(U/S 2(f) and 12B of the UGC Act 1956, NAAC Accredited)

DESH BHAGAT UNIVERSITY, MANDI GOBINDGARH

FACULTY OF ALLIED HEALTH SCIENCES

Master of Medical Biochemistry

Programme Outcomes:

PO1.Laboratoryknowledge: Apply the knowledge of human anatomy, physiology, hematology, pathology, microbiology and biochemistry related to medical laboratory.
PO2.Problem analysis: Identify, and analyze problems to arrive at substantiated conclusions using knowledge about different medical laboratory procedures.
PO3.Design/development of solutions: Design solutions for complex diagnosis problems and design system components, processes to meet the specifications with consideration for the public health and safety, and environmental considerations.
PO4.Conduct investigations of complex problems: Use knowledge including protocols, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
PO5.Modern tool usage: Create select, and apply appropriate techniques, resources, and modern technology and laboratory tools.
PO6. The lab technician and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal issues and the consequent responsibilities relevant
PO7.Environmentand sustainability: Understand the impact of the professional lab technician in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
PO8. Ethics: Apply ethical principles and commit to professional ethics and responsibilities of the medical lab practice.
PO9. **Individual and team work:** Function effectively as an individual, and as a member or leader in teams, and in multidisciplinary settings.
PO10.Communication: Communicate effectively with the laboratory community and with society (patient) at large. Be able to comprehend and write effective reports documentation. Make effective presentations, and give and receive clear instructions.
PO11.Management and finance: Demonstrate knowledge and understanding of protocols and management principles and apply these to one's own work, as a member and leader in a team.
PO12.Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Course Code: MMBI-101
Title of the Course: Human Anatomy

L	T	P	Credit
4	-	1	4

Course Outcomes:
CO1: Describe the general structure and functions of the body as a whole.
CO2: Describe the general and microscopic structure and functions of each system of the body.
CO3: Explain the macroscopic and microscopic structure and functions of each organs of the body.

Course Code: MMBI-102
Title of the Course: Human Anatomy-Practical

L	T	P	Credit

-	-	2	2

Course Outcomes:

CO1: Describe the general structure and functions of the body as a whole.
CO2: Describe the general and microscopic structure and functions of each system of the body.
CO3: Explain the macroscopic and microscopic structure and functions of each organs of the body.

Course Code: MMBI-103

Title of the Course: Human Physiology

L	T	P	Credit
4	-	1	4

Course Outcomes:

CO1: Describe the general structure and functions of the body as a whole.
CO2: Describe the general and microscopic structure and functions of each system of the body.
CO3: Explain the macroscopic and microscopic structure and functions of each organs of the body.

Course Code: MMBI-104

Title of the Course: Human Physiology-Practical

L	T	P	Credit
-	-	2	2

Course Outcomes:

CO1: Describe the general structure and functions of the body as a whole.
CO2: Describe the general and microscopic structure and functions of each system of the body.
CO3: Explain the macroscopic and microscopic structure and functions of each organs of the body.

Course Code: MMBI-105

Title of the Course: Conceptual Biochemistry

L	T	P	Credit
3	1	-	4

Course Outcomes:

CO1: Correlate biochemical findings with those generated in other areas of the clinical laboratory, patient symptoms and clinical history, to make appropriate and effective on-the-job professional decisions.
CO2: Perform basic Biochemistry laboratory testing, assess laboratory data and report findings according to laboratory protocol.
CO3: Adapt biochemistry laboratory techniques and procedures when errors and discrepancies in results are obtained to effect resolution in a professional and timely manner.

Course Code: MMBI-106

Title of the Course: Conceptual Biochemistry-Practical

L	T	P	Credit
-	-	2	2

Course Outcomes:

CO1: Correlate biochemical findings with those generated in other areas of the clinical laboratory, patient symptoms and clinical history, to make appropriate and effective on-the-job professional decisions.
CO2: Perform basic Biochemistry laboratory testing, assess laboratory data and report findings according to laboratory protocol.
CO3: Adapt biochemistry laboratory techniques and procedures when errors and discrepancies in results are obtained to effect resolution in a professional and timely manner.

Course Code: MMBI-107
Title of the Course: Advance Instrumentation & Maintenance

L	T	P	Credit
3	1	2	5

Course Outcomes:
CO1: Choose appropriate strategies and instrumentation for analysis of different biological sample types.
CO2: Evaluate the applicability, advantages, limitations and sources of error of current analytical instruments through an understanding of the working principles of these instruments and the underlying biochemical basis.
CO3: Conduct biochemical analyses and instrument evaluations in the laboratory and link the practical applications to the theoretical background

Course Code: MMBI-108
Title of the Course: Advance Instrumentation & Maintenance-Practical

L	T	P	Credit
3	1	2	5

Course Outcomes:
CO1: Choose appropriate strategies and instrumentation for analysis of different biological sample types.
CO2: Evaluate the applicability, advantages, limitations and sources of error of current analytical instruments through an understanding of the working principles of these instruments and the underlying biochemical basis.
CO3: Conduct biochemical analyses and instrument evaluations in the laboratory and link the practical applications to the theoretical background

Course Code: MMBI-201
Title of the Course: Enzymology and Endocrinology

L	T	P	Credit
3	1	-	4

Course Outcomes:
CO1: Describe the general structure and functions of the body as a whole.
CO2: Describe the general and microscopic structure and functions of each system of the body.
CO3: Explain the macroscopic and microscopic structure and functions of each organs of the body.

Course Code: MMBI-202
Title of the Course: Enzymology and Endocrinology-Practical

L	T	P	Credit
-	-	2	2

Course Outcomes:
CO1: Describe the general structure and functions of the body as a whole.
CO2: Describe the general and microscopic structure and functions of each system of the body.
CO3: Explain the macroscopic and microscopic structure and functions of each organs of the body.

Course Code: MMBI-203
Title of the Course: Nutrition & Dietetics

L	T	P	Credit
3	1	-	4

Course Outcomes:
CO1: Student will get insight of research tools

CO2: The student will gain knowledge of basic statistical approaches
CO3: Enhance knowledge of databases in research

Course Code: MMBI-205
Title of the Course: Metabolism of Biomolecules

L	T	P	Credit
3	1	-	4

Course Outcomes:
CO1: Describe basic theories of homeostasis including: -Interrelationship of the three systems in the haemostatic mechanism. -Blood coagulation factors. -Cascade theory. -Fibrinolytic mechanism. -Regulatory mechanisms.
CO2: Evaluate given clinical and laboratory data and determine cause of defects in the haemostatic mechanism.
CO3: Demonstrate proper use of the various coagulation reagents required in the clinical laboratory

Course Code: MMBI-206
Title of the Course: Metabolism of Biomolecules-Practical

L	T	P	Credit
3	1	-	4

Course Outcomes:
CO1: Describe basic theories of homeostasis including: -Interrelationship of the three systems in the haemostatic mechanism. -Blood coagulation factors. -Cascade theory. -Fibrinolytic mechanism. -Regulatory mechanisms.
CO2: Evaluate given clinical and laboratory data and determine cause of defects in the haemostatic mechanism.
CO3: Demonstrate proper use of the various coagulation reagents required in the clinical laboratory

Course Code: MMBI-207
Title of the Course: Research Methodology and Biostatistics

L	T	P	Credit
2	-	-	2

Course Outcomes:
CO1: Know and understand about microorganisms, their importance and history of microbiology.
CO2: Understand and Apply various equipment used microbiology.
CO3: Learn basic morphology cultural characteristics of microbes, their growth and their interpretation.

Course Code: MMBI-208
Title of the Course: Nano Biotechnology (Elective)

L	T	P	Credit
3	1	2	5

Course Outcomes:
CO1: Students will study about different nanoparticles and their application in biomedical field
CO2: Students will gain knowledge about the different bio conjugation concept related to different nanoparticles.
CO3: Students will also role of different Nano-biosensors in clinical biochemistry.

Course Code: MMBI-301
Title of the Course: Clinical Biochemistry

L	T	P	Credit
3	-	-	3

Course Outcomes:
CO1: Understand the ethics and code of practice of a medical laboratory technician
CO2: Understand the quality management in laboratory
CO3: Understand the information system and financial management in a medical facility

Course Code: MMBI-302
Title of the Course: Clinical Biochemistry-Practical

L	T	P	Credit
3	-	-	3

Course Outcomes:
CO1: Understand the ethics and code of practice of a medical laboratory technician
CO2: Understand the quality management in laboratory
CO3: Understand the information system and financial management in a medical facility

Course Code: MMBI-303
Title of the Course: Molecular Biology

L	T	P	Credit
3	-	-	3

Course Outcomes:
CO1: Understand the concepts of parasitological and its components.
CO2: Know about various medically important parasites, their pathogenesis and laboratory diagnosis
CO3: Know about various medically important viruses, their pathogenesis and laboratory diagnosis of some important viral infections.

Course Code: MMBI-304
Title of the Course: Molecular Biology-Practical

L	T	P	Credit
3	-	-	3

Course Outcomes:
CO1: Understand the concepts of parasitological and its components.
CO2: Know about various medically important parasites, their pathogenesis and laboratory diagnosis
CO3: Know about various medically important viruses, their pathogenesis and laboratory diagnosis of some important viral infections.

Course Code: MMBI-306
Title of the Course: Recent advances in Biochemistry

L	T	P	Credit
3	1	2	5

Course Outcomes:
CO1: Know and understand basic and advanced concepts of immunity and its components

CO2: Understand and apply various serological tests used in laboratory
CO3: Learn basic morphology and cultural characteristics of fungi, their growth and their laboratory diagnosis

Course Code: MMBI-307
Title of the Course: Human Values and Ethics

L	T	P	Credit
3	1	-	4

Course Outcomes:
CO1: To practice professional ethics, understanding of values and concepts are essential
CO2: To create awareness on professional ethics and Human Values.
CO3: To develop the ability to face difficult situations in life boldly and resolve them confidently

Course Code: MMBI-308
Title of the Course: Seminar

L	T	P	Credit
3	1	2	5

Course Outcomes:
CO1: To understand the biochemical changes and related physiological alteration in the body during infection / disease.
CO2: Evaluate the applicability, advantages, limitations and sources of error of current analytical instruments through an understanding of the working principles of these instruments and the underlying biochemical basis.
CO3: Conduct biochemical analyses and instrument evaluations in the laboratory and link the practical applications to the theoretical background.

Course Code: MMBI-401
Title of the Course: Biosafety and Bioethics (elective)

L	T	P	Credit
3	1	1	5

Course Outcomes:
CO1: Describe and use the equations of enzyme kinetics.
CO2: Describe the methods used in enzyme kinetics.
CO3: Describe the principles of enzyme inhibition.

Course Code: MMBI-402
Title of the Course: Bioinformatics (elective)

L	T	P	Credit
3	1	1	5

Course Outcomes:
CO1: Students will study about the growth of different types of microorganisms based on various environmental factors.
CO2: Students will gain knowledge about the nutrient uptake and transport and the different metabolic pathways involved in their growth.
CO3: Students will also learn about viruses and eukaryotic cell structure in detail.

Course Code: MMBI-403

Title of the Course: Dissertation

L	T	P	Credit
3	1	1	5

Course Outcomes:

CO1: Gain knowledge and understanding of biochemistry, structure and function of biological molecules.

CO2: Explain biological mechanisms, such as the processes and control of bioenergetics and metabolism, as chemical reactions.

CO3: To learn the concept and mechanism of ATP synthesis