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

**Teaching Plan Odd Semester (UG 1st Year)**

**Session (2021-2022)**

**Class: Biotech Hons. I Sem**  **Name of the Teacher: Dr. Ruchi**

**Subject: Intro to Biotech Period :** 2nd (2,4)

**Paper : Room No : 111**

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| **S. No** | **Dates** | **Topics to be covered** |
| Week 1 | 1-09-2021 to 04-09-2019 | -- |
| Week 2 | 06-09-2021 to 11-09-2021 | -- |
| Week 3 | 13-09-2021 to 18-09-2021 | -- |
| Week 4 | 20-09-2021 to 25-09-2021 | -- |
| Week 5 | 27-09-2021 to 01-10-2021 | Structure and function of the cell: the basic unit of life |
| Week 6 | 04-10-2021 to 09-10-2021 | Structure and function of the cell: the basic unit of life, Prokaryotic and Eukaryotic cells |
| Week 7 | 11-10-2021 to 16-10-2021 | Biomolecules in a cell (proteins) |
| Week 8 | 18-10-2021 to 19-10-2021 | Introduction to basic techniques like sterilization, centrifugation |
| **Mid Semester Exam (21st October 2021 – 30th October 2021)** | | |  | electrophoresis, chromatography |
| Week 9 | 01-11-2021 to 06-11-2021 | Sonication, Applications of biotechnology: today and tomorrow |
| Week 10 | 08-11-2021 to 13-11-2021 | Basics of Biotechnology in fermentation processes |
| Week 11 | 15-11-2021 to 20-11-2021 | Green technology to control pollution, introduction to gene therapy |
| Week 12 | 22-11-2021 to 27-11-2021 | Biotechnology and society: genetically modified organisms (GMOs) - transgenic plants and animals and their applications in biotechnology. |
| Week 13 | 29-11-2021 to 04-12-2021 | Role of biotechnology in diagnostics, Ethical, social and legal implications of biotechnology |
| Week 14 | 06-12-2021 to 11-12-2021 | Public concerns and risks associated with genetic engineering: Bioterrorism and biowarfare |
| Week 15 | 13-12-2021 to 16-12-2021 | Revision |

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

**Teaching Plan Odd Semester (For Ongoing Classes UG-PG)**

**Session (2021-2022)**

**Class: Biotech Hons. 3rd Sem**   **Name of the Teacher: Dr. Ruchi**

**Subject: Biochemistry Period :**3rd (1-3), 7th (1,2), 2nd (5)

**Paper : Room No : 111, 127**

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| **S. No** | **Dates** | **Topics to be covered** |
| Week 1 | 11-08-2021 to 14-08-2021 | Carbohydrate metabolism: Biosynthesis and degradation of glucose |
| Week 2 | 16-08-2021 to 21-08-2021 | feeder pathways of glycolysis; Kreb cycle, amphibolic nature of the Kreb cycle; regulation of Kreb cycle, |
| Week 3 | 23-08-2021 to 28-08-2021 | regulation of gluconegenesis. Glycogen metabolism. |
| Week 4 | 31-08-2021 to 04-09-2019 | Mitochondrial electron transport chain |
| Week 5 | 06-09-2021 to 11-09-2021 | oxidative phosphorylation; regulation of ATP synthesis |
| Week 6 | 13-09-2021 to 18-09-2021 | Lipid Metabolism: Biosynthesis and degradation of fatty acids; β-oxidation of saturated, unsaturated and polyunsaturated fatty acids. |
| Week 7 | 20-09-2021 to 25-09-2021 | Formation of ketone bodies, their function and physiological significance. Fatty acid synthesis |
| Week 8 | 27-09-2021 to 01-10-2021 | multifunctional enzyme complex in eukaryotes, function of citrate. Regulation of fatty acid metabolism. |
| Week 9 | 04-10-2021 to 09-10-2021 | Cholesterol metabolism: Biosynthesis of cholesterol and its regulation. |
| Week 10 | 11-10-2021 to 16-10-2021 | Nucleic acid metabolism: Biosynthesis of purine and pyrimidine nucleotides; salvage reactions. |
| Week 11 | 18-10-2021 to 19-10-2021 | Catabolism of purines and pyrimidines, urea cycle. |
| **Mid Semester Exam (21st October 2021 – 30th October 2021)** | | |
| Week 12 | 01-11-2021 to 06-11-2021 | Amino acid metabolism: Biosynthesis of nutritionally non-essential amino acids; catabolism of carbon skeleton of amino acids. |
| Week 13 | 08-11-2021 to 13-11-2021 | Conversion of amino acids to specialized products; amino acids as precursors of porphyrins, bile pigments and biogenic amines. |
| Week 14 | 15-11-2021 to 20-11-2021 | Metabolism: Metabolic pathways, biochemical reaction mechanism, energy rich metabolites. Regulation and evolution of metabolic pathways. |
| Week 15 | 22-11-2021 to 27-11-2021 | Coupled reactions, substrate level phosphorylation. Importance of ATP: Structural basis of high phosphoryl transfer potential of ATP. Sources of cellular energy, activated carriers. |
| Week 16 | 29-11-2021 to 30-11-2021 | Revision |

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

**Teaching Plan Odd Semester (For Ongoing Classes UG-PG)**

**Session (2021-2022)**

**Class: Biotech Hons.5th Sem**   **Name of the Teacher: Dr. Ruchi**

**Subject: Enzymology Period :** 5th(1,2,5,6), 2nd (3), 4th (5)

**Paper : Room No : 111, 127**

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| **S. No** | **Dates** | **Topics to be covered** |
| Week 1 | 11-08-2021 to 14-08-2021 | Structure and functions of enzymes: Historical background and general properties of enzymes, concept of active centre, binding sites, stereo specificity and ES complex formation, activation energy |
| Week 2 | 16-08-2021 to 21-08-2021 | Evidences for enzyme-substrate complex; Lock and key, Induced fit and Transition state hypotheses |
| Week 3 | 23-08-2021 to 28-08-2021 | Coenzymes and Cofactors- Prosthetic group, coenzymes involved in different metabolic pathways |
| Week 4 | 31-08-2021 to 04-09-2019 | Factors Affecting the Enzyme Activity: Concentration, pH and temperature. Kinetics of a single substrate enzyme catalysed reaction, derivation of Michealis-Menten Equation |
| Week 5 | 06-09-2021 to 11-09-2021 | significance of Km value, Vmax, Turnover number, Kcat. Enzyme activity, international units, specific activity |
| Week 6 | 13-09-2021 to 18-09-2021 | Enzymes as thrombolytic agents, Anti-inflammatory agents, streptokinase, Isoenzymes |
| Week 7 | 20-09-2021 to 25-09-2021 | Enzyme Regulation: Feedback inhibition, Allosteric Regulation |
| Week 8 | 27-09-2021 to 01-10-2021 | Covalent Modification and Proteolytic Activation |
| Week 9 | 04-10-2021 to 09-10-2021 | Organization of enzymes in the cell, localization, enzymes in membranes. |
| Week 10 | 11-10-2021 to 16-10-2021 | Acid-base catalysis, covalent catalysis, Metal ion catalysis, multienzyme complexes |
| Week 11 | 18-10-2021 to 19-10-2021 | ribozymes, catalytic antibodies, Allosteric enzymes. |
| **Mid Semester Exam (21st October 2021 – 30th October 2021)** | | |
| Week 12 | 01-11-2021 to 06-11-2021 | Applications of Enzymes: Immobilized enzymes, industrial applications of immobilized enzymes |
| Week 13 | 08-11-2021 to 13-11-2021 | Thermophilic enzymes, amylases, lipases |
| Week 14 | 15-11-2021 to 20-11-2021 | Proteolytic enzymes in meat and leather industry |
| Week 15 | 22-11-2021 to 27-11-2021 | cellulose degrading enzymes, Metal degrading enzymes, enzymes used in fermentation process |
| Week 16 | 29-11-2021 to 30-11-2021 | Revision |