**MEWAR UNIVERSITY, GANGRAR (RAJ.)**

**Diploma Medical Laboratory Technology**

**DMLT-1st Semester syllabus**

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|  | **Current Sub Code** | **Subjects** |   | **Grand Total** |  |
| **S.NO.** | **Internal Assessment Marks [(P/C/A)+Mid Term]** | **External Assessment Marks** | **Credit** |
|  **A** | **Main Subjects\*** |  |
| 1 | DMLT-101 | Human Anatomy [ including Histology ]I | 15 | 35 | 50 | 100 | 4 |
| 2 | DMLT-102 |  HumanPhysiology I  | 15 | 35 | 50 | 100 | 4 |
| 3 | DMLT-103 |  Clinical Biochemistry -I | 15 | 35 | 50 | 100 | 4 |
| 4 | DMLT-104 | Medical Microbiology -I | 15 | 35 | 50 | 100 | 4 |
| 5 | DMLT-105 |  Basic Pathology-I | 15 | 35 | 50 | 100 | 4 |
| 6 | DMLT-106 |  Human Anatomy Practical-I  |   |   | 50 | 50 | 2 |
| 7 | DMLT-107 |  Human Physiology Practical-I |   |   | 50 | 50 | 2 |
| 8 | DMLT -108 |  Clinical Biochemistry Practica-l |   |   | 50 | 50 | 2 |
| 9 | DMLT-109 |  Basic Pathology Practical-I |   |   | 50 | 50 | 2 |
| 10 | DMLT-110 |  Medical Microbiology Practical-I |   |   | 50 | 50 | 2 |
|   | **B** | **Subsidiary Subject\*\*** |  |
| 11 | DMLT-112 | Health Care I | 15 | 35 | 50 | 100 | 4 |
|   | Total |   |   | 875 | 35 |

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**B. Sc Medical Laboratory Technology**

**DMLT {1st Semester}**

**[DMLT-101]: HUMAN ANATOMY [INCLUDING HISTOLOGY]**

**UNIT-1ST:**

1. **Introduction: Human Body as a Whole**:

Definition of anatomy and its divisions; Terms of location, positions and planes Cell and its organelles; Epithelium-definition, classification, describe with examples, function.

Glands- classification, describe serous & mucous glands with examples;

Basic tissues–classification with examples.

2. **Locomotion and support**

Cartilage – types with example & histology; Bone – Classification, names of bone cells, parts of long bone, microscopy of compact bone, names of all bones, vertebral column, intervertebral disc, fontanelles of fetal skull; Joints – Classification of joints with examples, synovial joint (in detail for radiology);Muscular system: Classification of muscular tissue & histology; Names of muscles of the body.

**UNIT-2nd:**

1. **Cardiovascular system**

Heart-size, location, chambers, exterior & interior Blood supply of heart, Systemic & pulmonary circulation, Branches of aorta, common carotid artery, subclavian artery, axillary artery, brachial artery, superficial palmar arch, femoral artery, internal iliac artery, Peripheral pulse Inferior venacava, portal vein, portosystemic anastomosis, Great saphenous vein Dural venous sinuses

**UNIT-3rd:**

1. **Respiratory system:**

Parts of RS, nose, nasal cavity, larynx, trachea, lungs, bronchopulmonary segments

Histology of trachea, lung and pleura,Names of paranasal air sinuses

2. **Peritoneum:** Description in brief

**REFERENCE BOOKS**

1. William Davis (P) understanding Human Anatomy and Physiology MC Graw Hill

2. Chaursia –A Text book of Anatomy T.S. Ranganathan – A text book of Human Anatomy

3. Fattana, Human anatomy (Description and applied) Saunder’s & C P Prism Publishers, Bangalore – 1991

4. ESTER . M. Grishcimer,Physiology & Anatomy with Practical Considerations, J.P. Lippin Cott. Philadelphia

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**Diploma Medical Laboratory Technology**

**DMLT {1st Semester}**

**[DMLT-106]: HUMAN ANATOMY [INCLUDING HISTOLOGY]**

**PRACTICALS:**

1. Histology of types of epithelium; Histology of serous, mucous & mixed salivary gland
2. Histology of the 3 types of cartilage; Demo of all bones showing parts, radiographs of normal bones & joints; Histology of compact bone (TS & LS); Demonstration of all muscles of the body; Histology of skeletal (TS & LS), smooth & cardiac muscle
3. Demonstration of heart and vessels in the body, Histology of large artery, medium sized artery & vein, large vein, Microscopic appearance of large artery, medium sized artery & vein, large vein, pericardium, Histology of lymph node, spleen, tonsil & thymus,Normal chest radiograph showing heart shadows,Normal angiograms
4. Demonstration of parts of respiratory system, Normal radiographs of chest,Histology of lung and trachea , Demonstration of reflections

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**DIPLOMA Medical Laboratory Technology**

**DMLT {1st Semester}**

**[DMLT-102]: HUMAN PHYSIOLOGY-I**

 **UNIT-I:**

1. **Cell :**  Definition ,Structure and functions the cytoplasmic Organelles

 Reproduction Meiosis, Mitosis The important physico-chemical laws

 applied to physiology Diffusion , Osmosis , Bonding , Filtration

 ,Dialysis , Surface Tension , Adsorption ,Colloid

1. **Physiology of different types of tissue:** Epithelial tissue , Muscular tissue,Nervouse tissue

 **UNIT-II:**

1. **LYMPH & CARDIOVASCULAR SYSTEM:**

Lymph–lymphoid tissue formation, circulation, composition and function of lymph,Cardiovascular system: Heart – Physiological Anatomy, Nerve supply, Properties of Cardiac muscle, Cardiac cycle-systole,diastole. Intraventricular pressure curves. Cardiac Output – only definition, Heart sounds Normal heart sounds Areas of auscultation. Blood Pressure – Definition, normal value, clinical measurement of blood pressure. Physiological variations, regulation of heart rate, cardiac shock, hypotension, hypertension.

**UNIT-III:**

1. **DIGESTIVE SYSTEM**

Digestive System- Physiological anatomy of Gastro intestinal tract, Functions of digestive system, Salivary glands Stucture and functions. Deglutination –stages and regulation. Stomach – structure and fuctions, Gastric secretion – Composition function regulation of gastric juice secretion, Pancrease – structure, function, composition, regulation of pancreatic juice, Liver – functions of liver, Bile secretion, composition, function regulation of bile secretion .

1. **RESPIRATORY SYSTEM:**

Functions of Respiratory system, Physiological Anatomy of Respiratory system, Respiratory tract, Respiratory Muscles, Respiratory organ-lungs, Alveoli, Respiratory membrane, stages of respiration. Mechanism of normal and rigorous respiration. Forces opposing and favoring expansion of the lungs. Intra pulmonary pleural pressure, surface tension, recoil tendency of the wall. H-Transportation of Respiratory gases:Transportation of Oxygen : Direction, pressure gradient, Forms of transportation, Oxygenation of Hb. Quantity of Oxygen transported. Lung volumes and capacities

**REFERENCE BOOKS:**

1. Guyton (Arthur) Text Book of Physiology. Latest Ed. Prism publishers

2. Chatterjee(CC) Human Physiology Latest Ed.,Vol-1, Medical Allied Agency

3. Choudhari (Sujith K) Concise Medical Physiology Latest Ed. New Central Book,

4. Ganong (William F) Review of Medical Physiology. Latest Ed . Appleton

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**Diploma Medical Laboratory Technology**

**DMLT {1st YEAR}**

**[DMLT-107]: HUMAN PHYSIOLOGY**

**PRACTICALS:**

1. Haemoglobinometry,
2. White Blood Cell count
3. Red Blood Cell count
4. Determination of Blood Groups
5. Leishman’s staining and Differential WBC count
6. Determination of packed cell Volume

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**Diploma Medical Laboratory Technology**

**DMLT {1st Semester}**

**DMLT-103: CLINICAL BIOCHEMISTRY-I**

**Unit- I**

1. Introduction of Biochemistry , Aim & Scope of Biochemistry.

2. Laboratory Safety and First aid kit.

3. Role and Responsibilities of the laboratory technologist.

4. Laboratory management and Maintenance of Records.

**Unit- II**

 1.Introduction to Laboratory glassware & apparatus:

Pipettes- different types (Graduated, volumetric, Pasteur, Automatic etc.) Burettes, Beakers,Petri dishes, depression plates. Flasks-different types ,Bottles – Reagent bottles – graduated and common, Wash bottles– different type Specimen bottles etc., Maintenance of laboratory glassware and apparatus , care and cleaning of glass ware, different cleaning solutions of glassware.

2. Instruments and Laboratory Techniques:

 *Water bath*: Use, care and maintenance; *Oven & Incubators*: Use, care and

 Maintenance. *Water Distillation plant* and water deionizers. Use, care and maintenance,

 *Refrigerators*, –Use, care and maintenance, Centrifuges (Theory and demonstration)

 *Laboratory balances*.

**Unit -III**

1. Unit of measurements.

2. Definition of solutions and Reagents: - Percent solution, Molar solution, Normal solution and Buffer Solutions.

**REFERENCE BOOKS**

1. Varley – Clinical chemistry

2. TEITZ – Clinical chemistry

3. Kaplan – Clinical chemistry

4. Ramakrishna(S) Prasanna(KG), Rajna ® Text book of Medical Biochemistry Latest Ed Orient longman Bombay –1980

5. Vasudevan (DM) Sreekumari(S) Text book of Biochemistry for Medical students, Latest Ed

6. DAS (Debajyothi) Biochemistry Latest ED Academic, Publishers, Culcutta – 1992

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**Diploma Medical Laboratory Technology**

**DMLT {1st Semester}**

**[DMLT-108]: CLINICAL BIOCHEMISTRY-I**

**PRACTICALS**

1. Preparation of Solution.
2. Preparation of Molar solution .
3. Procedure for routine screening
4. Urinary screening for inborn errors of metabolism
5. Common renal disease
6. Urinary calculus
7. Urine examination for detection of abnormal constituents

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**Diploma Medical Laboratory Technology**

**DMLT {1st Semester}**

**[DMLT-104]:MEDICAL MICROBIOLOGY-I**

**UNIT-I:**

1. **Morphology:**

Historical aspect of microbiology, contribution of various scientist.

Classification of microorganisms, size, shape and structure of bacteria. Use of

Microscope in the study of bacteria.

1. **Growth and nutrition:**

Nutrition, growth and multiplications of bacteria, use of culture media in diagnostic

bacteriology.

**UNIT-II:**

1. **Sterilisation and Disinfection:**

Principles and use of equipments of sterlization namely Hot Air oven, Autoclave and serum inspissrator. Pasteurization, Anti septic and disinfectants. Antimicrobial sensitivity test

1. **Immunology:**

Immunity Vaccines, Types of Vaccine and immunization schedule, Principles and interpretation of commonly had done serological tests namely Widal, VDRL, ASLO, CRP, RF & ELISA. Rapid tests for HIV and HbsAg (Technical details to be avoided)

 **UNIT-III:**

1. **Systematic Bacteriology:**

Morphology, cultivation, diseases caused, laboratory diagnosis including specimen collection of the following bacteria (the classification, antigenic structure and pathogenicity are not to be taught) Staphyloccci, Streptococci, Pneumococci, Gonococci, Menigococci, Cdiphtheriae, Mycobacteria, Clostridia, Bacillus, Shigella, Salmonella, Esch coli, Klebsiella, Proteus,vibrio cholerae, Pseudomonas & Spirochetes

**REFERENCE BOOKS**

1. Anathanarayana & Panikar Medical Microbioloty

2. Roberty Cruckshank – Medical Microbiology – The Practice of Medical Mircrobiology

3. Chatterjee – Parasitology – Interpretation to Clinical medicine.

4. Rippon – Medical Mycology

5. Emmons – Medical mycology

6. Basic laboratory methods in Parasitology, 1st Ed, J P Bros, New Delhi – 199

7. Basic laboratory procedures in clinical bacteriology, 1st Ed, J P Brothers,New Delhi

8. Medical Parasitology – Ajit Damle

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**Diploma Medical Laboratory Technology**

**DMLT {1st Semester}**

**[DMLT-110]:MEDICAL MICROBIOLOGY PRACTICAL-I**

**PRACTICAL**:

1. Compound Microscope, Demonstration and sterlization of equipments–Hot Air oven, Autoclave, Bacterial filters.
2. Demonstration of commonly used culture media, Nutrient broth, Nutrient agar, Blood agar, Chacolate agar, Mac conkey medium, LJ media, Robertson Cooked meat media, Potassium tellurite media with growth, Mac with LF & NLF, NA with staph Antibiotic susceptibility test

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**DMLT {1st Semester}**

**[DMLT-105]:Basic PATHOLOGY-I**

UNIT-1

1. Introduction of Pathology & Their functional components.
2. Blood: - Definition, Composition & Function.
3. Collection of Blood
4. Anticoagulants used in Hematology.

UNIT-II

 The Cell in health and disease:-

1. Inflammation: – Acute and Chronic
2. Neoplasia:- Introduction , Etiology & Pathogenesis
3. Derangement of Body Fluids and Electrolytes :- Types of shocks , Ischemia & Infection

Unit-III

Various types of Body Fluids:-

1. Urine: Method of Collection • Normal Constituents • Physical Examination • Chemical Examination
2. Stool Examination : - Method of Collection & Normal Constituents
3. C.S.F. Examination:- Physical Examination & Chemical Examination

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**DMLT {1st Semester}**

**[DMLT-109]: BASIC PATHOLOGY PRACTICAL-I**

**PRACTICALS:**

1. Urine Examination.
2. Physical
3. Chemical
4. Microscopic
5. Stool examination

**REFERENCE BOOKS**

1. Culling Histopathology techniques

2. Bancroft Histopathology techniques

3. Koss – cytology

4. Winifred greg – Diagnostic cytopathology

5. Orell – Cyto Pathology

6. Todd & Sanford Clinical Diagnosis by laboratory method

7. Dacie & Lewis – Practical Haematology

8. Ramanic Sood, Laboratory Technology (Methods and interpretation) 4th Ed., J.P. Bros, New Delhi –1996)

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**DMLT {1st Semester}**

**[DMLT-112]: HEALTH CARE-I**

**UNIT-I: INTRODUCTION TO HEALTH**

Definition of Health, Determinants of Health,Health Indicators of India, Health Team Concept. National Health Policy, National Health Programmes (Briefly Objectives and scope).

**UNIT-II: INTRODUCTION TO NURSING**

What is nursing? Nursing principles, Inter-Personnel relationships, Bandaging: Basic turns, Bandaging extremities, Triangular Bandages and their application

**UNIT-III:**

Nursing Position, Bed making, prone, lateral, dorsal, dorsal recumbent, Fowler's positions, comfort measures, Aids and rest and sleep. Lifting And Transporting Patients: Lifting patients up in the bed. Transferring from bed to wheel chair