

Post Graduate Government College for Girls, Sector-42, Chandigarh

Teaching Plan for Bachelors (Third and Fifth Semester) and Post Graduate (Third Semester)

Session (2020-2021)

Class: Biotech Hons 3rd Sem (2nd yr)

Name of the Teacher: Dr Ruchi Sharma

Subject: Biochemistry

Paper:

S. No	Dates	Topics to be Covered
Week 1	03/08/2020 – 08/08/2020	Carbohydrate metabolism: Biosynthesis and degradation of glucose
Week 2	10/08/2020 – 14/08/2020	feeder pathways of glycolysis; Krebs cycle, amphibolic nature of the Krebs cycle; regulation of Krebs cycle,
Week 3	17/08/2020 – 22/08/2020	regulation of gluconeogenesis. Glycogen metabolism.
Week 4	24/08/2020 – 29/08/2020	Mitochondrial electron transport chain
Week 5	31/08/2020- 05/09/2020	oxidative phosphorylation; regulation of ATP synthesis
Week 6	07/09/2020- 12/09/2020	Lipid Metabolism: Biosynthesis and degradation of fatty acids; β -oxidation of saturated, unsaturated and polyunsaturated fatty acids.
Week 7	14/09/2020- 19/09/2020	Formation of ketone bodies, their function and physiological significance. Fatty acid synthesis
Week 8	21/09/2020- 26/09/2020	multifunctional enzyme complex in eukaryotes, function of citrate. Regulation of fatty acid metabolism.
Week 9	28/09/2020- 03/10/2020	Cholesterol metabolism: Biosynthesis of cholesterol and its regulation.
Week 10	05/10/2020- 10/10/2020	Nucleic acid metabolism: Biosynthesis of purine and pyrimidine nucleotides; salvage reactions.
Week 11	12/10/2020- 16/10/2020	Catabolism of purines and pyrimidines, urea cycle.
Week 12	19/10/2020- 24/10/2020	Amino acid metabolism: Biosynthesis of nutritionally non-essential amino acids; catabolism of carbon skeleton of amino acids.
Week 13	27/10/2020- 30/10/2020	Conversion of amino acids to specialized products; amino acids as precursors of porphyrins, bile pigments and biogenic amines.
Week 14	03/11/2020- 07/11/2020	Metabolism: Metabolic pathways, biochemical reaction mechanism, energy rich metabolites.
Week 15	09/11/2020- 12/11/2020	Coupled reactions, substrate level phosphorylation. Importance of ATP: Structural basis of high phosphoryl transfer potential of ATP.
Week 16	16/11/2020- 21/11/2020	Sources of cellular energy, activated carriers. Regulation and evolution of metabolic pathways.
Week 17	23/11/2020- 28/11/2020	revision

Post Graduate Government College for Girls, Sector-42, Chandigarh

Teaching Plan for Bachelors (Third and Fifth Semester) and Post Graduate (Third Semester)

Session (2020-2021)

Class: Biotech (H) 5th Sem (3rd yr)
Subject: Enzymology

Name of the Teacher: Dr Ruchi Sharma
Paper:

S. No	Dates	Topics to be Covered
Week 1	03/08/2020 – 08/08/2020	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	10/08/2020 – 14/08/2020	Evidences for enzyme-substrate complex; Lock and key, Induced fit and Transition state hypotheses
Week 3	17/08/2020 – 22/08/2020	Coenzymes and Cofactors- Prosthetic group, coenzymes involved in different metabolic pathways
Week 4	24/08/2020 – 29/08/2020	Factors Affecting the Enzyme Activity: Concentration, pH and temperature. Kinetics of a single substrate enzyme catalysed reaction, derivation of Michealis-Menten Equation
Week 5	31/08/2020- 05/09/2020	significance of Km value, Vmax, Turnover number, Kcat. Enzyme activity, international units, specific activity
Week 6	07/09/2020- 12/09/2020	Enzymes as thrombolytic agents, Anti-inflammatory agents, streptokinase, Isoenzymes
Week 7	14/09/2020- 19/09/2020	Enzyme Regulation: Feedback inhibition, Allosteric Regulation
Week 8	21/09/2020- 26/09/2020	Covalent Modification and Proteolytic Activation
Week 9	28/09/2020- 03/10/2020	Organization of enzymes in the cell, localization, enzymes in membranes.
Week 10	05/10/2020- 10/10/2020	Acid-base catalysis, covalent catalysis, Metal ion catalysis, multienzyme complexes
Week 11	12/10/2020- 16/10/2020	ribozymes, catalytic antibodies, Allosteric enzymes.
Week 12	19/10/2020- 24/10/2020	Applications of Enzymes: Immobilized enzymes, industrial applications of immobilized enzymes
Week 13	27/10/2020- 30/10/2020	Thermophilic enzymes, amylases, lipases
Week 14	03/11/2020- 07/11/2020	Proteolytic enzymes in meat and leather industry
Week 15	09/11/2020- 12/11/2020	cellulose degrading enzymes, Metal degrading enzymes
Week 16	16/11/2020- 21/11/2020	enzymes used in fermentation processes
Week 17	23/11/2020- 28/11/2020	revision

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

Teaching Plan for Bachelors (First Semester)

Session (2020-2021)

Class: Biotech (H) I Sem
Subject: Intro to Biotech

Name of the Teacher: Dr Ruchi Sharma
Paper:

S. No	Dates	Topics to be Covered
Week 1	01/09/2020-05/09/2020	Structure and function of the cell: the basic unit of life
Week 2	07/09/2020-12/09/2020	Structure and function of the cell: the basic unit of life, Prokaryotic and Eukaryotic cells
Week 3	14/09/2020-19/09/2020	Biomolecules in a cell (proteins)
Week 4	21/09/2020-26/09/2020	Introduction to basic techniques like sterilization, centrifugation
Week 5	28/09/2020-03/10/2020	electrophoresis, chromatography
Week 6	05/10/2020-10/10/2020	Sonication, Applications of biotechnology: today and tomorrow
Week 7	12/10/2020-16/10/2020	Basics of Biotechnology in fermentation processes
Week 8	19/10/2020-24/10/2020	Green technology to control pollution.
Week 9	27/10/2020-30/10/2020	introduction to gene therapy.
Week 10	03/11/2020 – 07/11/2020	introduction to gene therapy.
Week 11	09/11/2020 – 12/11/2020	Biotechnology and society: genetically modified organisms (GMOs) - transgenic plants and animals and their applications in biotechnology.
Week 12	16/11/2020 – 21/11/2020	Biotechnology and society: genetically modified organisms (GMOs) - transgenic plants and animals and their applications in biotechnology.
Week 13	23/11/2020 – 28/11/2020	Role of biotechnology in diagnostics
Week 14	01/12/2020 – 05/12/2020	Public concerns and risks associated with genetic engineering: Bioterrorism and biowarfare
Week 15	07/12/2020 – 12/12/2020	Ethical, social and legal implications of biotechnology
Week 16	14/12/2020 – 18/12/2020	Ethical, social and legal implications of biotechnology
Week 17	21/12/2020 – 26/12/2020	Revision