EKLAVYA UNIVERSITY
ज्ञान प्राप्तये लक्ष्य संधानम्

School of Nursing and Paramedical Sciences

DIPLOMA IN MEDICAL LAB TECHNOLOGY (DMLT)
SCHEME Of EXAMINATION: DMLT- 1st Year

S.No	SUBJECT CODE	SUBJECT	MAX. MARKS	MIN. PASSING MARKS
1	**DMLTE20Y101**	Basic Histology (Anatomy & Physiology)	100	50
2	**DMLTE20Y102**	Biochemistry	100	50
3	**DMLTE20Y103**	Pathology –I : Haematology & Blood Banking, Clinical Pathology & Parasitology	100	50
4	**DMLTE20Y104**	Pathology-II : Microbiology & Serology Histology & Cytology	100	50
		Total Max. Marks	**400**	**200**

N.B.- There shall be Institutional /College level theory examination as per university notification, marks to be send to University for internal assessment purposes of university examination.

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DIPLOMA IN MEDICAL LAB TECHNOLOGY (DMLT)
SCHEME Of EXAMINATION:DMLT-2nd Year

S.No	PAPER	SUBJECT	THEORY	INTERNAL	PRACTICAL	TOTAL
1	**DMLTE20Y201**	Basic Histology (Anatomy & Physiology)	100	100	100	300
2	**DMLTE20Y202**	Biochemistry	100	100	100	300
3	**DMLTE20Y203**	Pathology –I : Haematology & Blood Banking, Clinical Pathology & Parasitology	100	100	100	300
4	**DMLTE20Y204**	Pathology-II : Microbiology & Serology Histology & Cytology	100	100	100	300
TOTAL			**400**	**400**	**400**	**1200**

Note -

1. First year institutional /college level theory examinations awarded marks would be consider as Internal assessment marks and candidate have to get min. 50% marks in university theory examination in addition to Internal assessment marks i.e. 100 marks collectively for passing the examination.
2. University Practical examination of 100 max. marks is inclusive of viva and candidate should get separate 50% marks i.e. 50 marks to get pass.

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School Of Nursing & Paramedical Science

EKLAVA UNIVERSITY DAMOH

DIPLOMA IN MEDICAL LAB TECHNOLOGY (DMLT)

SCHEME Of EXAMINATION:DMLT- 1st Year

S.No	SUBJECT CODE	SUBJECT	MAX. MARKS	MIN. PASSING MARKS
1	DMLTE20Y101	Basic Histology (Anatomy & Physiology)	100	50
2	DMLTE20Y102	Biochemistry	100	50
3	DMLTE20Y103	Pathology –I : Haematology & Blood Banking, Clinical Pathology & Parasitology	100	50
4	DMLTE20Y104	Pathology-II : Microbiology & Serology Histology & Cytology	100	50
Total Max. Marks			**400**	**200**

N.B.- There shall be Institutional /College level theory examination as per university notification, marks to be send to University for internal assessment purposes of university examination.

Dean
School of Nursing and Paramedical Science
Eklavya University Damoh

DIPLOMA IN MEDICAL LAB TECHNOLOGY (DMLT)

SCHEME Of EXAMINATION:DMLT-2nd Year

S.No	PAPER	SUBJECT	THEORY	INTERNAL	PRACTICAL	TOTAL
1	DMLTE20Y201 DMLTE20Y202	Basic Histology (Anatomy & Physiology) Practical- Basic Histology (Anatomy & Physiology)	100	100	100	300
2	DMLTE20Y203 DMLTE20Y204	Biochemistry Practical- Biochemistry	100	100	100	300
3	DMLTE20Y205 DMLTE20Y206	Pathology –I : Haematology & Blood Banking, Clinical Pathology & Parasitology Practical- Pathology –I : Haematology & Blood Banking, Clinical Pathology & Parasitology	100	100	100	300
4	DMLTE20Y207 DMLTE20Y208	Pathology-II : Microbiology & Serology Histology & Cytology Practical Pathology-II	100	100	100	300
TOTAL			**400**	**400**	**400**	**1200**

Note -

1. First year institutional /college level theory examinations awarded marks would be consider as Internal assessment marks and candidate have to get min. 50% marks in university theory examination in addition to Internal assessment marks i.e. 100 marks collectively for passing the examination.
2. University Practical examination of 100 max. marks is inclusive of viva and candidate should get separate 50% marks i.e. 50 marks to get pass.

Dean
School of Nursing and Paramedical Science
Eklavya University

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School Of Nursing & Paramedical Science

Department of Paramedical

SYLLABUS

DMLT

2 YEAR DIPLOMA COURSE

Year	**DMLT 1st Year**
Subject	**HUMAN ANATOMY & PHYSIOLOGY**
Time	**75 Hours (Theory + Demonstration)**

Course code	HUMAN ANATOMY & PHYSIOLOGY	
DMLTE20Y201		
Pre-requisite	Nil	Syllabus version

Course Objectives:

1. To understand the definition of anatomy and physiology and their different terms
2. To understand the structure of the cell and their constituents..
3. To understand the systems of anatomical and physiological characters
4. To understand the normal anatomical and their parts and their functions.

Course Outcome:

1. To student should be able to identify & describe Anatomical aspects of muscle bones & joints, & to understand & analyze movements.
2. To understand the Anatomical basis of various clinical conditions e.g. trauma, deformities, pertaining to limbs & spine.
3. To understand & describe the mechanism of posture & gait the Anatomical basis of abnormal gait.
4. To describe various parts of CNS, brain, midbrain, Hind-brain, brain stem, courses of cranial nerves; functional components course distribution. Anatomical basis of clinical lesions.
5. To be able to identify & describe the source & course of circulatory system.

Student Learning Outcomes (SLO):

1. Students will be able to understand the definition of anatomy and physiology and their different terms
2. Students will be able to understand the structure of the cell and their constituents..
3. Students will be able understand the systems of anatomical and physiological characters.
4. Students will be able to understand the normal anatomical and their parts and their functions.

Unit – 1	**15**
Study of the structure of a cell. Normal anatomical structure, Histology & Functions (Physiology) of the following.	
Unit – 2	**15**
The circulatory system (Heart & Blood Vessels). The Respiratory system.	
Unit – 3	**15**
The Digestive system. Liver & Pancreas.	
Unit – 4	**15**
Lymphatic system, Urinary system.	
Unit – 5	**15**
Reproductive system – Male & Female, Endocrine system, Central nervous system (Brain & Spinal cord)	

# Mode: Flipped Class Room, Case Discussion, Lectures.	

Suggested Reading:

1. Solon on E.A. (2008) Introduction to Human Anatomy and Physiology 3rd Ed. Saunders: St Louis.
2. Chaursia, B.D. & Garg, K., (2012) Human Anatomy Regional and Applied CBS Publications: New Delhi
3. T.S. Ranganathan – A text book of Human Anatomy
4. Fattana, Human anatomy (Description and applied) Saunder's & C. P. Prism Publishers, Bangalore – 1991
5. W. F. Ganong - Review of Medical Physiology.

PRACTICAL **DMLTE20Y202**

1. Demonstration of parts of body and land marks on the surface.

a) The skeletal system, Head & Neck. Thorax And Abdomen.

b) Demonstration of various organs within thorax & abdomen.

c) Respiratory systems, pleurae, heart, liver, gall bladder, peritoneum stomach & intestine.

d) Spleen, pancreas & parts of urinary system.

2. GENERAL NERVOUS SYSTEM:

a) (i)Spinal level and site of lumber puncture.

b) (ii)Surface anatomy of important organs & blood vessels.

c) (iii)Identification of models like those of Brain, Heart, embryology, Kidney.

DEMONSTRATION: -

1. Fixing, labeling & storage of specimens. - Drawing diagrams & labeling. - Demonstration of models, specimens & skeletion.
2. The microscope, its usage, cleaning & maintenance.
3. Identification of blood cells under Microscope. RBC, various types of WBC, pallets, Reticulocytes.
4. Preparation of anti coagulants.
5. Collection of blood samples to obtain plasma & serum samples.
6. Ruling area of Neubaur chamber.
7. Usage of RBC & WBC pipettes & wintergreen Pipette & Win robe tube.
8. Estimation of Hb, preparation of blood smears, staining.
9. Demonstration of blood pressure recording and pulse.
10. Determination of bleeding, clotting & prothrombin Time.

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SYLLABUS

DMLT

2 YEAR DIPLOMA COURSE

Year	**DMLT 1st Year**
Subject	**BIOCHEMISTRY**
Time	**60 Hours (Theory + Demonstration)**

Course code	BIOCHEMISTRY	
DMLTE20Y203		
Pre-requisite	Nil	Syllabus version

Course Objectives:

1. To define biochemistry and explain the major complex biomolecules of the cell.
2. To enumerate the chemical structure, classification and functions of proteins, lipids and carbohydrates.
3. To comprehend the classification & function of nucleic acids and enzymes.
4. To explain the biochemical structure of vitamins, its classification and the functions of vitamins and minerals.
5. To list the various hormones, its action and function
6. To describe acids and bases, the mechanism of homeostasis and acid base balance.

Course Outcome:

1. Students will be able to connect science and technology with society.
2. Students will learn to prepare for Group Discussions and thus, be able to perform well in discussions, debates and interviews.
3. Examine and analyze the complex nature and seriousness of the patient's condition or extent of injuries to assess the need for advanced emergency medical care, and perform complex medical care based on assessment findings of the patient's condition and/or situation.
4. Demonstrate an increased depth and breadth of patient care in the prehospital setting by applying principles from evidence-based research in emergency medicine.

Student Learning Outcomes (SLO):

1. Student will be able to demonstrate professional conduct and interpersonal communication skills with patients, laboratory personnel, other health care professionals, and the public.
2. Student will be able to utilize computer technology in clinical laboratory data processing, data reporting, and information retrieval.
3. Student will be able to integrate patient data to evaluate validity of laboratory test results.
4. Student will be able apply basic scientific principles in learning new techniques and procedures.
5. Student will be able aintain professional ethics.

Unit – 1	**15**
Biochemistrical structure of the following: Carbohydrates ,Proteins , Lipids ,Enzymes.	
Unit – 2	**15**
Clinical Biochemistry ,Kidney function tests (Renal profile) , Liver functions tests (Hepatic profile)	
Unit – 3	**15**
Cardiac profile, Lipid profile.	
Unit – 4	**15**
Estimation of: Blood sugar, Blood Urea, S. Cholesterol.	
Unit – 5	**15**
S. Uric Acid, S. Creatinine, Diff. S. Enzymes.	
# Mode: Flipped Class Room, Case Discussion, Lectures.	

Suggested Reading:

1. Review of Physiological Chemistry, Harold Harper A,
2. Biochemistry- U satyanarayana
3. Text book of biochemistry- By Vasudevan.
4. Biochemistry – by Lippincott.

PRACTICAL **DMLTE20Y204**

1. Demonstration of Kidney function test. Gastric function test & liver function test.
2. Demonstration of Enzyme Analysis - Acid and Alkaline phosphates, SGOT/SGPT. Lacticdehydrogenase, CPK.
3. Lipid profile.
4. Estimation of Blood/ serum- Glucose, G.T.T. Urea, creatinine, uric Acid, Cholesterol. Bill Rubin. protin & A/G Ratio, Glycosylated Hb.
5. demostration of semi automated, Fully automated Biochemical Analyzers.
6. Demonstration/ Exposure to Radioimmuno assay laboratory.
7. Visit to Laboratory of National Importance.

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SYLLABUS

DMLT

2 YEAR DEGREE COURSE

Year	**DMLT 1st Year**
Subject	**PATHOLOGY-I HAEMATOLOGY & BLOOD BANKING CLINICAL PATHOLOGY & PARASITOLOGY**
Time	**75 Hours (Theory + Demonstration)**

Course code	PATHOLOGY-I HAEMATOLOGY & BLOOD BANKING CLINICAL PATHOLOGY & PARASITOLOGY	
DMLTE20Y205		
Pre-requisite	Nil	Syllabus version

Course Objectives:

1. Students will have knowledge of various investigations required for diagnosis of anemia and leukemia.
2. To make students able to perform investigations required for assessment of bleeding disorders.
3. To be proficient with applications of cytogenetic studies
4. To understand cross-matching and compatibility tests required before blood transfusion.
5. To understand Laboratory investigations of haemolytic anaemia including classification and causes, Leukemia

Course Outcome:

1. Student will be able to understand ABO Grouping and Rh typing.
2. Student will be able to understand preparation of reagent cells – A,B,O, IgG coated cells & Papanised cells.
3. Student will be able tounderstand Subgroups of ABO system, MNS grouping.
4. Student will be able to develop knowledge of basic pathologic processes and skills needed to interpret laboratory data as well as make clinic pathologic correlations
5. Student will be able to promote the development of investigative skills to better understand pathologic processes as they apply to both individual patients and the general patient population.

Student Learning Outcomes (SLO):

1. Student will be able to Demonstrate conceptual knowledge in hematology, coagulation, clinical chemistry, immunology, immunohematology, pathogenic microbiology and phlebotomy.
2. Perform basic laboratory techniques on biological specimens.
3. Student will be able to recognize factors that affect laboratory procedures and results.
4. Student will be able to take appropriate action, within predetermined limits, when indicated for resolution.
5. Student will be able to comply with safety regulations and universal precautions.

Unit – 1	**15**

HAEMATOLOGY: Composition of blood, Collection of blood & anticoagulants, Hb estimation, TRBC count – ANAEMIAS, Preparation & staining ,blood films, Development of WBCS (Leucopoiesis) Composition of blood.

Unit – 2	**15**

TWBC & DWBC count – LEUKAEMIAS, Absolute values, ESR, PCV, Reticulocyte count, Platelet count BT & CT, LE cell preparation, sickling test, osmotic fragility, Bone marrow examination.

Unit – 3	**15**

BLOOD BANKING: Blood group – ABO system, Rh typing, Cross matching, Coomb's test, Donor screening, Blood transfusion & transfusion reactions, Blood components.	
Unit – 4	**15**
CLINICAL PATHOLOGY: Physical, chemical & microscopic examination of urine, Stool examination, Semen examination, CSF exam. & other body fluids.	
Unit – 5	**15**
PARASITOLOGY: Introduction, Parasites in Blood, stool & Urine.	
Practical	**DMLTE20Y206**
1. Estimation of hemoglobin 2. Determination of hemoglobin by colometric method. 3. Determination of ESR. 4. To study centrifuge machine. 5. To study hot air oven.	
# Mode: Flipped Class Room, Case Discussion, Lectures.	
Suggested Reading: 1. Text book of pathology by Mohan Harsh 2. Concepts in pathology by Devesh Mishra. 3. Rapid review pathology by Edward F. Goljan. 4. Pathophysiology by Lippincott	

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SYLLABUS

DMLT

2 YEAR DEGREE COURSE

Year	**DMLT 1st Year**
Subject	**PATHOLOGY-II MICROBIOLOGY & SEROLOGY HISTOLOGY & CYTOLOGY**
Time	**75 Hours (Theory + Demonstration)**

Course code	PATHOLOGY-II MICROBIOLOGY & SEROLOGY HISTOLOGY & CYTOLOGY	
DMLTE20Y207		
Pre-requisite	Nil	Syllabus version

Course Objectives:

1. To help students identify & describe Anatomical aspects of muscle bones & Joints.
2. To understand the Anatomical and physiological basis of various clinical conditions e.g. trauma, deformities, pertaining to limbs & spine etc.
3. To understand & describe the mechanism working of different organs.
4. To understand the physiological process at cellular level, functional components and course distribution that help to survive.
5. To enable students identify & describe the source, course and physiology of circulatory system and other functional systems.
6. To Acquired the knowledge of the relative contribution of each organ system in maintenance of the homeostasis.

Course Outcome:

1. Students will learn steps of process of diagnosis are receipt of specimen, grossing, tissue processing, embedding, section cutting, staining, labeling
2. Students will learn all the specimens should be stored in 10% formalin container
3. Students will learn how to receive and handle the surgical specimens.
4. Students will understand the structure of the cell and their constituents.

Student Learning Outcomes (SLO):

1. Students will be able to apply basic scientific principles in learning new techniques and procedures.
2. Students will be able to maintain professional ethics.
3. Students will be able to meet continuing education requirements as a function of growth and Students will be able to maintenance of professional competence.
4. Students will be able to participate in professional organizations to support the profession and constituents served.

Unit – 1	**15**
Microbiology: Classification ,Morphology of Bacteria, Culture & isolation of bacteria, Gram positive & gram negative cocci, Gram positive & Gram negative bacilli, Anaerobic spore bearing bacilli.	
Unit – 2	**15**
Serology: Antigen & Antibodies, Diagnosis of syphilis – VDRL test, RA test, Diagnosis of Typhoid – Widal test, Elisa test serology: Antigen & Antibodies.	
Unit – 3	**15**
HISTOLOGY: Fixatives, Tissue processing, impregnation, Block making, Section cutting .Blood components	
Unit – 4	**15**

Types of Microtome, Basic staining of sections, Collection of tissue for histology , Method of Decalcification.	
Unit – 5	**15**
CYTOLOGY: Techniques & equipments required, Fixatives & staining procedure, FNAC technique, Pap's staining	
# Mode: Flipped Class Room, Case Discussion, Lectures.	

Suggested Reading:

1. Solon on E.A. (2008) Introduction to Human Anatomy and Physiology 3rd Ed. Saunders: St Louis.
2. Chaurasia, B.D. & Garg, K., (2012) Human Anatomy Regional and Applied CBS Publications: New Delhi
3. T.S. Ranganathan – A text book of Human Anatomy
4. Fattana, Human anatomy (Description and applied) Saunder's & C. P. Prism Publishers, Bangalore – 1991
5. W. F. Ganong - Review of Medical Physiology
6. .Medical Microbiology by Patric R. Murray, Ken S. Rosenthel, Michael A. Pfaller.
7. Text Book of Microbiology by Chakraborty.
8. Microbiology An introduction by Tortora Funk, Case 12ed.
9. Mackie & Mc Carthey - Medical Microbiology,
10. Ananthansarayana, R., Jayaram Pumkar - Test Book of Microbiology,