M.Sc. BIOCHMISTRY

PROGRAMME OUTCOME

Department of Biochemistry

KAKATIYA UNIVERSITY

Vidyaranyapuri, Warangal-506009 TS, India

Preamble:

Kakatiya University (KU) started B.Sc and M.Sc. programmes in different subjects from year 2000. Biochemistry Department participates in the undergraduate core program (B.Sc) and runs M.Sc.and Ph.D Programmes in Biochemistry.

It is mentioned that:

1. The structure, courses and syllabus are designed after the detail study of syllabus and course structure of different universities (Including BHU, DU, HCU, BRAOU, U.G.C CSIR NET Syllabus).

2. These courses will be helpful for further research of students in the area of his/her choice. This pattern fulfills the requirement of learning, teaching and research.

3. A well-equipped laboratory was established in Kakatiya University campus. The university organizes workshops in its own campus for practical support to the faculty of affiliated colleges of Biochemistry.

4. The syllabus is designed on the bases on CBCS as per UGC recommendation and it will help for the students to get the CSIR NET.

M.Sc. Biochemistry

Programme Objectives:

- To provide an opportunity for science education to the door steps of aspirants and for skill development to enhance employability or entrepreneurship

Programme Outcome

- Understand the biological diversity and grades of complexity of various animal forms through their systematic classification and comparative structural studies.

- Understand the applications of Biological techniques to various fields of biology.

- Understand the concepts and principles of biochemistry, Chemistry of Biomolecules, Immunology, physiology & Nutrition, Metabolisms, Molecular Biology, Enzymology Endocrinology, developmental biology, cell biology, genetics, molecular biology, Analytical Biochemistry, Clinical Biochemistry, Phyto Biochemistry, Food and Nutrition NanoTechnology and microbiology.

- Apply the wide range of subject based skills to various fields that provide a base for future career in disciplines such as Poultry, Environmental Management, Biotechnology, Publishing, Teaching and Research.

- Develop technical skills in animal, Plant biotechnology, bioinformatics and biostatistics.

- Perform, Assess and implement practical techniques and procedure to solve biological problems and analyse and quantify data collected during any project.

- Perform laboratory procedures as per standard protocols in the areas of Clinical Biochemistry, cell biology, genetics, biochemistry, molecular biology, microbiology, physiology, immunology, developmental biology, Food & Nutrition and endocrinology.

Course Outcomes

Sl.No	Course Name	Course Outcomes
1	Cell Biology	➢ Both these theory and practical papers touch upon structural and functional details of the basic unit of life at the molecular Level. ➢ Explain Bio membranes and the processes of Cell-cell signaling and cell-cell adhesion. ➢ Motivate the learner to refresh and delve into the basics of cell biology. ➢ Provide a thorough knowledge on types and properties of Cancer and how normal cells become cancerous.
2	Tools and Techniques in Biology	➢ Learn the biophysical properties and functioning of life processes. ➢ Both these theory and practical papers touch upon Acquire skills in tools and techniques available for studying biochemical and biophysical nature of life. ➢ Equip the learner to use the tools and techniques for project work/ research in biology. ➢ Get skills in Histological & biochemical techniques. ➢ Learn the application of radiations in Medical treatments**.**
3	Chemistry of Biomolecules	➢ Both these theory and practical papers touch deeper upon the chemical nature of life and life process. ➢ Develop an idea on structure and functioning of biologically important molecules such as Carbohydraes, Lipds, Proteins, Aminoacids, Nucleicacids ➢ Generate an interest in the subject and help students explore the new developments in Biochemistry. ➢ Inculcate an interest for further research.

4	Enzymology	➢ To help students gain a fundamental understanding and basic level of familiarity with the diversity of Catalytic Enzymes ➢ To assist students with incorporating knowledge in various types of enzymes and their activity. ➢ To help students in understanding the regulation of biochemical metabolisms, leading to homostatsis of living Organism ➢ Teaches the Biological applications of Enzyme technology in the field of industrial biotechnology
5	Metabolism	➢ Both these theory and practical papers touch upon to understand biological reactions, structure of protein, carbohydrates fats, nucleic acids and their metabolism. ➢ Gives the Knowledge on activity of Different Biomolecules and their Physiological Importance ➢ Knowledge of Detoxification Muscle Contraction, energy metabolism in Plants and animals ➢ Knowledge and comparative studies of Different Biomolecules such as carbohydrates, proteins, lipids and Nucleic acids
6	Molecular Biology	➢ To understand the process of gene expression & protein synthesis. ➢ Understand the fine structure and molecular aspects of genetic material. ➢ Understating expression and Regulation of Gene expression. ➢ Gives in depth Information on genetic Code and central dogma of live ➢ To introduce the new developments in molecular biology and its implications inhuman welfare

7	Immunology	➢ Both these theory and practical papers touch upon an intensive and in-depth knowledge to the students in immunology. ➢ Outline the key components of the innate and adaptive immune responses ➢ Understand the role of immunology in human health and well-being. ➢ Familiarize the students the new developments in immunology. ➢ Learn the way body fights foreign bodies. ➢ Understand the risks in transplantation of organs.
8	MicroBiology	➢ To help students gain a fundamental understanding general principles of Microbiology and Classification of Micro bial World. ➢ To assist students with incorporating knowledge of Microbial growth and inhibition of growth in treating Diseases. ➢ To help students distinguish between Bactria, Bateriophages, and Viruses. ➢ Gives information on reproductive systems of Viruses and also gives information on polioviruses and cancer causing viruses etc.
9	Clinical Biochemistry	➢ Both these theory and practical papers touch upon the understand the basic theories and principles involved in the Diagnosis of various Diseases. ➢ Teaches the Diseases and metabolic Disorders due to proteins lipds and Enzymes. ➢ Focus on Biochemical Evaluation of Diseases. ➢ And Gives information on latest Techniques used in the field of Medical Biochemistry and diagnosis

10	Endocrinology	➢ Both these theory and practical papers touch upon the understood how fertilization, cleavage and gastrulating occur. ➢ Understood the basic concepts of organogenesis. ➢ Understood about the basic concepts of growth, regeneration and ageing. ➢ Described the test tube baby and placentation in mammals. ➢ Compare the structure, functions and regulation of the receptor organs of vertebrates. ➢ Understand the structure, function and regulation of endocrine & neuro endocrine glands
11	Genetic Engineering	➢ To help students gain a fundamental understanding general principles of Genetic engineering ➢ Get an in-depth understanding on the principles and mechanisms of rDNA Technology ➢ Understand the Genomics and rDNA Therapy ➢ Introduction to Transgenic systems, understanding the Technology involving in it.
12	Animal Biotechnology	➢ Get an in-depth understanding on the principles and mechanisms, current status and Future Applications of Animal Biotechnology ➢ Concepts of r-DNA Technology; Genetic Engineering through Plasmids, Cosmids ➢ Teaches applications of Animal biotechnology in the field of Pharmaceutical Biotechnology ➢ Teaches applications of Animal biotechnology in the field of Animal and Human Health Care:

13	Bioinformatics, computers and biostatistic	➢ Both these theory and practical papers touch upon impart concepts, generate enthusiasm and make awareness about the tools and accessories of biological research. ➢ Equip the learner to carry out original research in biology. ➢ Inculcate analytical and critical thinking skills through problem solving ➢ Acquire hands on training in the use of various tools and techniques suggested in the course. ➢ Develop skills to solve scientific problems with statistical formulas
14	Nutrional Biochemitry	➢ Designed to learn the importance of Nutrition in different age groups and sex. and in-depth concepts in food and Nutrition. ➢ Teaches Nutrional importance of each Nutrient that is taken from the diet. ➢ Gives In depth analysis of Nutritional disorders ➢ Also learn how each nutrient is utilized by body and toxins are removed from the body
15	Physiology & Genetics	➢ Get an in-depth understanding on the principles and mechanisms of inheritance ➢ Learn the importance of inheritance in Man. ➢ The students would have learned the structures and functions of various organs and their organized systems to help a living organism thrive in its environment. ➢ Understand all physiological processes of vertebrates & analyse the biochemically.

16	Developmental biology & plant biochemistry	➢ Learn the concepts and process in developmental biology. ➢ Create awareness on new developments in embryology and its relevance to Man ➢ Acquire knowledge on teratogenesis and generate awareness in society. ➢ Both these theory and practical papers touch up on the understand the plant Physiology