



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

DESH BHAGAT UNIVERSITY, MANDI GOBINDGARH

FACULTY OF ALLIED HEALTH SCIENCES

DIPLOMA OF LABORATORY TECHNIQUES

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: DMLT-101

Title of the Course: Basic Computers and Information Science

| L | T | P | Credit |
|----------|----------|----------|---------------|
| 2 | - | - | 2 |

Course Outcomes:

CO1: The students will be able to appreciate the role of computer technology.

CO2: The course has focus on computer organization, computer operating system and software, and MS windows.

CO3: Word processing, Excel data worksheet and PowerPoint presentation.

Course Code: DMLT-102

Title of the Course: Basic Computers and Information Science-Practical

| L | T | P | Credit |
|---|---|---|--------|
| - | - | 4 | 2 |

Course Outcomes:

CO1: The students will be able to appreciate the role of computer technology.

CO2: The course has focus on computer organization, computer operating system and software, and MS windows.

CO3: Word processing, Excel data worksheet and Power Point presentation.

Course Code: DMLT-103

Title of the Course: Introduction to Quality and Patient safety

| L | T | P | Credit |
|---|---|---|--------|
| 3 | 1 | - | 2 |

Course Outcomes:

CO1: The objective of the course is to help students understand the basic concepts of quality in health Care.

CO2: Develop skills to implement sustainable equality assurance program in the health system.

CO3: The goal is "to improve the quality of patient care by identifying, analyzing, and attempting to resolve the ethical problems that arise in practice".

Course Code: DMLT-104

Title of the Course: Introduction to Quality and Patient safety-Practical

| L | T | P | Credit |
|---|---|---|--------|
| - | - | 4 | 2 |

Course Outcomes:

CO1: The objective of the course is to help students understand the basic concepts of quality in health Care.

CO2: Develop skills to implement sustainable equality assurance program in the health system.

CO3: The goal is "to improve the quality of patient care by identifying, analyzing, and attempting to resolve the ethical problems that arise in practice".

Course Code: DMLT-105

Title of the Course: Medical Terminology and Record Keeping (including anatomical terms)

| L | T | P | Credit |
|---|---|---|--------|
| 2 | - | - | 2 |

Course Outcomes:

CO1: This course introduces the elements of medical terminology.

CO2: Emphasis is placed on building familiarity with medical words through knowledge of roots, prefixes, and suffixes.

CO3: Topics include: origin, word building, abbreviations and symbols, terminology related to the human anatomy, reading medical orders and reports, and terminology specific to the student's field of study.

Course Code: DMLT-106

**Title of the Course: Medical Terminology and Record Keeping (including anatomical terms)
-Practical**

| L | T | P | Credit |
|---|---|---|--------|
|---|---|---|--------|

| | | | |
|---|---|---|---|
| - | - | 2 | 1 |
|---|---|---|---|

Course Outcomes:

CO1: This course introduces the elements of medical terminology.

CO2: Emphasis is placed on building familiarity with medical words through knowledge of roots, prefixes, and suffixes.

CO3: Topics include: origin, word building, abbreviations and symbols, terminology related to the human anatomy, reading medical orders and reports, and terminology specific to the student's field of study.

Course Code: DMLT-107

Title of the Course: Environmental Sciences

| L | T | P | Credit |
|---|---|---|--------|
| 1 | - | - | 1 |

Course Outcomes:

CO1: The student will be made aware of the environment in general, natural resources, ecosystems, environmental pollution.

CO2: Social issues related to environment, human population.

CO3: The environment and understanding the hospital environment.

Course Code: DMLT-108

Title of the Course: Environmental Sciences-Practical

| L | T | P | Credit |
|---|---|---|--------|
| - | - | 2 | 1 |

Course Outcomes:

CO1: The student will be made aware of the environment in general, natural resources, ecosystems, environmental pollution.

CO2: Social issues related to environment, human population.

CO3: The environment and understanding the hospital environment.

Course Code: DMLT-109

Title of the Course: Principles of management with special reference to MLS

| L | T | P | Credit |
|---|---|---|--------|
| 2 | 1 | - | 2 |

Course Outcomes:

CO1: To provide knowledge about the basic principles of Management.

CO2: The students will be made aware of the basic ethics, good lab practices including awareness/safety in a clinical lab.

CO3: In addition they will understand sample accountability, quality management system, biomedical waste management, calibration and validation of clinical laboratory instruments, Laboratory Information system (LIS), Hospital Information system (HIS) and financial management.

Course Code: DMLT-110

Title of the Course: Principles of management with special reference to MLS-Practical

| L | T | P | Credit |
|---|---|---|--------|
| 2 | 1 | - | 2 |

Course Outcomes:

CO1: To provide knowledge about the basic principles of Management.

CO2: The students will be made aware of the basic ethics, good lab practices including awareness/safety in a clinical lab.

CO3: In addition they will understand sample accountability, quality management system, biomedical waste management, calibration and validation of clinical laboratory instruments, Laboratory Information system (LIS), Hospital Information system (HIS) and financial management.

Course Code: DMLT-111

Title of the Course: Introduction to Healthcare Delivery System in India

| L | T | P | Credit |
|---|---|---|--------|
| 1 | - | - | 1 |

Course Outcomes:

CO1: Provides the students a basic in sight in to the main features of Indian health care delivery system.

CO2: It compares with the other systems of the world.

CO3: Develop, implement and manage various public health programs

Course Code: DMLT-112

Title of the Course: Medical Law and Ethics

| L | T | P | Credit |
|---|---|---|--------|
| 2 | - | - | 2 |

Course Outcomes:

CO1: Medical ethics has developed in to a well based discipline which acts as a "bridge" between theoretical bioethics and the bedside.

CO2: The goal is "to improve the quality of patient care by identifying, analyzing, and attempting to resolve the ethical problems that arise in practice".

CO3: It is a universal consensus that legal and ethical considerations are inherent and inseparable parts of good medical practice across the whole spectrum.

Course Code: DMLT-113

Title of the Course: Professional Values and Ethics

| L | T | P | Credit |
|---|---|---|--------|
| 1 | - | - | 1 |

Course Outcomes:

CO1: The module on professionalism will deliver the concept of what it means to be a professional

CO2: And how a specialized profession is different from a usual vocation.

CO3: It also explains how relevant is professionalism in terms of health care system and how it affects the overall patient environment.

Course Code: DMLT-114

Title of the Course: Community Orientation and Clinical visit (including related practical to course)

| L | T | P | Credit |
|---|---|---|--------|
| 1 | - | - | 1 |

Course Outcomes:

CO1: To sensitize potential learners with essential knowledge.

CO2: This will lay a sound foundation for their learning across the under-graduate program and across their career.

CO3: Innovative teaching methods should be used to ensure the attention of a student and make them more receptive such as group activities, interactive fore, role plays, and clinical bed-side demonstrations.

Course Code: DMLT-115

Title of the Course: Communication and soft skills

| L | T | P | Credit |
|---|---|---|--------|
| 2 | - | - | 2 |

Course Outcomes:

CO1: Teaching the different methods of writing like letters, E-mails, report, case study, collecting the patient data etc.

CO2: Basic compositions, journals, with a focus on paragraph form and organization.

CO3: Basic concepts & principles of good communication.

Course Code: DMLT-116**Title of the Course: Communication and Soft skills-Practical**

| L | T | P | Credit |
|---|---|---|--------|
| - | - | 2 | 2 |

Course Outcomes:

CO1: Teaching the different methods of writing like letters, E-mails, report, case study, collecting the patient data etc.

CO2: Basic compositions, journals, with a focus on paragraph form and organization.

CO3: Basic concepts & principles of good communication.

Course Code: DMLT-201**Title of the Course: Human Anatomy & Physiology**

| L | T | P | Credit |
|---|---|---|--------|
| 4 | - | - | 4 |

Course Outcomes:

CO1: Students will be able to learn the terminology of the subject.

CO2: Basic knowledge of cells, tissues, blood and to understand anatomy and physiology of human body.

CO3: This subject will develop an understanding of the structure and function of organs and organ systems in normal human body.

Course Code: DMLT-202**Title of the Course: Human Anatomy & Physiology-Practical**

| L | T | P | Credit |
|---|---|---|--------|
| - | - | 4 | 4 |

Course Outcomes:

CO1: Students will be able to learn the terminology of the subject.

CO2: Basic knowledge of cells, tissues, blood and to understand anatomy and physiology of human body.

CO3: This subject will develop an understanding of the structure and function of organs and organ systems in normal human body.

Course Code: DMLT-203**Title of the Course: Basics of Medical Microbiology**

| L | T | P | Credit |
|---|---|---|--------|
| 4 | - | - | 4 |

Course Outcomes:

CO1: This subject gives a general in sight in to the history and basics of medical microbiology, imparts knowledge about equipment used in Medical Microbiology.

CO2: Basic procedures done in a medical microbiology laboratory i.e. microscopy, sterilization, disinfection, culture methods.

CO3: To perform different microbiological tests in clinical microbiology lab and biomedical waste management.

Course Code: DMLT-204

Title of the Course: Basics of Medical Microbiology-Practical

| L | T | P | Credit |
|---|---|---|--------|
| - | - | 4 | 4 |

Course Outcomes:

CO1: Students will be made aware of the composition of blood and methods of estimating different components of blood.

CO2: Students will learn the basic concepts of Haematology.

CO3: Routine clinical investigations of Haematology laboratory.

Course Code: DMLT-205

Title of the Course: Basic Haematology

| L | T | P | Credit |
|---|---|---|--------|
| 4 | - | - | 4 |

Course Outcomes:

CO1: Students will be made aware of the composition of blood and methods of estimating different components of blood.

CO2: Students will learn the basic concepts of Haematology.

CO3: Routine clinical investigations of Haematology laboratory.

Course Code: DMLT-206

Title of the Course: Basic Haematology-Practical

| L | T | P | Credit |
|---|---|---|--------|
| - | - | 4 | 4 |

Course Outcomes:

CO1: Students will be made aware of the composition of blood and methods of estimating different components of blood.

CO2: Students will learn the basic concepts of Hematology.

CO3: Routine clinical investigations of Hematology laboratory.

Course Code: DMLT-207

Title of the Course: Basics of Clinical Biochemistry

| L | T | P | Credit |
|---|---|---|--------|
| 4 | - | - | 4 |

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: Diagnosis of clinical disorders by estimating biomarkers.

Course Code: DMLT-208

Title of the Course: Basics of Clinical Biochemistry-Practical

| L | T | P | Credit |
|---|---|---|--------|
| - | - | 4 | 4 |

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: Diagnosis of clinical disorders by estimating biomarkers.

Course Code: DMLT-301

Title of the Course: Applied Bacteriology, Mycology and Basic Immunology

| L | T | P | Credit |
|---|---|---|--------|
| 4 | - | - | 4 |

Course Outcomes:

CO1: This subject will give information about the different types of bacterial culture procedures, staining procedures and

CO2: Biochemical tests used for identification of bacteria.

CO3: The students will learn the morphology cultural characteristics, biochemical characteristics & laboratory diagnosis of various bacteria.

Course Code: DMLT-302

Title of the Course: Applied Bacteriology, Mycology and Basic Immunology -Practical

| L | T | P | Credit |
|---|---|---|--------|
| - | - | 4 | 4 |

Course Outcomes:

CO1: This subject will give information about the different types of bacterial culture procedures and staining procedures

CO2: Biochemical tests used for identification of bacteria.

CO3: The students will learn the morphology cultural characteristics, biochemical characteristics & laboratory diagnosis of various bacteria.

Course Code: DMLT-303

Title of the Course: Applied Haematology

| L | T | P | Credit |
|---|---|---|--------|
| 4 | - | - | 4 |

Course Outcomes:

CO1: The students will be made aware of various diseases like anemia, quantitative disorders of Leucocytes.

CO2: Morphological alterations in blood cells, bleeding disorders.

CO3: To enhance the student's ability to produce a differential diagnosis based on clinical examination and laboratory values.

Course Code: DMLT-304

Title of the Course: Applied Haematology-Practical

| L | T | P | Credit |
|---|---|---|--------|
| - | - | 4 | 4 |

Course Outcomes:

CO1: The students will be made aware of various diseases like anemia, quantitative disorders of Leucocytes.

CO2: Morphological alterations in blood cells, bleeding disorders.

CO3: To enhance the student's ability to produce a differential diagnosis based on clinical examination and laboratory values.

Course Code: DMLT-305

Title of the Course: Applied Clinical Biochemistry-I

| L | T | P | Credit |
|---|---|---|--------|
| 4 | - | - | 4 |

Course Outcomes:

CO1: This subject shall give information about all the major metabolic pathways occurring in our body.

CO2: The students will learn the details about metabolism of carbohydrates, proteins, lipids, nucleic acids, enzymes.

CO3: The deficiency diseases related to them.

Course Code: DMLT-306

Title of the Course: Applied Clinical Biochemistry-I-Practical

| L | T | P | Credit |
|---|---|---|--------|
| - | - | 4 | 4 |

Course Outcomes:

CO1: This subject shall give information about all the major metabolic pathways occurring in our body.

CO2: The students will learn the details about metabolism of carbohydrates, proteins, lipids, nucleic acids, enzymes.

CO3: The deficiency diseases related to them.

Course Code: DMLT-307

Title of the Course: Histopathology

| L | T | P | Credit |
|---|---|---|--------|
| 4 | - | - | 4 |

Course Outcomes:

CO1: The student will study diseases associated with different body organs and systems.

CO2: The students will learn the details about metabolism of carbohydrates, proteins, lipids, nucleic acids, enzymes.

CO3: The deficiency diseases related to them.

Course Code: DMLT-308

Title of the Course: Histopathology-Practical

| L | T | P | Credit |
|---|---|---|--------|
| - | - | 4 | 4 |

Course Outcomes:

CO1: The student will study diseases associated with different body organs and systems.

CO2: The students will learn the details about metabolism of carbohydrates, proteins, lipids, nucleic acids, enzymes.

CO3: The deficiency diseases related to them.

Course Code: DMLT-401

Title of the Course: Medical Parasitology & Virology

| L | T | P | Credit |
|---|---|---|--------|
| 4 | - | - | 4 |

Course Outcomes:

CO1: The student will be taught about introduction, general characteristics, and life cycle.

CO2: Laboratory diagnosis of various medically important parasites.

CO3: Describe molecular, biochemical and cellular mechanisms that occur in the body of humans infected with parasites

Course Code: DMLT-402

Title of the Course: Medical Parasitology & Virology-Practical

| L | T | P | Credit |
|---|---|---|--------|
| - | - | 4 | 4 |

Course Outcomes:

CO1: The student will be taught about introduction, general characteristics, and life cycle.

CO2: Laboratory diagnosis of various medically important parasites.

CO3: Describe molecular, biochemical and cellular mechanisms that occur in the body of humans infected with parasites

Course Code: DMLT-403

Title of the Course: Immuno-Haematology/ Blood Banking

| L | T | P | Credit |
|---|---|---|--------|
| 4 | - | - | 4 |

Course Outcomes:

CO1: The students will be made aware of the methods of estimating different components of blood.

CO2: Students will learn the basic concepts of staining and coagulation in Haematology laboratory

CO3: Collection & preservation of blood for the investigations.

Course Code: DMLT-404

Title of the Course: Immuno-Haematology/ Blood Banking-Practical

| L | T | P | Credit |
|---|---|---|--------|
| - | - | 4 | 4 |

Course Outcomes:

CO1: The students will be made aware of the methods of estimating different components of blood.

CO2: Students will learn the basic concepts of staining and coagulation in Haematology laboratory

CO3: Collection & preservation of blood for the investigations.

Course Code: DMLT-405

Title of the Course: Applied Biochemistry-II

| L | T | P | Credit |
|---|---|---|--------|
| 4 | - | - | 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: DMLT-406

Title of the Course: Applied Biochemistry-II-Practical

| L | T | P | Credit |
|----------|----------|----------|---------------|
| - | - | 4 | 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: DMLT-407

Title of the Course: Immuno-Pathology and Cytopathology

| L | T | P | Credit |
|----------|----------|----------|---------------|
| 4 | - | - | 4 |

Course Outcomes:

CO1: The students will learn about various staining procedures for demonstration of different substances.

CO2: Various cytological investigations.

CO3: This will include special staining procedures & handling & testing of various cytological specimens.

Course Code: DMLT-408

Title of the Course: Immuno-Pathology and Cytopathology-Practical

| L | T | P | Credit |
|----------|----------|----------|---------------|
| - | - | 4 | 4 |

Course Outcomes:

CO1: The students will learn about various staining procedures for demonstration of different substances.

CO2: Various cytological investigations.

CO3: This will include special staining procedures & handling & testing of various cytological specimens.