

As Per NEP 2020

University of Mumbai



Syllabus for Basket of Minor	
Board of Studies in Biochemistry	
UG First Year Programme	
Semester: Second	
Title of Paper	Credits 2/ 4
I) Introduction to Lipids and Nucleic acids	2
From the Academic Year	2024-2025

F.Y. B. Sc. (BIOCHEMISTRY) SEMESTER II
COURSE TITLES:
Course 1: Introduction to Lipids and Nucleic acids [2 Credits]

Sr.No.	Heading	Particulars	
1	Description the course : Including but not limited to:	This course describes the importance of Lipids, Nucleic acids	
2	Vertical :	Minor	
3	Type :	Theory	
4	Credits :	2 credits (1 credit = 15 Hours Theory in a semester)	
5	Hours Allotted :	30 Hours	
6	Marks Allotted:	50 Marks	
Course – I Introduction to Lipids and Nucleic acids			
Course Learning Objective and Outcome			
Learning Objective: 1. This course is intended to provide students with a basic understanding of the chemical nature and properties of biomolecules. i.e Lipids and Nucleic acids Learning Outcomes: 1. The learner will be able to describe the classification, reactions and biochemical importance of Lipids 2. The learner will be able explain different types ,structures, properties and reactions of nucleic acids			
Module	Topics	Credits	Lectures
I	Module II : Lipids • Definition and Bloor's Classification of lipids. • Fatty acids and TAG: Saturated fatty acids – definition, classification of C2 and C20 (only even C chain fatty acids) Unsaturated fatty acids – MUFA, PUFA (2,3,4 double bonds), Omega - 3, Omega - 6 and Omega - 9 fatty acids. • Triacylglycerol - Simple and mixed. • Chemical reactions - Saponification, Iodination, Ozonolysis, Auto-oxidation, Phospholipases, action of heat on glycerol and choline, Rancidity of fats. • Definition and significance - Acid Number, Saponification Number, Iodine Number and Reichert-Meissel Number.	2	15

	- Compound lipids – Structure and function of Glycerophospholipids (Cephalin, Lecithin and Phosphotidyl inositol) Phosphosphingolipids (Ceramide, Sphingomyelin), Glycolipids or Cerebrocides (Galacto and Glucocerebrocides). - Steroids and Lipoproteins		
II	Module II: Nucleic acids Nucleic Acids: - Structure of purine and pyrimidine bases, ribose, deoxyribose, nucleosides and nucleotides. c AMP and formation of polynucleotide strand with its shorthand representation. - RNAs- (various type in pro and eukaryotes) rRNA, t- RNA (Clover – leaf model), m-RNA (general account) and action of alkali on RNA. - DNA-X-ray diffraction pattern (Physical evidence), - Chargaff's rules (Chemical evidence), Watson –Crick model of DNA and its characteristic features. - Physical properties of DNA - Ionisation, Viscosity, Buoyant density, UV absorption and Hypochromism, Hyperchromism, Denaturation of DNA, T_m.		15

F.Y. B. Sc. (BIOCHEMISTRY) SEMESTER II
COURSE TITLE: Practicals based on Minor Course
[CREDITS - 02]

Practicals based on Minor Course			
Course Learning Objective and Outcome			
Learning Objective: - This course is intended to provide students with a basic understanding of the several concepts associated with practical Biochemistry Learning Outcomes: - The learner will be able to demonstrate the detection of the proteins using qualitative methods - The learner will be able to differentiate between different stages of cell division			
Practical	Topics	Credits	Hours
I	1. Qualitative Analysis: Proteins - Albumin, Casein, Gelatine, Peptone.	2	60

	2. Cytoplasmic streaming in Hydrilla 3. Observation of different stages of mitosis in onion root tip. 4. Localization of Nucleic acids (DNA and RNA) from onion peel using iodine 5. Demonstration experiment: RNA by Orcinol method		
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