

Teaching Plan  
Academic Year 2015-16

**Class** : B.Sc III year **Semester:V**

**Subject** :Microbiology **Paper No:XVI**

**Periods per week** : Th. 3

**Weeks (Total)** : 17

Name of the teacher : Dr.Aditi Bhattacharya

Week	Topic to be Covered
1	<b>June III week:</b> Unit II . <b>Definitions:</b> Metabolism, anabolism , catabolism, free energy. Bioenergetics: chemical links between catabolism and biosynthesis.
2	<b>June IV week :</b> Energy coupling through ATP and through pyridine nucleotides, Central role of ATP-ADP system.
3	<b>July I week :</b> Modes of energy yielding metabolism, Definition and features of Fermentation, respiration and photosynthesis. Differences between catabolism and Anabolism, Metabolic mill.
4	July II week . Unit II . Fermentation of carbohydrates: Embden , Meyeroff, Parnus pathway: Introduction, Steps involved, reactions, Substrate level phosphorylation, mechanism, net gain , energy turnover.
5	July III week : Differences between catabolism and Anabolism, Metabolic mill. Fermentation of carbohydrates: Hexose monophospahte pathway; Introduction, Steps involved, reactions, mechanism, energy turnover, Fermentation of carbohydrates: Entener Duodoroff pathway, Introduction, Steps involved, reactions, mechanism, energy turnover.
6	<b>July IVweek :</b> fermentation of carbohydrates: Phosphoketolase pathway, Introduction, Steps involved, reactions, mechanism, energy turnover.
7	<b>July V week :</b> Fermentation of carbohydrates: Phosphoketolase pathway, Introduction, Steps involved, reactions, mechanism, energy turnover, importance of the pathway .

8	<b>August I week;</b> Alcoholic, homolactic, mixed acid, butanediol, Fermentations; Introduction, Steps involved, reactions, mechanisms, importance of the pathway
9	<b>Unit III: August II week:</b> Butyric, Acetone-butanol fermentations; Introduction, Steps involved, reactions, mechanisms, importance of the pathway
10	<b>August III week :</b> Aerobic respirations: RETC : location functions, components, redox carriers. oxidative phosphorylation artificial electron acceptors, bacterial cytochrome systems.
11	<b>Unit IV: August IV week :</b> Aerobic respirations: oxidative phosphorylation artificial electron acceptors, bacterial cytochrome systems. TCA cycle, glyoxylate cycle, anaplerotic sequences, regulation of TCA.
12	<b>September I week : Unit : III;</b> Catabolism of saturated (16 carbon) and unsaturated fatty acids (16 carbon) by $\beta$ oxidation; Introduction, Steps involved, reactions, mechanisms, importance of the pathway , Degradation of proteins and amino acids : proteolysis, putrefaction.
13	<b>September II week:</b> Transformation of aminoacids : oxidation, reduction, decarboxylation, deamination . (one example of each).; Introduction, Steps involved, reactions. Biosynthesis of nucleotides: Purine biosynthesis.
14	<b>September III week:</b> Biosynthesis of pyrimidine nucleotides, conversion of ribonucleotides to deoxyribonucleotides. Nucleic acid catabolism: DNA, RNA depolymerization, degradation of nitrogenous bases (mention end products without pathway); Introduction, Steps involved, reactions, mechanisms, importance of the pathway.
15	<b>September IV week:</b> Unit I : <b>Enzymes</b> : Definition, properties, specificity, active site, activation of enzymes, mechanism of action of enzymes (lock and key , induced fit, ping-pong); Nomenclature and classification of enzymes; Factors affecting catalytic activity of enzymes ( pH, temp.,enzyme conc., substrate conc., metal ions, time).
16	<b>October I week :</b> Unit :1 Michaelis_Menten equation : derivation and significance; Types of enzymes :extracellular, intracellular, constitutive and inducible. Enzyme inhibition : Irreversible ,reversible (competitive, uncompetitive , incompetitive) and metabolic antagonism, feedback inhibition. Elementary knowledge and uses of isoenzymes.
17	<b>October II week :</b> Immobilized enzymes and allosteric enzymes. Commercial uses of enzymes (any five ) – ( food, leather, textile, environment, pharmaceuticals and clinical). Types of co-enzymes (NAD, FAD, Lipoic acid, VitB <sub>12</sub> , Thiamine

	pyrophosphate) and reactions catalysed (atleast two).
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Teacher's Signature

H.O.D.'s Signature