Semister- 3rd SEM Honours, Department of Zoology, Basirhat College
Session- 2020-2021

Lesson Plan for Course: Biochemistry………. Code: ZOOACOR07T…. Credit: 4….

- Course coordinator:..UDAY HOSSAIN…
- Course Outcome
  - ✓ CO1: To understand the link between biological processes and chemistry behind that.
  - ✓ CO2: Gather knowledge about metabolism and synthesis of various essential biomolecules.

Course planner

Sl	Course Topic	Teacher	Class-hour	Remarks*
Jul	**Unit 1: Fundamentals of biochemical reactions and metabolism**	Uday Hossain		
	Ionization of water, weak acids and bases		1	Theoretical, PPT presentation
Aug	**Unit 1:Fundamentals of biochemical reactions and metabolism**	Uday Hossain		
	Buffering and pH changes in living systems,		1	Theoretical, PPT presentation
	Metabolism: Catabolism and Anabolism, Compartmentalization of metabolic pathways.		1	Theoretical, PPT presentation, animation from YouTube
	Shuttle systems and membrane transporters;		1	Theoretical, PPT presentation, animation from YouTube, notes in Google classroom
	ATP as "Energy Currency of cell";coupled reactions; Use of reducing equivalents and cofactors; Intermediary metabolism and regulatory mechanisms		1	Theoretical, PPT presentation, notes in Google classroom
	Class test		1	MCQ in Google classroom
	Unit 2: Carbohydrates	Uday Hossain		
	Structure and Biological importance: Monosaccharides		1	Theoretical, PPT presentation, notes in Google classroom
	Disaccharides, Polysaccharides, Derivatives of Monosachharides		1	Theoretical, PPT presentation, notes in Google classroom
	Glycolysis		1	Theoretical, PPT presentation, notes in Google classroom

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	Citric acid cycle		1	Theoretical, PPT presentation, notes in Google classroom, YouTube video
	Pentose phosphate pathway, Gluconeogenesis		1	Theoretical, PPT presentation, notes in Google classroom
	Class Test		1	In Google classroom
Sep	**Unit 3: Lipids**	Uday Hossain		
	Physiologically important saturated and unsaturated fatty acids		1	Theoretical, PPT presentation, notes in Google classroom
	Triacylglycerols, Phospholipids		1	Theoretical, PPT presentation, notes in Google classroom
	Sphingolipid, Glycolipids, Steroids, Eicosanoids and terpinoids		1	Theoretical, PPT presentation, notes in Google classroom
	β-oxidation of fatty acids		1	Theoretical, PPT presentation, notes in Google classroom, YouTube video
	Fatty acid biosynthesis		1	Theoretical, PPT presentation, notes in Google classroom
	Class test		1	Quiz on Google classroom
	Unit 4: Proteins	Uday Hossain		
	Amino acids Structure, Classification of amino acids		1	Theoretical, PPT presentation, notes in Google classroom
	General and Electro chemical properties of α-amino acids; Physiological importance of essential and non-essential amino acids		1	Theoretical, PPT presentation, notes in Google classroom
	Proteins Bonds stabilizing protein structure; Levels of organization		1	Theoretical, PPT presentation, notes in Google classroom
Oct	**Unit 4: Proteins**	Uday Hossain		

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	Transamination, Deamination			1	Theoretical, PPT presentation, notes in Google classroom
	Urea cycle, Fate of C-skeleton of Glucogenic and Ketogenic amino acids			1	Theoretical, PPT presentation, notes in Google classroom
	Class test			1	Quiz in Google classroom
	Unit 5: Nucleic Acids	Uday Hossain			
	Structure: Purines and pyrimidines, Nucleosides, Nucleotides, Nucleic acids			1	Theoretical, PPT presentation, notes in Google classroom
	Types of DNA and RNA			1	Theoretical, PPT presentation, notes in Google classroom
	Complementarity of DNA, Hypo-Hyperchromaticity of DNA			1	Theoretical, PPT presentation, notes in Google classroom
	Outlines of nucleotide metabolism			1	Theoretical, PPT presentation, notes in Google classroom
	Class Test			1	Quiz in Google classroom
	Assessment: Mid-term Test				
Nov	**Unit 6: Enzymes**	Uday Hossain			
	Nomenclature and classification of enzymes			1	Theoretical, PPT presentation, notes in Google classroom
	Cofactors; Specificity of enzyme action, Isozymes, Mechanism of enzyme action			1	Theoretical, PPT presentation, notes in Google classroom
	Enzyme kinetics; Derivation of Michaelis-Menten equation			1	Theoretical, PPT presentation, notes in Google classroom, Youtube animation
Dec	**Unit 6: Enzymes**	Uday Hossain			
	Lineweaver-Burk plot; Factors affecting rate of enzyme-catalyzed			1	Theoretical, PPT presentation, notes

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	reactions			in Google classroom
	Enzyme inhibition; Allosteric enzymes and their kinetics		1	Theoretical, PPT presentation, notes in Google classroom
	Strategy of enzyme action- Catalytic and Regulatory (Basic concept with one example each)		1	Theoretical, PPT presentation, notes in Google classroom
	Class test		1	Quiz in Google classroom
	Unit 7: Oxidative Phosphorylation	Uday Hossain		
	Redox systems		1	Theoretical, PPT presentation, notes in Google classroom
	Review of mitochondrial respiratory chain		1	Theoretical, PPT presentation, notes in Google classroom, Youtube animation
	Inhibitors and un-couplers of Electron Transport System		1	Theoretical, PPT presentation, notes in Google classroom
	Class Test		1	Quiz
	Assessment: End-term Test		Total: 40 Hrs	

Resources :

1. Books: Principal of Biochemistry 6th edition(Lehninger), Biochemisrty 4th edition(Voet and Voet)
2. Other resources : Youtube animation links, Wikipedia, some ebooks

*Remarks will specify

- The nature of the class-topic (viz. Theoretical, Practical, and Tutorial).
- Methodology of teaching (whether using ICT, engaging students in group discussion, quiz etc. etc.)
- Different modes of assessment. (Please check UGC evaluation reforms).

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