Sr. No.	Course Code	Course Title	Course Objective	Expected Outcome
1	BIC 101	Biomolecules	This course is designed to enable students to acquire basic understanding of the structure, conformation, properties and role of Biomolecules. It also includes scope and development of Biochemistry.	• Shall learn development of Biochemistry as a new discipline of Biological Science • Develop an understanding of Biomolecules • Basic understanding of Carbohydrates, Amino acids and simple Lipids. • The student has hands on training of preparation of Biochemical reagents, Analysis of Carbohydrate mixture, Chemical constants of Fats, and use of Microscope. • Water analysis for hardness is also introduced as a part of Environmental Biochemistry. •
2	BIC 103	Biomolecules(Advanced)	The objective of this course is to provide an understanding of complex Carbohydrates, Lipids,Proteins, Sterols.	• Students learn about Occurence, Structure, Biological functions, color reactions of Carbohydrates, Lipids, Proteins, and Sterols. • Nucleic acid

				composition, function and features of DNA, RNA is introduced. • Colorimetric estimations of Sugar, Protein, DNA, RNA forms their basis of understanding of quantitative analysis. • Oxidometry, iodometry titrations, Qualitative analysis of Amino acids, Lipids and color reactions of Cholesterol complement the students' theoretical knowledge.
3	BIC- 201	Biophysics and Instrumentation	This course aims to understand biophysical principles and important techniques used in the field of Biochemistry.	• Students gain knowledge regarding techniques like Chromatography, Spectrophotometry, and Electrophoresis etc. • Preparation of buffers, use of pH meter and numerical gives students an idea for preparation of various solutions and also prepares them for facing entrance exams. • Experiments involving Biophysics, Viscosity, Osmosis, Surface tension

				and instrumentation gives clarity of concepts.
4	BIC- 202	Cell Biology & Physiology.	This course is designed to enable students to acquire basic understanding of structure, chemical composition and function of various Organelles and tissues .Physiological chemistry of Hormones and Vitamins are included.	● Students acquire the knowledge of Cell biology, Cell Organelle separation, localisation of enzymes in both Prokaryotic and Eukaryotic cells. ● Muscle, bone, nerve heart physiology is taught in detail ● Signal molecules-Hormones, their properties, mode of action, functions and their imbalance leading to various disorders like Diabetes Mellitus, Hyperthyroidism is introduced.
5	BIC-204	Advanced Techniques.	This course is designed to acquire more knowledge on other techniques having applications in Biochemistry like Microscopy, Centrifugation and Radioisotopes. Biostatistics and based numericasl is introduced.	● Enabling the students to know and understand the basics of Biostatistics. And its applications in Biological research. ● Use of Centrifuge, hands on training of TLC, Soxhlet's apparatus is taught.
6	BIC- 205	Advanced Physiolgy	The course imparts knowledge of	● Hands on training of

			different body organs and their working, respiratory, Digestive and excretory system. Blood, its composition, cells, Various indices, and haemoglobin, ESR, Blood grouping, and Coagulation is discussed in detail.	Haematology practicals and Urine analysis give them an in depth knowledge and experience of handling such experiments in Pathology laboratory.
7	BIC-301	Metabolism	Since Metabolism is one of the core subjects of Biochemistry, it is taught in detail to our students. Here metabolism is taught to prepare students to both impart them with basic knowledge about metabolism as well as to give them in-depth understanding about the major metabolic pathways. This will train them to better understand how catabolism, anabolism occur, how these pathways are regulated and integrated, how environmental factors specially diet & diseases impacts our metabolism & health.	● The Students Gain knowledge regarding basic terminologies used in metabolism. Students get in depth knowledge about Carbohydrate, Lipid, Protein metabolism & Energy metabolism along with their regulation. They get familiarised with some of the In-born-errors of metabolism also. Role of hormones in fuel metabolism &It's integration of too is also discussed in depth.
8	BIC- 302	Molecular Biology	A detail study of Molecular Biology including history, properties and types of Nucleic acids , Central dogma , Mutations ,Transposable elements and techniques used in	● Basic steps of gene cloning, isolation and purification of DNA techniques like Agarose gel electrophoresis, Shot gun cloning, Southern

			molecular Biology.	blotting technique and PCR will help them to gain knowledge on the Understanding & the Applications and Scope of Genetic Engineering. ●
9	BIC- 303	Enzymology	The objective of course is to lay a foundation about basic Enzymology such that when they go to the next semester they are ready for understanding advanced Enzymology topics.	● Students will understand fundamentals/ general aspects of Enzymology which include nature of catalysis, active site, energy of activation, enzyme specificity, Classification of enzymes of Enzymes. Different types of enzymes like Isoenzymes, Multienzyme complexes, Membrane bound enzymes, Metalloenzymes, regulatory enzymes are also included so that it helps students understand metabolism and it's regulations easily. Factors affecting enzyme reaction is also included so that they get in basic

				knowledge about the enzyme kinetics.
10	BIC- 304	Introduction to Microbiology and Nutrition.	The course imparts introduction of basic concepts of Microbiology and Nutrition, as this two fields form an important area of research and scope of Biochemistry.	● Development of awareness of nutritional significance of Carbohydrates, Proteins, Lipids in our daily diets orients the students towards a healthy lifestyle. ● Students are also exposed to Energy balance studies, nutritional values of foods of plant & animal origin and advantages of Vegetarianism. ● The students are introduced to different Microbial organisms, and their role in the welfare of human beings. ● Fundamental anatomy of a bacterial cell and different staining procedures to observe the different structures are introduced. ● Different groups of microorganism and their salient features like Fungi,

				viruses, Mycoplasma and Archaebacteria exposes them to microbial world along with bacteria. ● Role of microorganisms in human welfare or as diseases causing agents. ● Hands on training of Liver function and clinical tests are conducted.
11	BIC- 305	Techniques of Biotechnology.	As an elective course this aims to introduce basic understanding of gene cloning technique and PCR. Bacterial genetics is also included.	● Useful knowledge of techniques in gene cloning will update and support their understanding of requirements of various research labs of Biotechnology and pharmaceuticals. ●
12	BIC- 307	Nutrition and Diseases	The course educates and exposes the students to indepth Biochemical understanding of various Lifestyle & major killer disesases like Heart Diseases,Diabetes Mellitus,Obesity and nutrient deficiency disorders like PEM,Osteomalacia,Xerophthalmia	• Detailed understanding of Etiology,Clinical & Biochemical features of Diabetes Mellitus,Obesity,Rickets ,PEM,Scurvy,Xerophthalmia.

			etc.	• Development of useful knowledge on effect of diet on onset of Heart diseases. • Learning about Food toxins and their detoxification methods • Hands on training on Body mass index estimation and Nitrogen estimation by Kjeldahl's method.
13	BIC- 308	Advanced Microbiology	To expose and make the students competent in Microbiology both theory and practicals in all important areas and concepts. It aims to help students to correlate, inter relate it to Biochemistry and biochemical principles, helping students in inter disciplinary research.	● Students are taught comprehensive information of sterilisation procedures, aseptic handling, isolation, identification of microbial cultures, media, growth, types of growth, factors affecting growth, anaerobic cultivation, pure culture isolation & preservation. ● Microbiological fundamentals of of diseases, Typhoid, Tuberculosis including emerging diseases like AIDS and chemotherapy.

				● Basics of fermentation technology and industrial applications of microorganisms ignite their interest in the subject and the role of microorganisms in human welfare.
14	BIC- 309	Immunology	This course is designed to enable students to acquire understanding of the structure of immune system, its functions and also gives awareness of various immunodeficiency diseases, immunochemical techniques and their applications.	● Development of awareness of structure and function of immune system ● Steps involved in monoclonal production and its use in vaccine production Gain knowledge on the immune system during healthy and diseased status, in immunological disorders (auto immune diseases, Hypersensitivities, immune deficiencies and also about transplant rejections) ● Enables the student to pursue further studies on immunotherapy and drugs / vaccine production for various diseases

15	BIC- 310	Advanced Enzymology	The objective of the paper is to give them detail knowledge of enzyme kinetics and application of enzymes in biotechnology, medical sciences and industries.	• This paper includes enzyme kinetics quantitative methods for following enzyme reactions and enzyme purification. All these topics will help the students to work with enzymes in the laboratory. Almost all applications of enzymes are covered in this paper which will give the students an insight about both research & commercial application of enzymes.
16	BIC- 311	Applied Biotechnology	To create an interest in the applications of Biotechnology in different fields of Medicine, Enzymology, Environment and Food	Exposing the students to the current topics of relevance on Food Biotechnology like Genetically Modified foods,

			science.	Probiotics, Single Cell Proteins and Use of Enzymes in Food industry. Different types of Enzyme Reactors, Immobilised enzyme & biosensors are also included which will help the students about basics of these applications. Medical biotechnology will give them an insight into Recombinant vaccines, DNA finger printing, Tissue Engineering and Gene Therapy. Environmental biotechnology includes Bioremediation, Biopesticides, Biofertilizers, Xenobiotics and their degradation.