Department of Biochemistry
M.Sc Biochemistry(17-18 Regulation)

Program Outcomes:

S.No	OUTCOMES
PO1	The students achieved for best computational performance in a specific context
PO2	They cultivate the highest level of learning and technological key
PO3	We were choose social welfare oriented skill based subject and its applications in biology, helps to the students & social welfare
PO4	These competences of a course possess upon achieved for course specific goals
PO5	Able to design and contact scientific experiments and analyzing the data

Program specific Outcomes:

S.No	OUTCOMES
PSO1	Acquire knowledge and skills to undertake a career in research in an academic setup.
PSO2	Apply the knowledge of experimental approaches to save problems of a chemical nature & ability to entered that knowledge to the solution
PSO3	Drug development and synthesize the knowledge & apply the same for multitude of laboratory applications
PSO4	Understand and apply the concepts of life sources, empower the technical knowledge know &practical hands-on braining in the field
PSO5	Drug development and synthesize the knowledge & apply the same for multitude of laboratory applications

Course Outcomes:
Sub Name:Cell Dynamics And Environment Biology
Sub Code:MBC1

Semester	Course Name	Course Credit	Course Outcomes
I (Regulation 2020-2021)	Semester I Core Paper 1 **Cell Dynamics And Environment Biology**	04	CO 1- The student will be able to Get Knowledge on Structure and function of prokaryotic and eukaryotic cells. CO 2 -Understands the structure and functions of cells and transport across membrane. CO 3 -Aware of structure of model membrane Well versed on Extracellular matrix, cell-cell communication. CO 4 -Familiar with Sorting and regulation of intracellular trans. CO 5 -The student will be able to understand of cell signaling process. CO 6 -knowledge on signaling molecules get familiar with cell surface receptors and its function comprehend the pathways of intra cellular signal transduction aware of secondary messengers

Mapping with Programme Outcomes

COS	PO1	PO2	PO3	PO4	PO5
CO1	**S**	**M**	**S**	**S**	**S**
CO2	**S**	**S**	**S**	**S**	**M**
CO3	**S**	**S**	**S**	**S**	**S**
CO4	**S**	**S**	**S**	**S**	**S**
CO5	**S**	**S**	**S**	**S**	**S**
CO6	**S**	**S**	**M**	**S**	**S**

PO – Programme Outcome, CO – Course outcome S – Strong, M – Medium, L – Low (may be avoided)

Sub Name: Chemistry of Macromolecules
Sub Code:MBC12

	Core Paper 2 Chemistry of Macromolecules	04	CO 1-The student will be able understand about the properties of water and buffers . CO 2- knowledge on polysaccharides and its types get familiar with structural elucidation of polysaccharides . CO 3- Well versed with proteoglycans, glycoproteins and glycolipids aware of oligosaccharides and its interaction in biochemical process. CO 4- Get an idea about structure and functions of vitamins Well known with sources and Daily requirements of various vitamins. CO 5 -Knowledge of structure and functions of porphyrins Aware of Deficiency of vitamins and porphyrins. CO 6 -Well versed with Biochemical important porphyrins hemoglobin and chlorophyll.

Mapping with Programme Outcomes

COS	PO1	PO2	PO3	PO4	PO5
CO1	S	M	S	S	S
CO2	S	S	S	S	M
CO3	S	S	S	S	S
CO4	S	S	S	S	S
CO5	S	S	S	S	S
CO6	S	S	S	S	M

PO – Programme Outcome, CO – Course outcome S – Strong, M – Medium, L – Low (may be avoided)

Sub Name:Human Physiology & Nutrition
Sub Code:MBC13

	Core Paper 3 Human Physiology&Nutrion	03	CO1 -The student will be able to obtain a deep knowledge regarding blood and its components. CO 2 -Get to know about the haemopoiesis. Get a well versed knowledge on coagulation of blood. CO 3 -Aware of various types of blood groups and its significance Attain information on Blood corpuscles CO 4- Interpret ECG – its principle and significance Infer blood pressure and its complications . CO 5- Understand various sense organs Get familiar with Neurons and gross neuroanatomy of the brain and spinal cord. Get knowledge on Muscle physiology .

Mapping with Programme Outcomes

COS	PO1	PO2	PO3	PO4	PO5
CO1	S	M	S	S	S
CO2	S	S	S	S	M
CO3	S	S	S	S	S
CO4	S	S	S	S	S
CO5	S	S	S	S	S

PO – Programme Outcome, CO – Course outcome S – Strong, M – Medium, L – Low (may be avoided)

Sub Name: Pharmaceutical Biochemistry
Sub Code:MBC14B

	Core Elective Paper **Pharmaceutical Biochemistry**	03	)1-Understand the chemistry of drug molecules CO2- Illustare the drug distribution and absorption mechanism CO3-Gain the knowledge of drug delivery systems CO4- Prepare the plants in traditional medicine CO5 -Examine urine and stool sample for normal and abnormal Constituents. .

Mapping with Programme Outcomes

COS	PO1	PO2	PO3	PO4	PO5
CO1	S	M	S	S	S
CO2	S	S	S	S	M
CO3	S	S	S	S	S
CO4	S	S	S	S	S
CO5	S	S	S	S	S

PO – Programme Outcome, CO – Course outcome S – Strong, M – Medium, L – Low (may be avoided)

Sub Name: Analytical Biochemistry
Sub Code:MBC21

SEMESTER II	Core Paper-4 Analytical Biochemistry	04	CO 1 -Gain Practical knowledge, hands on tools and techniques for the characterization of Biomolecules will help the students in advanced research programs . CO 2 -Choose and plan the use of suitable electrophoretic techniques for actual analytical problems. CO 3 -Describe the use of nucleic acids as tools in molecular research decides and apply appropriate tools and techniques in molecular biology. CO 4 -Has practical experience in the use of computer software for the construction of genetic maps. CO 5 -gain insight of molecular biology techniques that are instrumental in analysis of genes at DNA level CO 6- knowledge on analytical instruments by visiting laboratories.

Mapping with Programme Outcomes

COS	PO1	PO2	PO3	PO4	PO5
CO1	S	M	S	S	S
CO2	S	S	S	S	M
CO3	S	S	S	S	S
CO4	S	S	S	S	S
CO5	S	S	S	S	S
CO6	S	S	S	S	M

PO – Programme Outcome, CO – Course outcome S – Strong, M – Medium, L – Low (may be avoided)

Sub Name:Inter Mediary Metabolism
Sub Code:MBC23

	Core Paper-6 Metabolic Regulation and Disorders	04	CO 1- Get a mechanistic overview of enzyme activity and regulation in cells . CO 2 -Understand the metabolic pathways, the energy yielding & energy requiring reactions in biological system. CO 3 -Describe the Cholesterol is kept in balance by homeostatic mechanisms: CO 4 -Understand the metabolic defects in different enzymes of urea biosynthesis, although distinct at the molecular level, present similar clinical signs and symptoms

			. CO **5** -Understand the nucleotide metabolism assess the crucial role of some hormones with regard to the integration of metabolic pathways CO 6- Gain the Knowledge Higher dietary intake leads to reduced synthesis in the body.

Mapping with Programme Outcomes

COS	PO1	PO2	PO3	PO4	PO5
CO1	**S**	**M**	**S**	**S**	**S**
CO2	**S**	**S**	**S**	**S**	**M**
CO3	**S**	**S**	**S**	**S**	**S**
CO4	**S**	**S**	**S**	**S**	**S**
CO5	**S**	**S**	**S**	**S**	**S**
CO6	**S**	**S**	**S**	**S**	**S**

PO – Programme Outcome, CO – Course outcome S – Strong, M – Medium, L – Low (may be avoided)

Sub Name: Bioinformatics
Sub Code:MBC34B

	Core Elective Paper - 2 Bioinformatics	03	CO-1 Well known on computer system design. CO 2 -Well versed with internet. CO 3 -Aware on World wide Web, Url, HTML CO 4-Well versed with Phylogenetic trees. vare on DNA microarrays CO 5- Aware on drug designing and Knowledgeable on simulation of ES Complex

			interaction. Familiar with computer modeling of proteins.

Mapping with Programme Outcomes

COS	PO1	PO2	PO3	PO4	PO5
CO1	S	M	S	S	S
CO2	S	S	S	S	M
CO3	S	S	S	S	S
CO4	S	S	S	S	S
CO5	S	S	S	S	S

PO – Programme Outcome, CO – Course outcome S – Strong, M – Medium, L – Low (may be avoided)

Sub Name:Advanced Endocrinology
Sub Code:MBC31

SEMESTER III	Paper -7 Advanced Endocrinology	05	CO 1 -Knowledgeable on cyclic hormone cascade system. CO 2- Aware of Hormone regulations and Insulin. CO 3 -Well versed on pituitary hormones and its roles. CO 4- Familiar with thyroid hormones. CO 5- Well versed with signal transduction. Knowledgeable on G protein. CO 6- Aware of protein kinase enzyme regulations. Well versed on light and dark cycle. CO 7 -Aware of multiple endocrine neoplasias. Well versed on hormone response.

Mapping with Programme Outcomes

COS	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**
CO1	**S**	**M**	**S**	**S**	**S**
CO2	**S**	**S**	**S**	**S**	**M**
CO3	**S**	**S**	**S**	**S**	**S**
CO4	**S**	**S**	**S**	**S**	**S**
CO5	**S**	**S**	**S**	**S**	**S**
CO6	**S**	**S**	**S**	**S**	**M**
CO7	**S**	**S**	**S**	**S**	**S**

PO – Programme Outcome, CO – Course outcome S – Strong, M – Medium, L – Low (may be avoided)

Sub Name:Core Practical

Sub Code:

	Core Practical – I -	03	CO 1- Students understand the preparation of buffers and ph measurements. CO 2 -Students understand and practical knowledge of techniques of PCR CO 3 - Students understand and practical knowledge of techniques of column chromatography CO 4- Gain the Knowledge of Determination of tryptophan. CO 5- Gain the Knowledge of Estimation of Iron.

Mapping with Programme Outcomes

COS	PO1	PO2	PO3	PO4	PO5
CO1	S	M	S	S	S
CO2	S	S	S	S	M
CO3	S	S	S	S	S
CO4	S	S	S	S	S
CO5	S	S	S	S	S

PO – Programme Outcome, CO – Course outcome S – Strong, M – Medium, L – Low (may be avoided)

SUBJECT NAME: CORE PRACTICAL II
SUB CODE:

	Core Practical – II	03	CO 1-students understand the blood grouping and Rh typing CO2- Students make understanding the techniques ELISA. CO3 -Students get practical knowledge on basic microbiological techniques like pure culture techniques and staining techniques. CO4 -Acquire knowledge related to turbidity method CO5 -Gain the Knowledge of membrane filtration technique.

Mapping with Programme Outcomes

COS	PO1	PO2	PO3	PO4	PO5
CO1	S	M	S	S	S
CO2	S	S	S	S	M
CO3	S	S	S	S	S
CO4	S	S	S	S	S
CO5	S	S	S	S	S

PO – Programme Outcome, CO – Course outcome S – Strong, M – Medium, L – Low (may be avoided)

SUBJECT NAME: RESEARCH METHODOLOGY
SUB CODE:MBC32

	Core Paper – 8 Research Methodology	05	CO 1- Identify a research problem by searching relevant literature. Write an effective research articles CO 2 -familiar with search engines. Aware on standard deviation CO3- Well known on ANOVA Aware of BLAST and FASTA CO4 -identify the protein structure using bioinformatics tools. CO5-Aware of ethics in food and drug safety. Well known on patenting and fundamental research. CO 6-Well known on importance of NET examination CO7 -To develop sound Knowledge on Preparation of research reports .

Mapping with Programme Outcomes

COS	PO1	PO2	PO3	PO4	PO5
CO1	S	M	S	S	S
CO2	S	S	S	S	M
CO3	S	S	S	S	S
CO4	S	S	S	S	S
C05	S	M	S	S	M
CO6	S	S	M	S	S
CO7	S	S	S	S	S

PO – Programme Outcome, CO – Course outcome S – Strong, M – Medium, L – Low (may be avoided)

	Paper - 9 Biotechnology	05	CO -1 familiar with gene transfer system. CO2 -Knowledgeable on plasmids and cosmids .Aware of PCR and blotting techniques. CO 3 Well versed on xenografting. Aware of GM foods. CO4 -Well versed on industrial uses of enzymes. CO 5- Aware of IPR. CO 6- Well versed on patenting. CO7 -Well versed with restriction enzymes

Mapping with Programme Outcomes

COS	PO1	PO2	PO3	PO4	PO5
CO1	S	M	S	S	S
CO2	S	S	S	S	M
CO3	S	S	S	S	S
CO4	S	S	S	S	M
CO5	S	S	S	S	S
CO6	S	S	S	S	S
CO7	S	S	S	S	S

PO – Programme Outcome, CO – Course outcome S – Strong, M – Medium, L – Low (may be avoided)

SUBJECT NAME: MOLECULAR BIOLOGY
SUB CODE:MBC41

emester IV	Core Paper 10 Molecular Biology	05	CO 1 -Know about genome organization or living organisms. CO 2 -study of genes genome, chromosome etc. CO 3 -Learn structural levels of nucleic acids- DNA and RNA and genome organization in prokaryotes. CO 4 -Learn structural levels of transcription, posttranscriptional processing in prokaryotes. CO 5 -The student can predict how a change in a specific DNA or RNA sequence can result in changes in gene expression. CO 6- Understanding the principles and applications of Molecular Biology techniques CO7 -Applications of Polymerase chain reaction.

Mapping with Programme Outcomes

COS	PO1	PO2	PO3	PO4	PO5

CO1	**S**	**M**	**S**	**S**	**S**
CO2	**S**	**S**	**S**	**S**	**M**
CO3	**S**	**S**	**S**	**S**	**S**
CO4	**S**	**S**	**S**	**S**	**M**
CO5	**S**	**S**	**S**	**S**	**S**
CO6	**S**	**S**	**S**	**S**	**S**
CO7	**S**	**S**	**S**	**S**	**S**

PO – Programme Outcome, CO – Course outcome S – Strong, M – Medium, L – Low (may be avoided)

SUBJECT NAME: ADVANCED CLINICAL BIOCHEMISTRY
SUB CODE: MBC42

	Core Paper – 11 Advanced Clinical Biochemistry	05	CO 1- Understand the blood glucose regulation . CO2-Describe the pathophysiology and molecular basis of Diabetes mellitus. CO3 -Analyze the genetic diseases like phenyl ketonuria, cystinuria, and albinism CO4 -Assess the diagnostic performance of renal function tests CO5 -Examine the gastric contents. CO 6 -Practical knowledge on FTM analysis. CO7- Acquire the Knowledge of hypo and hyperuricemias, obesity and fatty liver.

Mapping with Programme Outcomes

COS	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**
CO1	**S**	**M**	**S**	**S**	**S**
CO2	**S**	**S**	**S**	**S**	**M**
CO3	**S**	**S**	**S**	**S**	**S**
CO4	**S**	**S**	**S**	**S**	**S**
CO5	**S**	**S**	**S**	**S**	**S**

CO6	**S**	**M**	**S**	**S**	**S**
CO7	**S**	**S**	**S**	**S**	**S**

PO – Programme Outcome, CO – Course outcome S – Strong, M – Medium, L – Low (may be avoided)

Sub Name: Genetic engineering
Sub Code:MBC43A

	Core Elective Paper -3 Genetic Engineering	03	CO 1 -Familiar with gene cloning. CO 2 -Well versed with tools and techniques. CO 3 -Knowledgeable on isolation and purification of enzymes. Aware of isolation of plant cell DNA. CO 4- Knowledgeable on Ti plasmids. Well versed on papilloma viruses Knowledgeable on nick translation. CO 5 -Well versed on DNA ligation. Aware of DNA foot printing. Well versed on DNA analysis

Mapping with Programme Outcomes

COS	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**
CO1	**S**	**M**	**S**	**S**	**S**
CO2	**S**	**S**	**S**	**S**	**M**
CO3	**S**	**S**	**S**	**S**	**S**
CO4	**S**	**S**	**S**	**S**	**S**
CO5	**S**	**S**	**S**	**S**	**S**

PO – Programme Outcome, CO – Course outcome S – Strong, M – Medium, L – Low (may be avoided)

SUBJECT NAME: PRACTICAL III

SUB CODE:

	Practical – III zymology and Clinical Diagnostics (Biochemical Analysis of Blood)	05	CO 1 students able to Understand the hands on training of purification and kinetics analysis of enzymes CO 2 And also make practical training of biochemical techniques and biochemical analysis CO3 Purification of acid Phosphatase from Potato. CO4 Effect of substrate Concentration and acid phosphates Activity by EDTA. CO 5 Determination of Optimum Temperature. CO 6 Determination of optimum PH. CO 7 Effect of Activator and Inhibitor of Acid Phosphates' activity by EDTA.

Mapping with Programme Outcomes

COS	PO1	PO2	PO3	PO4	PO5
CO1	S	M	S	S	S
CO2	S	S	S	S	M
CO3	S	S	S	S	S

CO4	**S**	**S**	**S**	**S**	**M**
CO5	**S**	**S**	**S**	**S**	**S**
CO6	**S**	**S**	**S**	**S**	**S**
CO7	**S**	**S**	**S**	**S**	**S**

PO – Programme Outcome, CO – Course outcome S – Strong, M – Medium, L – Low (may be avoided)

SUBJECT NAME: PRACTICAL IV
SUB CODE:

	Practical – IV ematological Methods and Urine Analysis.	05	CO 1 Identify and enumerate the total count of erythrocytes and leukocytes. CO 2 Differentiate leukocytes and calculate their total count. CO 3 Define and determine the erythrocyte sedimentation rate. CO 4 Determine the packed cell volume and mean corpuscular volume. CO 5 Hematological clinical implications. CO 6 Utilize sphygmomanometer to determine the blood pressure CO 7 Qualitatively analyze the normal and abnormal constituents of urine sample

Mapping with Programme Outcomes

COS	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**
CO1	**S**	**M**	**S**	**S**	**S**
CO2	**S**	**S**	**S**	**S**	**M**
CO3	**S**	**S**	**S**	**S**	**S**
CO4	**S**	**S**	**S**	**S**	**M**
CO5	**S**	**S**	**S**	**S**	**S**

CO6	**S**	**S**	**S**	**S**	**S**
CO7	**S**	**S**	**S**	**S**	**S**

PO – Programme Outcome, CO – Course outcome S – Strong, M – Medium, L – Low (may be avoided)