07-2019 to 27-07-2019 | Mendelian laws of inheritance, Sex determination in drosophila, plants and animals, sex linkage, |
| Week 2 | 29-07-2019 to 03-08-2019 | Non-disjunction as a proof of chromosomal theory of nheritance. |
| Week 3 | 05-08-2019 to 10-08-2019 | Numerical chromosome aberration polyploidy, aneuploidy, Chromosomal aberrations: duplications, inversions, Translocations, position effects. |
| Week 4 | 13-08-2019 to 17-08-2019 | Gene interactions, sex linked inheritance. Crossing over: molecular mechanism and cytological proof, |
| Week 5 | 19-08-2019 to 24-08-2019 | Recombination, linkage, gene mapping |
| Week 6 | 26-08-2019 to 31-08-2019 | Three point testcross, interference, coincidence,  recombination frequencies, |
| Week 7 | 02-09-2019 to 07-09-2019 | Tetrad analysis, somatic cell hybridization for gene linkage studies, |
| Week 8 | 09-09-2019to 14-09-2019 | *Hereditary defects. pedigree analysis.* |
| Week 9 | 16-09-2019 to 21-09-2019 | Population genetics: Hardy-Weinberg equilibrium, gene and genotypic frequencies,Chi- square *test, probability,* |
| Week 10 | 23-09-2019 to28-09-2019  ( | Youth Festival 24-09-2019 to 27-09-2019) |
| Week 11 | 30-09-2019 to 05-10-2019 | Mutation: Spontaneous versus induced mutations, types of mutations, mutagenic *agents:* |
| **MID SEMESTER EXAMINATION (October 9, 2019 to October 14, 2019)** | | |
| Week 12 | 16-10-2019 to 19-10-2019 | Physical, chemical and radiation, molecular basis of mutations, mechanisms of DNA repair, mutations frequency, |
| Week 13 | 21-10-2019 to 26-10-2019 | Basic microbial genetics: Conjugation, transduction, |
| Week 14 | 29-10-2019 to 02-11-2019 | transformation, |
| Week 15 | 04-11-2019 to 09-11-2019 | isolation of auxotrophs,  replica plating techniques, |
| Week 16 | 11-11-2019 to 16-11-2019 | analysis of mutations in biochemical pathway one gene – one enzyme hypothesis. |
| Week 17 | 18-11-2019 to 23-11-2019 | Extra chromosomal inheritance: mitochondrial and chloroplast genetic systems. |
| Week 18 | 25-11-2019 to 30-11-2019 | Revision |

**Post Graduate Govt. College for Girls, Sector-42, Chandigarh**

**Teaching Plan (OddSemester) Session (2019-2020)**

**Class: BSC 5SEM BIOTECH HONS Name of the Teacher: DR SMITA**

**Subject: MOLECULA BIOLOGY Period:MON (7), WED (3,4) FRI, SAT (5)**

**Room No: 122/104**

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| **S. No** | **Dates** | **Topics to be Covered** |
| Week 1 | 23-07-2019 to 27-07-2019 | DNA: Chemical composition of DNA DNA structure-single stranded DNA, detailed account of double stranded DNA, BDNA, Z.DNA and other structural forms and their importance. |
| Week 2 | 29-07-2019 to 03-08-2019 | Genome organization in prokaryotes: Molecular nature of the genetic material, Composition and structure of prokaryotic DNA and RNA. |
| Week 3 | 05-08-2019 to 10-08-2019 | Genome organization in eukaryotes: Composition and structure of eukaryotic DNA and RNA. |
| Week 4 | 13-08-2019 to 17-08-2019 | Characteristic features of highly repetitive DNA, Tandem repetitive DNA and Mini and microsatellite DNA |
| Week 5 | 19-08-2019 to 24-08-2019 | Insertional elements and their role and importance |
| Week 6 | 26-08-2019 to 31-08-2019 | DNA replication: Prokaryotic DNA replication; replication origin and site and structure and DNA Ter regions and structure. |
| Week 7 | 02-09-2019 to 07-09-2019 | DNA polymerases, composition and features, replication factors  and the mechanism of replication, leading strand and lagging strand synthesis, procesessivity and fidelity , Replication of single stranded DNA, M13 viral DNA |
| Week 8 | 09-09-2019to 14-09-2019 | *Disassembly of chromatin components and reassembly during r*eplication. |
| Week 9 | 16-09-2019 to 21-09-2019 | *Gene Expression: Overview of central dogma* |
| Week 10 | 23-09-2019 to28-09-2019  (Youth Festival 24-09-2019 to 27-09-2019) | -- |
| Week 11 | 30-09-2019 to 05-10-2019 | RNAs: types, rRNAs; Structural features of rRNAs- prokaryotic and eukaryotic. tRNAs: structural features, their anticodon feature. mRNAs- prokaryotic and eukaryotic mRNAs, structural features, |
| **MID SEMESTER EXAMINATION (October 9, 2019 to October 14, 2019)** | | |
| Week 12 | 16-10-2019 to 19-10-2019 | Transcription: regulatory elements and mechanism of transcription regulation Eukaryotes |
| Week 13 | 21-10-2019 to 26-10-2019 | Translation: Overview and mechanism of translation process in prokaryotes, characteristics of  the genetic code, structure and charging of tRNA, |
| Week 14 | 29-10-2019 to 02-11-2019 | Gene Regulation |
| Week 15 | 04-11-2019 to 09-11-2019 | Regulation of gene expression in response to environmental conditions. |
| Week 16 | 11-11-2019 to 16-11-2019 | Operon concept- the Lactose |
| Week 17 | 18-11-2019 to 23-11-2019 | Tryptophan operon |
| Week 18 | 25-11-2019 to 30-11-2019 | Revision |

**Post Graduate Govt. College for Girls, Sector-42, Chandigarh**

**Teaching Plan (OddSemester) Session (2019-2020)**

**Class: BTE BIOTECH Name of the Teacher: DR SMITA**

**Subject: BITECHNOLOGY Period:wed- sat (1)**

**Room No:126**

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| **S. No** | **Dates** | **Topics to be Covered** |
| Week 1 | 23-07-2019 to 27-07-2019 | History and scope of rDNA technology |
| Week 2 | 29-07-2019 to 03-08-2019 | Fundamental concepts of r DNA technology: gene cloning and need to clone a gene |
| Week 3 | 05-08-2019 to 10-08-2019 | DNA modifying enzyme: restriction enzyms |
| Week 4 | 13-08-2019 to 17-08-2019 | Endonuclease |
| Week 5 | 19-08-2019 to 24-08-2019 | Exonuclease |
| Week 6 | 26-08-2019 to 31-08-2019 | Polymerase, Ligase |
| Week 7 | 02-09-2019 to 07-09-2019 | Alkaline phosphatase, kinase, topoisomerase |
| Week 8 | 09-09-2019to 14-09-2019 | Purification of DNA purification from bacterial, plants and animal cells |
| Week 9 | 16-09-2019 to 21-09-2019 | Cloning vectors: E.coli |
| Week 10 | 23-09-2019 to28-09-2019  (Youth Festival 24-09-2019 to 27-09-2019) | -- |
| Week 11 | 30-09-2019 to 05-10-2019 | Cloning vectors: E.coli |
| **MID SEMESTER EXAMINATION (October 9, 2019 to October 14, 2019)** | | |
| Week 12 | 16-10-2019 to 19-10-2019 | Cloning vectors: yeast |
| Week 13 | 21-10-2019 to 26-10-2019 | Cloning vectors: bacteriophage |
| Week 14 | 29-10-2019 to 02-11-2019 | Transfection, electroporation |
| Week 15 | 04-11-2019 to 09-11-2019 | Screening of gene library |
| Week 16 | 11-11-2019 to 16-11-2019 | Selection of clones |
| Week 17 | 18-11-2019 to 23-11-2019 | Introduction to PCR and applications |
| Week 18 | 25-11-2019 to 30-11-2019 | Revision |