SPACES DEGREE COLLEGE

(Affiliated to Andhra University)

(Under the Management of Sri Prakash Educational Society)

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Department of Biochemistry

Bachelor of Science

APSCHE, Revised Syllabus of Biochemistry under CBCS Frameworkw.e.f 2020-21

Course Out Comes (COs) for Biochemistry

Code	Title of the paper	Outcomes
Course- I (THEORY)	Biomolecules	CO 1 :The student gains knowledge in the chemistry of biomolecules such as water, carbohydrates, lipids, proteins and nucleicacids, which make up all the living organisms including humans. CO2:This will enable the student to understand the importance of these biomolecules in living organisms and effects of their alterations in diseases occurring in plants, animals and humans. CO3:Study of structure and classification of biomolecules C04:Importance of water and its biological role CO5:Classifi cation of biomolecules.
Course-I (Practical)	Qualitative Analysis	CO1:The practicals will give the expertise to the student for analysis of any biological or non biological sample for identification of its chemical composition
Course-2 (TH)	Analytical techniques	CO1:The student will leam the various analytical techniques and their applications in separation and isolation of cells and tissues for studying their functional abnormalities CO2: The knowledge in the analytical techniques will enable the student for isolation ,purifcation and chemical characterization of compounds from plants and microbes which will have **medical applicationsCO3:commercial importance of biomolecules**
Course.2 (Pr)	Biochemical Techniques	COI:The practicals will provide the expertise to the student for quantification of electrolytes and other metal ions, hormones and identification of bacteria. CO2:The expertise gained by the student in this course can be useful in food indusries ,pharma industries. clinical and microbiological lab
Course- 3 (TH)	Enzymology, Bioenergetics and Intermediary metabolism	CO1:The student will get knowledge in enzymes, their physiological importance and other applications. CO2: The ability in classifying Enzymes.Understand the mechanism of

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		catalysis employed by the most well characterized enzymes.Identify the methods of enzyme purification. CO3:Apply the knowledge of immobilized systems and application of enzymes to industrial and clinical processes. Describe the chemical nature of enzymes and their functions in biochemical reactions. CO4:Explain how the enzyme activity is regulated and affected by temperature ,pH and concentration. Explain enzyme function with reference to the lock and key , induced fit models. Co5: Explain the roles of enzymes inhibitors, activators and coenzymes. Recognize enzyme specificity, allosteric enzymes, km. Express the important coenzymes and the groups they transfer. C06: Describe what happens in citric acid cycle, ETC, oxidative phosphorylation and explain the role of each process in energy production. CO7:The student will know how the nutrients such as carbohydrates- lipids and Proteins get metabolized for the purpose of energy and other physiological functions in the body. This will Enable the student to understand the patho-physiology of metabolic diseases such as diabetes, atherosclerosis etc. which occur due to alterations in metabolisms. CO8:Explain and give examples of the strategies' of metabolism, emphasizing role of ATP coupled reaction. CO9:Define catabolism , anabolism and which type of reactions involved
Course-3 (Pr)	Quantitative Analysis	CO1: The practicals will provide the expertise for quantification of enzymes' activities, glucose, proteins and lipid levels in blood which will have clinical applications. CO2: Hands on experience in estimating the quantitative analysis of Biomolecules like protein, carbohydrates and nucleic acids.
Course-4 (TH)	Physiology, Nutritional and Clinical Biochemistry	CO1: The student will get knowledge in the different physiological systems and their functions in the human body. CO2: This course will also provide knowledge in hormones, their functions and the diseases occurring due to alterations in the levels of hormones. CO3:By studying this course the student will know the nutritional importance of proteins, carbohydrates, lipids, vitamins and minerals. CO4: LFT tests and kidney function tests COS: By studying blood, its composition

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		and its functions the student will understand the importance of blood.
Course-4 (Pr)	Nutritional and Clinical Biochemistry	COI: Clinical biochemistry unit along with practicals will enable the student to do diagnostic tests for liver diseases, Gastro intestinal diseases, renal diseases and nutritional deficiencies. Conduct experiments designed for study of nutritional biochemistry
Course -5 (Th)	**Microbiology,Immunology and Molecular biology**	CO 1: Thiscoursewill enable the student to know various microbes such as bacteria,fungi and viruses ,their structures and other propertiesand diseases caused by them. The student will also get knowledge in their commercial applications by making use of their beneficial effectssuch as fermentation in alcohol production, nitrogen fixation in agriculture**etc.** CO 2: The student will also get knowledge in immune system, vaccines andalso understand the pathogenesis of auto immune diseases and immune deficiency diseases. CO 3: This course will provide knowledge and expertise in molecular biology such as genes, their structureand importance. CO 5: This will also enable the student to know the applications of PCR in cloning and diagnosis of genetic and viral diseases.
Course 5 (Pra)	**Microbiology and immunology**	CO 1 : The practical will provide the expertise to the student to work in microbiology laboratory, food and pharma industries, and biotech companies for production of vaccines and other life saving drugs.
Course 6A (Th)	Clinical Biochemistry	CO-1. Clinical biochemistry unit along with practicals will enable the student to gain knowledge about clinical laboratories and diagnostic laboratories. CO-2. Clinical biochemistry unit along with practicals will enable the student to

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		do diagnostic tests for liver diseases, Gastro intestinal diseases, renal diseases
Course 6A (Pr)	Clinical Biochemistry	CO1: Clinical biochemistry unit along with practicals will enable the student to establish clinical laboratories and diagnostic tests . CO 2: It will enable the student to do diagnostic tests for liver diseases, Gastro intestinal diseases, renal diseases
Course 7A(Th)	Haematological and Immunological Techniques	CO-1. This unit along with practicals will enable the student to gain knowledge about clinical laboratories and diagnostic tests for different infectious , immune related diseases. CO-2. Students will learn how to do diagnostic tests for virus, bacteria and fungal infections and other Immune Techniques.
Course 7A (Pr)	Haematological and Immunological Techniques	CO 1: Practicals will enable the student to establish clinical laboratories and diagnostic tests for different infectious diseases. CO-2. Student cando diagnostic tests for virus, bacteria and fungal infections and immune techniques

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