**MEWAR UNIVERSITY**

**Diploma Medical Laboratory Technology**

**DMLT-2nd Semester syllabus**

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| **S.NO.** | **Current Sub Code** | **Subjects** |  | | | | **Grand Total** |  |
| **Internal Assessment Marks [(P/C/A)+Mid Term]** | | **External Assessment Marks** | | **Credit** |
| **A** | | **Main Subjects\*** |  | | | | | |
| 1 | DMLT-201 | Human Anatomy [ including Histology ]II | 15 | 35 | 50 | 100 | | 4 |
| 2 | DMLT-202 | Human Physiology II | 15 | 35 | 50 | 100 | | 4 |
| 3 | DMLT-203 | Clinical Biochemistry II | 15 | 35 | 50 | 100 | | 4 |
| 4 | DMLT-204 | Medical Microbiology -II | 15 | 35 | 50 | 100 | | 4 |
| 5 | DMLT-205 | Basic Pathology ( Including Blood Bank) II | 15 | 35 | 50 | 100 | | 4 |
| 6 | DMLT-206 | Human Anatomy Practical II |  |  | 50 | 50 | | 2 |
| 7 | DMLT-207 | Human Physiology Practical II |  |  | 50 | 50 | | 2 |
| 8 | DMLT -208 | Clinical Biochemistry Practical II |  |  | 50 | 50 | | 2 |
| 9 | DMLT-209 | Basic Pathology ( Including Blood Bank) Practical II |  |  | 50 | 50 | | 2 |
| 10 | DMLT-210 | Medical Microbiology Practical II |  |  | 50 | 50 | | 2 |
| **B** | | **Subsidiary Subject\*\*** |  | | | | | |
| 111 | DMLT-212 | Health Care II | 15 | 35 | 50 | 100 | | 4 |
|  | Total |  |  |  |  | 875 | | 35 |

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**Diploma Medical Laboratory Technology**

**DMLT {2nd Semester}**

**[DMLT-201]: HUMAN ANATOMY [INCLUDING HISTOLOGY]**

**UNIT-I**

**Urinary system:**

Kidney, ureter, urinary bladder, male and female urethra, Histology of kidney, ureter and urinary bladder

2. **Reproductive system**

Parts of male reproductive system, testis, vas deferens, epididymis, prostate , Parts of female reproductive system, uterus, fallopian tubes, ovary

3.**Digestive System:**

Basic structure of alimentary canal ,Mouth, Salivary glands ,Pharynx ,Oesophagus, Stomach , Small intestine , Large intestine , rectum ,anal canal , pancreas , Liver

**UNIT-II**

1. **Endocrine glands**:

Names of all endocrine glands in detail on pituitary gland, thyroid gland, parathyroid

gland, suprarenal glad – (gross & histology)

2. **Nervous system**

Neuron, Classification of NS, Cerebrum, cerebellum, midbrain, pons, medulla oblongata, spinal cord with spinal nerve (gross & histology)

**UNIT-III**

1. **Sensory organs**:

Skin: Skin-histology, Appendages of skin

Eye: Parts of eye & lacrimal apparatus,Extra-ocular muscles & nerve supply

Ear: parts of ear- external, middle and inner ear and contents

2. **Embryology**:Spermatogenesis & oogenesis, Ovulation, fertilization, Fetal circulation

Placenta

**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 {2nd Semester}**

**[DMLT-206]: HUMAN ANATOMY Practical -II[INCLUDING HISTOLOGY]**

**PRACTICALS:**

1. Demonstration of parts of urinary system,Histology of kidney, ureter, urinary bladder,
2. Radiographs of abdomen-IVP, retrograde cystogram
3. Demonstration of section of male and female pelves with organs in situ,Histology of testis, vas deferens, epididymis, prostate, uterus, fallopian tubes, ovary,Radiographs of pelvis – hysterosalpingogram
4. Demonstration of the glands,Histology of pituitary, thyroid, parathyroid, suprarenal glands

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**Diploma Medical Laboratory Technology**

**DMLT {2nd Semester}**

**[DMLT-202]: HUMAN PHYSIOLOGY**

**UNIT-1st:**

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,

**UNIT-2nd:**

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. .

1. **ENDOCRINE SYSTEM**

Definition Classification of Endocrine glands & their Harmones, Properties of Harmones.

Thyroid gland hormone–Physiological, Anatomy, Hormone scerated, Physiological function, regulation of secretion.

**UNIT-3rd:**

1. **NERVOUS SYSTEM**

Functions of Nervous system, Neurone structure, classification and properties. Neuroglia, nerve fiber, classification ,conduction of impulses continuous and saltatory.Velocity of impulse transmission and factors affecting.

1. **EXCRETORY SYSTEM**

Excretory organs, Kidneys: Functions of kidneys structural and functional unit nepron, vasarecta, cortical and juxtamedullary nephrons – Comparision, Juxta Glomerular Apparatus –Structure and function. Renal circulation peculiarities. Mechanism of Urine formation

**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 {2nd Semester}**

**[DMLT-207]:HUMAN PHYSIOLOGY PRACTICAL -II**

**PRACTICALS:**

1. Calculation of Blood indices
2. Determination of Clotting Time, Bleeding Time
3. Blood pressure Recording
4. Auscultation for Heart Sounds
5. Artificial Respiration
6. Determination of vital capacity

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**DMLT {2nd Semester}**

**DMLT-203: CLINICAL BIOCHEMISTRY-II**

**UNIT-1st:**

1. Definition of solutions and Reagents: - Percent solution, Molar solution, Normal solution and Buffer Solutions. Instruments and Laboratory Techniques.
2. Collection and Recording of Biochemical Specimen, separation of serum/plasma preservation, Disposal of Biological waste

**UNIT-2nd:**

1. Acids and Bases, pH Measurements: - pH indicators, pH paper and pH meter.

2. Collection and Recording of Biochemical Specimen, separation of serum/plasma preservation, Disposal of Biological waste. 1. Chemical examination of Urine: - Qualitative, Sugar, Protein, Bile Salt, Bile Pigment, Ketones Bodies

3. Chemical examination of Stool: - Occult Blood.

4. Chemical examination of other Body Fluids : CSR, Plural Fluid, Ascetic Fluid etc.

**UNIT-3rd:**

1. ***Special Investigations*:** Immunoglobulin Drugs: Regulation of Acid Base status: Henderson Hasselback Equations, Buffers of the fluid, pH Regulation, Disturbance in acid Base Balance, Anion Gap, Metabolic acidosis, Metabolic acidosis, Metabolic alkalosis, Respiratory acidosis, Respiratory alkalosis,

**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 {2nd Semester}**

**[DMLT-208]: CLINICAL BIOCHEMISTRY PRACTICAL -II**

**PRACTICALS**

1. Analysis of Normal Urine
2. Composition of urine
3. Procedure for routine screening
4. Urinary screening for inborn errors of metabolism
5. Common renal disease
6. Urinary calculus
7. Ph measurement

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**DIPLOMA Medical Laboratory Technology**

**DMLT {2nd Semester}**

**[DMLT-204]: MEDICAL MICROBIOLOGY-II**

**UNIT-I:**

1. **Parasitology**:

Introduction & laboratory diagnosis of following parasites E. histolytica, Plasmodium, Tape worms, Intestinal nematodes

1. **Mycology:**

Introduction and lab diagnosis of following fungi, Candida, Cryptococcus, Dermatophytes ,opportunistic fungi.

1. Staining technique: LCB, Gram staining , Acid fast staining and Albert staining

**UNIT-II:**

1. **Virology**:

Introduction of viruses, Morphological types of viruses , cultivation of viruses(cell culture ) lab diagnosis and prevention of following viruses, Herpes, Hepatitis, HIV, Rabies and Poliomyelitis .

**UNIT-III:**

1. **Transmission of infection :** Epidemic ,pandemic & Endemic infection
2. **Hospital management**: Hospital infection, Causative agents, transmission methods, investigation, prevention and control Hospital infection.
3. **Biomedical waste management:** Principles and practice Biomedical waste management

**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 {2nd Semester}**

**[DMLT-210]: MEDICAL MICROBIOLOGY PRACTICAL -II**

**PRACTICAL**:

1. Demonstration of common serological tests – Widal, VRDL, ELISA, Grams stain, Acid Fast staining, Stool exam for Helminthic ova.
2. Visit to hospital for demonstration of Biomedical waste mangement. Anaerobic culture methods.
3. Gram staining
4. Acid fast staining

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**DIPLOMA Medical Laboratory Technology**

**DMLT {2nd Semester}**

**[DMLT-205]: BASIC PATHOLOGY(Including Blood Bank)-II**

**UNIT-1st:**

**Hematology**:

1. **Introduction of Haematopoiesis**: Formation of Red blood cells , White blood cells & White blood cells.
2. **Diagnostic methods:**

Hb estimation - Method, Colorimetric Method ,Chemical Method ,Clinical Importance ESR ,Haematocrit values , RBC Indices ,Haemocytometery: Define All Blood cells count , their calculation & Clinical significance ,Rowmanowsky Stains : Staining procedures Counting Methods, Principle of staining Differential Leucocytes Count (DLC) , Normal & Abnormal Morphology of Red Blood cells and White Blood Cells.

**UNIT-2nd:**

**Blood Banking Technology:**

i) ABO Blood group and Rh system

ii) Subgroups of A and B, other blood groups and Bombay group

iii) HLA antigena and their significance,

iv)Principles of Blood transfusion, Blood donor selection, Methods of bleeding donors, Blood containers, anticoagulants and storage of blood, COOMB’S test and it’s significance, Screening of blood for infective material,Blood components, preparation & component therapy, Autologous transfusion, Transfusion reactions and work up, Blood bank organisation, standards, procedures, techniques & quality control

**UNIT-3rd:**

1. **Anemias:**
2. Definition & classification of Anemia
3. Laboratory Diagnosis of -

Iron Deficiency Anemia

Megaloblastic Anemia

Post Hemorrhagic Anemia

Thalessemia Syndrome

1. **Hemorrhagic Disorders** – Definition and Classification
2. Haemostasis and coagulation Factors
3. Investigations and Lab Diagnosis
4. DIC
5. Platelet function test
6. Bleeding disorder

**Automation in pathology:**

i)Semi – Automatic and Fully automatic Analyzer – working and methodology

ii)Maintenance of Instruments

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**DIPLOMA Medical Laboratory Technology**

**DMLT {2nd Semester}**

**[DMLT-209]: BASIC PATHOLOGY PRACTICAL(Including Blood Bank) Practical -II**

**PRACTICALS:**

1. Hb Estimation

2. PCV Estimation

3.ESR Estimation

4.WBC Count

5.RBC Count

ABO blood group

Rh blood group

**REFERENCE BOOKS**

1. Culling Histopathology techniques

2. Bancroft Histopathology techniques

3. Koss – cytology

4. Winifred greg – Diagnostic cytopathology

5. Orell – Cyto Pathology

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**DIPLOMA Medical Laboratory Technology**

**DMLT {2nd Semester}**

**[DMLT-212]: HEALTH CARE-II**

**UNIT-I:**

**BED SIDE MANAGEMENT**

Giving and taking Bed pan, Urinal: Observation of stools, urine. Observation of sputum, Understand use and care of catheters, enema giving, Methods Of Giving Nourishment: Feeding, Tube feeding, drips, transfusion Care Of Rubber Goods,

**UNIT-II:**

**HOSPITAL INFECTION**

Definition of Nosocomial infection , types of nosocomial infection Variou route of infection

Recording of body temperature, respiration and pulse, Simple aseptic technique, sterlization and disinfection.Surgical Dressing: Observation of dressing procedures. First Aid.

**UNIT-III:**

**Simple aseptic technique**, sterilization , disinfection and antiseptic , Surgical Dressing: Observation of dressing procedures First Aid.