

KONGUNADU ARTS AND SCIENCE COLLEGE (AUTONOMOUS)

Re-accredited to NAAC with “A+” Grade (4th Cycle)

College of Excellence (UGC)

Coimbatore – 641 029.

DEPARTMENT OF BIOCHEMISTRY (PG)

COURSE OUTCOMES (CO) OF

M.Sc., BIOCHEMISTRY

For the students admitted in the year

2020-21

20PBC101

Programme Code: 07		Programme Title: M.Sc Biochemistry		
Course Code: 20PBC101		Title: Core Paper 1 – Biomolecules		
Batch	Semester	Hours / Week	Total Hours	Credits
2020-2021	I	5	75	4

Course Objectives

1. To learn about the chemistry and structures of biomolecules
2. To know the properties of different biomolecules
3. To know the physiological functions of Biomolecule

Course Outcomes (CO)

K1-K4 CO1-CO4	The students recollect the classification and functions of biomolecules, grasp the scope of biological chemistry, know about execute of biomolecules in human health, analyse and study the chemical and biochemical properties of biomolecule and able to enter into drug design and pharmacogenetics field.
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Programme Code: 07		Programme Title: M.Sc Biochemistry		
Course Code: 20PBC102		Title: Core Paper 2 – Bioanalytical Techniques		
Batch	Semester	Hours / Week	Total Hours	Credits
2020-2021	I	5	75	4

Course Objectives

1. To learn the principle and instrumentation of various separation techniques
2. To know the applications of various separation techniques in biological fields
3. To learn the concept of radioactivity and explore its role in various fields.

Course Outcomes (CO)

K1- K4 CO1-CO4	The students recall the principle and applications of bioinstrumentation, discern the principle, Instrumentation of different types of bioanalytical techniques, discern about applying the instrumentation techniques of Centrifugation, Electrophoresis and Chromatography in various research fields, the knowledge and practice concerning modern analytical instrumentation and students can able to enter into large scale industries.
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Programme Code: 07		Programme Title: M.Sc Biochemistry		
Course Code: 20PBC103		Title: Core Paper 3 – Enzymes and Enzyme Technology		
Batch	Semester	Hours / Week	Total Hours	Credits
2020-2021	I	5	75	4

Course Objectives

1. To know the classification and properties of enzymes
2. To learn about the mechanism of enzyme action
3. To know the applications of enzymes in clinical and diagnostic fields

Course Outcomes (CO)

K1-K4 CO1- CO4	The students remember the fundamentals of enzyme properties nomenclatures, characteristics and mechanisms, the different procedures involved in enzyme technology, the enzyme and their kinetics and also apply to this in the industry and other technological field and estimate enzyme technology for the commercialization purpose of biotechnological products
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Programme Code: 07		Programme Title: M.Sc Biochemistry		
Course Code: 20PBC104		Title: Core Paper 4 – Cell Biology		
Batch	Semester	Hours / Week	Total Hours	Credits
2020-2021	I	5	75	4

Course Objectives

1. To learn the models and functions of biological membrane
2. To learn about the structure and functions of cytoplasmic organelles
3. To learn the mechanism of membrane transport in cells

Course Outcomes (CO)

K1-K4 CO1- CO4	The students will be able to elicit the basic concepts of cell biology , the knowledge of cell structure and function, apply the knowledge of cell biology to selected examples of changes or losses in cell function and to analyse the cell structure, cell signaling and cell functions.
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Programme Code: 07		Programme Title: M.Sc Biochemistry		
Course Code: 20PBC1CL		Title: Core Practical 1 – Lab in Biomolecules, Bioinstrumentation, Enzymology and Cell Biology		
Batch	Semester	Hours / Week	Total Hours	Credits
2020-2021	I	5	75	4

Course Objectives

1. To get practical experience in analyzing the biochemical metabolites in biological samples, bioinstrumentation, enzyme technology and cell biology techniques
2. To have hands on experience on chromatography, electrophoresis, enzyme and cell biology techniques
3. To develop familiarity with bioanalytical techniques and applications of enzyme and cell biology in research and industries

Course Outcomes (CO)

K1-K4 CO1-CO4	The students will learn how to standardize various biomolecules, enzyme and cell biology, Conceive the amount of biomolecules, isolation, purification and determination of enzyme, preparation of buccal smears, apply the enzyme technology and cell biology skill in basic research projects, the principles of Biomolecules, enzyme and cell biology techniques to discovery novel drug development
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Programme Code: 07		Programme Title: M.Sc Biochemistry		
Course Code: 20PBC205		Title: Core Paper 5 – Plant Biochemistry and Biotechnology		
Batch	Semester	Hours / Week	Total Hours	Credits
2020-2021	I	5	75	4

Course Objectives

1. To learn the mechanism and importance of photosynthesis in plants
2. To learn the role of hormones in the growth metabolism of plants
3. To know the latest genetic engineering techniques for plant development

Course Outcomes (CO)

K1-K4 CO1-CO4	The students recall the biosynthesis of primary and secondary metabolites, nitrogen metabolism involved in plants. Understand the concept of plant tissue culture and plant transformation techniques. know about the applications of phytoconstituents in development of new drug and can device new technologies involving plant biotechnology.
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Programme Code: 07		Programme Title: M.Sc Biochemistry		
Course Code: 20PBC206		Title: Core Paper 6 – Intermediary Metabolism		
Batch	Semester	Hours / Week	Total Hours	Credits
2020-2021	II	5	75	4

Course Objectives

1. To learn the metabolism of various biomolecules in our system
2. To provide a basic understanding of the biochemical reactions of molecules
3. To study the interrelationship of various metabolic pathways

Course Outcomes (CO)

K1-K4 CO1-CO4	The students remember commemorate the overall concept of cellular metabolism ,perceive the metabolism of biochemical pathways. execute the diseases associated with defective nucleotide biosynthesis and to analyze the role of fat in energy production and membrane synthesis
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Programme Code: 07		Programme Title: M.Sc Biochemistry		
Course Code: 20PBC207		Title: Core Paper 7 –Genetics and Molecular Biology		
Batch	Semester	Hours / Week	Total Hours	Credits
2020-2021	II	5	75	4

Course Objectives

1. To understand the molecular organization of genes and chromosomes
2. To learn the process of DNA synthesis, repair and function
3. To learn the various molecular events occurring in DNA with proposed theories

Course Outcomes (CO)

K1-K4 CO1-CO4	The students recognize about the basic concepts of gene , understand the different processes involved in replication, transcription and translation, integrate scientific and technological knowledge on the use of genetics and molecular biology for industrial products on the cell and process level and examine the molecular mechanisms behind DNA damage and repair
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20PBC208

Programme Code: 07		Programme Title: M.Sc Biochemistry		
Course Code: 20PBC208		Title: Core Paper 8 –Drug Biochemistry		
Batch 2020-2021	Semester II	Hours / Week 5	Total Hours 75	Credits 4

Course Objectives

1. To learn the mechanism of drug action in various diseases
2. To learn about different drugs available for treatment
3. To learn about the designing mechanisms for drug development

Course Outcomes (CO)

K1- K4 CO1-CO4	The students will learn the concept of pharmacology, know the mechanism of action of drug inside the system, know about the drug discovery and drug design procedures and know about the treatment of various disorders using drug molecules
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Programme Code: 07		Programme Title: M.Sc Biochemistry		
Course Code: 20PBC2CM		Title: Core Practical 2 –Lab in Plant Biochemistry, Genetics and Molecular Biology		
Batch	Semester	Hours / Week	Total Hours	Credits
2020-2021	II	5	75	4

Course Objectives

1. To learn the techniques of plant tissue culture
2. To get an hands-on-training on molecular techniques
3. To implement the applications of plant tissue culture, microbes, genetics and molecular techniques in research and industries

Course Outcomes (CO)

K1- K4 CO1-CO4	The students know about the principles of plant biochemistry, microbes, molecular biology and genetics techniques, gain the technical skills involved in plant tissue culture, counting cells, identification of gene and its expressions, develop and apply the modern technology of plant biochemistry, molecular biology and genetics in industries and research and examine the results obtained using plant biochemistry, sterilization techniques, molecular biology and genetics
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Programme Code: 07		Programme Title: M.Sc Biochemistry		
Course Code: 20PBC309		Title: Core Paper 9 – Immunology		
Batch	Semester	Hours / Week	Total Hours	Credits
2020-2021	III	7	75	5

Course Objectives

1. To learn about the various cells of immune system and their functions
2. To know about the specificity of antigen-antigen interaction and their possible mechanisms
3. To know the role of immunological cells in the treatment of different diseases

Course Outcomes (CO)

K1- K4 CO1.CO4	The students can learn the types and functions of different immune cells, the mechanism of action of different immune cells and their resultant reaction responses, understand the underlying causes of inherited or autoimmune diseases and consequences and the new technologies involving immune cells in treating many diseases
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Programme Code: 07		Programme Title: M.Sc Biochemistry		
Course Code: 20PBC313		Title: Core Paper 13 –Genetic Engineering		
Batch	Semester	Hours / Week	Total Hours	Credits
2020-2021	III	5	75	5

Course Objectives

1. To learn the cloning strategies and genetic manipulation with devised technologies
2. To enable the students to learn the principle and application of genetic engineering
3. To implement and transmission of a genetic material at molecular and cellular levels.

Course Outcomes (CO)

K1- K4 CO1-CO4	The students enshrine the principles of genetic engineering and the vectors used in cloning and expression, grasp the different cloning strategies and their expression, know about the implementation of genetic engineering for different npurposes and investigate the different strategies of rDNA technology and resolve the problems encountered
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Programme Code: 07		Programme Title: M.Sc Biochemistry		
Course Code: 20PBC311		Title: Core Paper 11 – Clinical Biochemistry		
Batch	Semester	Hours / Week	Total Hours	Credits
2020-2021	III	7		4

Course Objectives

1. To learn the methodologies for the detection of abnormalities in blood
2. To learn the process of different sample collection and processing
3. To know about the markers in the various metabolic disorders like cancer

Course Outcomes (CO)

K1 -K4 CO1-CO4	The students will be knowing the important laboratory biochemical tests, introduced to methods of specimen collection and processing and analyzing the results, learn the role of enzymes in clinical diagnosis of diseases and know the diagnostic procedures for tumor development
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Programme Code: 07		Programme Title: M.Sc Biochemistry		
Course Code: 20PBCX1		Title: EDC - Nutritional Biochemistry		
Batch	Semester	Hours / Week	Total Hours	Credits
2020-2021	3	2	30	2

Course Objectives

1. To impart the knowledge on historical overview of nutrition, essential nutrients for metabolism
2. To provide an overview of the major macro and micronutrients relevant to human health
3. To discuss the scientific rationale for defining nutritional requirements in healthy individuals and populations, with reference to specific conditions such as pregnancy, lactation, and older age

Course Outcomes (CO)

K1- K3 CO1-CO3	Assess the nutritional status of community in order to determine the type magnitude and distribution of malnutrition nomenclatures, characteristics and mechanisms. Describe the biochemical and physiological functions of the nutrients and their integrated role. Evaluate the therapeutic role of key nutrients in maintaining health.
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Programme Code: 07		Programme Title: M.Sc Biochemistry		
Course Code: 20PBC3CN		Title: Core Practical 3 – Lab in Immunology, Molecular techniques and Clinical Biochemistry		
Batch	Semester	Hours / Week	Total Hours	Credits
2020-2021	III	5	75	4

Course Objectives

1. To enhance the students to have practical experience on techniques in immunological tests
2. To learn the methods of estimation of clinical parameters
3. To have hands on experience in genetic engineering

Course Outcomes (CO)

K1-K4	The students recall the basic principles involved in immunology, clinical biochemistry and genetic engineering, demonstrate the techniques involved in immunology, clinical biochemistry and genetic engineering, develop and apply the recent technology involved in diagnostic techniques of immunology, clinical biochemistry and genetic engineering and examine and analyze the results involved in immune techniques, clinical biochemistry and genetic engineering.
CO1-CO4	

Programme Code: 07		Programme Title: M.Sc Biochemistry		
Course Code: 20PBC412		Title: Core Paper 12 – Hormonal Biochemistry		
Batch	Semester	Hours / Week	Total Hours	Credits
2020-2021	I	5	75	4

Course Objectives

1. To learn about the system of hormonal functioning in biological systems
2. To know the regulation and action of different hormones at different conditions
3. To get an in depth knowledge on diabetes mellitus

Course Outcomes (CO)

K1- K4 CO1-CO4	The students know about the diverse group of hormones and their specific mechanism of action in the bodily metabolism, learn the regulatory functions of various hormones and their interrelationship in the endocrine disorders, acquire the pathophysiology, diagnosis, treatment and management of endocrine disorders, and made equipped with the hormonal concepts and disease predictions.
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Programme Code: 07		Programme Title: M.Sc Biochemistry		
Course Code: 20PBC310		Title: Core Paper10-Biostatistics and Research Methodology		
Batch	Semester	Hours / Week	Total Hours	Credits
2020-2021	III	6	75	5

Course Objectives

1. To learn the different methods of collecting data and processing
2. To know about the different statistical methods to interpret the collected statistical data
3. To know the concept of article writing, report writing and thesis making so on

Course Outcomes (CO)

K1- K4 CO1-CO4	The students get an idea on choosing the appropriate method of collecting data, select the statistical method and process the collected data ,can device and standardize the statistical methods, well versed preparing a report, publishing an article and writing a project thesis
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Programme Code: 07		Programme Title: M.Sc Biochemistry		
Course Code: NA		Title: Major Elective: Nanobiotechnology		
Batch	Semester	Hours / Week	Total Hours	Credits
2020-2021	NA	5	75	5

Course Objectives

1. To get an idea about the application of nanotechnology in biological research
2. To learn the properties and functions of nanomaterials in biological systems
3. To learn the applications of nanomaterials in drug delivery and treatment

Course Outcomes (CO)

K1- K4 CO1-CO4	The students will get an insight about the nanotechnology concepts the methods of nanoparticle synthesis ,learn the properties of nanoparticles and know the application of nanotechnology in biological research
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Programme Code: 07		Programme Title: M.Sc Biochemistry		
Course Code: NA		Title: Major Elective – Microbiology		
Batch	Semester	Hours / Week	Total Hours	Credits
2020-2021	NA	5	75	5

Course Objectives

1. To learn about the microbiological techniques for microbial studies
2. To learn the energy process taking place in microbes
3. To learn about the food poisoning and pathogenicity of microbes

Course Outcomes (CO)

K1- K4 CO1-CO4	The students commemorate the general bacteriology and microbial techniques. Understand the basic microbial structure and function, implement the handling techniques and staining procedures in laboratory, and resolve the microbial techniques and its applications
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Programme Code: 07		Programme Title: M.Sc Biochemistry		
Course Code: NA		Title: Major Elective: Bioinformatics		
Batch	Semester	Hours / Week	Total Hours	Credits
2019-2020	NA	5	75	5

Course Objectives

1. To learn the role of computer programmes in studying the biological processes
2. To know about the different software's for data analysis
3. To learn about the methods of data retrieval from various databases

Course Outcomes (CO)

K1- K4 CO1-CO4	The students will learn about the basics and beginning developments in computer usage, know the basics of bioinformatics, learn the different bioinformatics softwares, and learn the application of bioinformatics in biological science research
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Programme Code: 07		Programme Title: M.Sc Biochemistry		
Course Code: NA		Title: Major Elective - Bioethics, Biosafety and IPR		
Batch	Semester	Hours / Week	Total Hours	Credits
2020-2021	NA	5	75	5

Course Objectives

1. To learn about the demerits of biotechnological applications in recent research
2. To know the ethical issues to be concerned in the course of biological research
3. To know about the intellectual property rights of individual researchers

Course Outcomes (CO)

K1- K4 CO1-CO4	The students can know about the ethical issues of scientific research Learn the various regulations in biosafety and bioethics, make aware the intellectual property rights and move into secured and ethical way of research
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Programme Code: 07		Programme Title: M.Sc Biochemistry		
Course Code: NA		Title: Non Major Elective – Environmental Management		
Batch	Semester	Hours / Week	Total Hours	Credits
2020-2021	NA	5	75	5

Course Objectives

1. To learn the various issues pertaining to the environment
2. To combat the environmental issues with efficient strategies
3. To assess the various existing environmental risk issues

Course Outcomes (CO)

K1- K4 CO1-CO4	The students will learn about the subject of environmental management Learn the issues concerned with environmental management, analyse the various issues of importance, and can take a right decision on combating upcoming environmental issues
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Programme Code: 07		Programme Title: M.Sc Biochemistry		
Course Code: NA		Title: Non Major Elective – Competitive Science		
Batch	Semester	Hours / Week	Total Hours	Credits
2020-2021	NA	5	75	5

Course Objectives

1. To insist the various facts of life sciences in detail
2. To learn the various information regarding the biological processes
3. To expose the students to the online examination

Course Outcomes (CO)

K1- K4	The students can learn the subjects in detail, get consolidated view of life science subjects, develop the analytical capability by learning the objective type questions and can undertake the competitive examinations will necessary preparation
CO1-CO4	

Programme Code: 07		Programme Title: M.Sc Biochemistry		
Course Code: NA		Title: Non Major Elective – Bioprocess Technology		
Batch	Semester	Hours / Week	Total Hours	Credits
2020-2021	NA	5	75	5

Course Objectives

1. To understand the basics of fermentation techniques
2. To learn the concepts of screening, optimization and maintenance of cultures
3. To provide the basics of bioprocess technology

Course Outcomes (CO)

K1- K4	The students can remember the basics of bioreactors, understand of the various aspects of bioprocess techniques, employ in biotechnological industries and examine the fermentation process and its kinetics
CO1-CO4	

Programme Code: 07		Programme Title: M.Sc Biochemistry		
Course Code: NA		Title: Non Major Elective – Cancer Biology		
Batch	Semester	Hours / Week	Total Hours	Credits
2020-2021	NA	5	75	5

Course Objectives

1. To know the biology of cancer development
2. To know the features of various cancer types
3. To know about the mechanism of cancer cell cycle
4. To learn the screening and diagnosis methods for cancers
5. To learn the treatment strategies for various cancers

Course Outcomes (CO)

K1- K4 CO1-CO4	To remember the basic knowledge on cancer development, understand the molecular mechanisms of cancer cell cycle, apply the techniques for diagnosis of various cancers and evaluate the role of different treatment strategies and its application
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