

## DESH BHAGAT UNIVERSITY, MANDI GOBINDGARH

### FACULTY OF ALLIED HEALTH SCIENCES

#### Master of MLT (Biochemistry)

#### Programme Outcomes:

**PO1.Laboratory knowledge:** 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.Environment and 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: MMLT-101**

**Title of the Course: Analytical & Physical Biochemistry**

L	T	P	Credit
4	1	-	5

#### Course Outcomes:

CO1: The students will learn basic principles/mechanisms

CO2: Procedures performed in analytical biochemistry

CO3: Various types of techniques commonly performed in analytical biochemistry.

**Course Code: MMLT-102**

**Title of the Course: Enzymes & Metabolism –I**

L	T	P	C

4	0	0	4
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**Course Outcomes:**

CO1: Students will be made aware of terminology used in histotechnology.

CO2: Various instruments and their maintenance.

CO3: Also learn the processing of various samples for histopathological investigations.

**Course Code: MMLT-103**

**Title of the Course: Statistics & Clinical Biochemistry Laboratory Management**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
4	1	0	5

**Course Outcomes:**

CO1: The main objective of the subject is to impart the knowledge of apparatus, units, equipment.

CO2: Volumetric analysis in the laboratory of clinical Biochemistry.

CO3: Analyse interpret and participate in reporting to their peers on the results of their laboratory experiments

**Course Code: MMLT-104**

**Title of the Course: Analytical & Physical Biochemistry (Practical)**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
-	-	8	4

**Course Outcomes:**

CO1: The students will learn basic principles/mechanisms

CO2: Procedures performed in analytical biochemistry

CO3: Various types of techniques commonly performed in analytical biochemistry.

**Course Code: MMLT-105**

**Title of the Course: Enzymes & Metabolism –I (Practical)**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
-	-	8	4

**Course Outcomes:**

CO1: Students will be made aware of terminology used in histotechnology.

CO2: Various instruments and their maintenance.

CO3: Also learn the processing of various samples for histopathological investigations.

**Course Code: MMLT-106**

**Title of the Course: Statistics & Clinical Biochemistry Laboratory Management (Practical)**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
-	-	5	3

**Course Outcomes:**

CO1: The main objective of the subject is to impart the knowledge of apparatus, units, equipment.

CO2: Volumetric analysis in the laboratory of clinical Biochemistry.

CO3: Analyse interpret, and participate in reporting to their peers on the results of their laboratory experiments

**Course Code: MMLT-201**

**Title of the Course: Principles of Biochemistry**

L	T	P	C
4	1	0	5

**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: MMLT-202**

**Title of the Course: Enzymes & Metabolism –II**

L	T	P	C
4	-	-	4

**Course Outcomes:**

After completing this course student will be able to:-

**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

**Course Code: MMLT-203**

**Title of the Course: Vitamins, Hormones, General Physiology and Nutrition**

L	T	P	C
4	1	-	5

**Course Outcomes:**

After completing this course student will be able to: -

**CO1:** Know and understand about sampling in various systematic diseases

**CO2:** Understand and apply antibiotic susceptibility testing

**CO3:** Know and apply various procedures used in bacteriological examination of water, milk, food and air and nosocomial infections.

**Course Code: MMLT-204**

**Title of the Course: Principles of Biochemistry (Practical)**

L	T	P	C
-	-	8	4

**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: MMLT-205**

**Title of the Course: Enzymes & Metabolism –II (Practical)**

L	T	P	C

-	-	8	4
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**Course Outcomes:**

After completing this course student will be able to:-

**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

**Course Code: MMLT-206**

**Title of the Course: Vitamins, Hormones, General Physiology and Nutrition (Practical)**

L	T	P	C
-	-	5	3

**Course Outcomes:**

After completing this course student will be able to: -

**CO1:** Know and understand about sampling in various systematic diseases

**CO2:** Understand and apply antibiotic susceptibility testing

**CO3:** Know and apply various procedures used in bacteriological examination of water, milk, food and air and nosocomial infections.

**Course Code: MMLT-301**

**Title of the Course: Organ Function Tests**

L	T	P	C
4	1	0	5

**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: MMLT-302**

**Title of the Course: Clinical Biochemistry**

L	T	P	C
4	-	-	4

**Course Outcomes:**

**CO1:** Student will learn about the various methods of patients' sample analysis for biochemistry parameters.

**CO2:** Analyze various clinical samples, for estimation of different components which are the cause of the disease or are the diagnostic/prognostic markers.

**CO3:** This subject gives information about various clinically important enzymes & automation techniques.

**Course Code: MMLT-303**

**Title of the Course: Molecular Biology**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>4</b>	<b>1</b>	<b>-</b>	<b>5</b>

**Course Outcomes:**

**CO1:** Construct an understanding of the history and underlying themes of biology, especially regarding evolution, organism diversity, and ecology. Explore how the study of biology impacts quality of life.

**CO2:** Become acquainted with how scientific information is presented. Develop higher order written and oral communication.

**CO3:** Use the scientific method to analyze and evaluate problems and information.

**Course Code: MMLT-304**

**Title of the Course: Organ Function Tests (Practical)**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>-</b>	<b>-</b>	<b>8</b>	<b>4</b>

**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: MMLT-305**

**Title of the Course: Clinical Biochemistry (Practical)**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>-</b>	<b>-</b>	<b>8</b>	<b>4</b>

**Course Outcomes:**

**CO1:** Student will learn about the various methods of patients' sample analysis for biochemistry parameters.

**CO2:** Analyze various clinical samples, for estimation of different components which are the cause of the disease or are the diagnostic/prognostic markers.

**CO3:** This subject gives information about various clinically important enzymes & automation techniques.

**Course Code: MMLT-306**

**Title of the Course: Molecular Biology (Practical)**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>-</b>	<b>-</b>	<b>5</b>	<b>3</b>

**Course Outcomes:**

**CO1:** Construct an understanding of the history and underlying themes of biology, especially regarding evolution, organism diversity, and ecology. Explore how the study of biology impacts quality of life.

**CO2:** Become acquainted with how scientific information is presented. Develop higher order written and oral communication.

**CO3:** Use the scientific method to analyze and evaluate problems and information.