

DMLT (Diploma in Medical Laboratory Technology)
Syllabus DMLT II SEMESTER
Session 2023-2024

				Teachi	ng and Ev	aluation	Scheme				
			Т	heory		Prac	tical				7 0
Subject Code	Category	Subject Name	End Sem University Exam (60%)	Two Term Exam (20%)	Teacher Assessment (20%)	End Sem University Exam (60%)	Teacher Assessment (40%)	L	Т	P	CREDITS
DMLT201		Anatomy & Physiology II	60	20	20	0	0	3	0	0	3

Legends: L - Lecture; T - Tutorial/Teacher Guided Student Activity; P - Practical; C - Credit;

Course Educational Objectives (CEOs): The students will

CEO1: rationalize the fundamental knowledge of the human body system.

CEO2: understanding detailed functioning about human system histology.

CEO3: gain knowledge about clinical conditions of different body systems.

Course Outcomes (COs): Student should be able to

CO1: understand the human system with emphasis on normal and pathophysiological conditions.

CO2: acquainted with the different body systems and their prime functions.

CO3: Identification of the different clinical conditions with their signs and symptoms.

CO4: Learn some important clinical identification processes of diseases.

Unit-I Blood:

- Formation of Blood Cells. Functions of Blood.
- Structure of Haemoglobin. Functions of Haemoglobin.
- Anemia, Polycythemia, Thrombocytopenia, Leukemia.

^{*}Teacher Assessment shall be based on the following components: Quiz/Assignment/ Project/Participation in class, given that no component shall exceed more than 10 marks.



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DMLT201		Anatomy & Physiology II	60	20	20	0	0	3	0	0	3

 $[\]boldsymbol{Legends} \colon \boldsymbol{L} \text{ - Lecture; } \boldsymbol{T} \text{ - Tutorial/Teacher Guided Student Activity; } \boldsymbol{P} - Practical; \quad \boldsymbol{C} \text{ - Credit; }$

Unit-II

Circulatory System II:

- Cardiac Output, Cardiac Index.
- Blood Pressure: Determination of BP. Different methods for BP measurement.
- Interpretation of Normal ECG.

Unit-III

Respiratory System II:

- Lung volumes and Capacities.
- O₂ Transportation.
- CO₂ Transportation.

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DI	MLT201	CC	Anatomy & Physiology II	60	20	20	0	0	3	0	0	3

Legends: L - Lecture; T - Tutorial/Teacher Guided Student Activity; P - Practical; C - Credit;

Unit-IV

Digestive system II:

- Digestion of Carbohydrate.
- Digestion of Protein.
- Digestion of Fats.

Unit-V

Renal system II:

- Glomerular Filtration Rate.
- Formation of Urine.
- Composition of urine and its abnormal constituents.

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DMLT201(P)	CC	Anatomy & Physiology II (Practical)	00	00	00	30	20	0	0	2	1

Legends: L - Lecture; T - Tutorial/Teacher Guided Student Activity; P - Practical; C - Credit;

Course Educational Objectives (CEOs): The students will

CEO1: identify various bones present in the human body.

CEO2: develop understanding about vitals of human cardiovascular system and factors affecting them.

systems.

CEO3: understand, analyze and interpret various histological tests for blood.

Course Outcomes (COs): Student should be able to

CO1: understand and identify the human bones with emphasis on general anatomy and general histology.

CO2: distinguish various human bones based on their respective

CO3: memorize and perform various clinical tests.

CO4: analyze and interpret the results of various blood tests.

List of Practicals

- Hb estimation by different manual methods.
- Blood smear preparation.
- Phlebotomy
- Blood grouping.

Reference books

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

- 2. Chaursia A Text book of Anatomy IS. Ranganathan A text book of Human Anatomy
- 3. Fattana, Human anatomy (Description and applied) Saunders & C P Prism Publishers. Bangalore 1991
- 4 ESTER . M. Gnshcimer, Physiology & Anatomy with Practical Considerations J P Lippin Cott

Board of Studies Paramedical and Allied Sciences Shri Vaishnav Vidyapeeth Vishwavidyalaya, Indore

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Philadelphia

- 5 Guyton (Arthur) Text Book of Physiology Latest Ed. Prism publishers
- 6. Chatterjee(CC) Human Physiology Latest Ed. Vol-1, Medical Allied Agency
- 7 Choudhan (Su)ith K) Concise Medical Physiology Latest Ed New Central Book,
- 8 Ganong (William F) Review of Medical Physiology. Latest Ed Appleton



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				Teac	hing and I	Evaluatio	on Scheme	9			
				Theory		Pract	ical				
Subject Code	Category	Subject Name	End Sem University Exam (60%)	Two Term Exam (20%)	Teacher Assessment (20%)	End Sem University Exam (60%)	Teacher Assessment (40%)	L	Т	P	CREDITS
DMLT202	CC	Biochemistry-II	60	20	20	0	0	3	0	0	3

Legends: L - Lecture; T - Tutorial/Teacher Guided Student Activity; P - Practical; C - Credit;

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Course Educational Objectives (CEOs): The students will -

CEO1: Conferring basic knowledge about body elements.

CEO2: Understanding their Structure, basic metabolism and utilisation in human body.

CO1: 1. An understanding of basic biochemistry of body elements

CO2: Understanding of their utilization processes in the living system.

CO3: Understanding the mechanism and the importance of different body elements.

Unit I:

Carbohydrates II:

• Carbohydrate Metabolism: Glycolysis, Krebs Cycle and ETC.

Unit II:

Proteins II:

• Protein Metabolism: Deamination and Transamination.

Unit III:

Lipids II:

• Lipid Metabolism: Beta- Oxidation and Cholesterol Biosynthesis.

Unit IV:

Nucleic Acid II:

Pentose Phosphate Pathway and PRPP Pathway

Unit V:

Metabolic Disorders I:

• Diabetes Meletus and Glucose-Galactose Malabsobtion.

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DMLT202(P)	CC	Biochemistry-II (Practical)	00	00	00	30	20	0	0	2	1

Legends: L - Lecture; T - Tutorial/Teacher Guided Student Activity; P - Practical; C - Credit;

Course Educational Objectives (CEOs): The students will-

CEO1: understand, analyze and interpret test for macronutrients, blood and Urine.

Course Outcomes (COs): Student should be able to -

CO1: memorize and perform various tests.

CO2: analyze and interpret the results of various tests.

List of Practical's:

- 1. Blood glucose estimation
- 2. Qualitative analysis of Proteins in urine.
- 3. Quantitative analysis of Proteins in urine.

REFERENCE BOOKS Biochemistry

- 1 Varley Clinical chemistry
- 2 TEITZ Clinical chemistry
- 3 Kaplan Clinical chemistry
- 4 Ramakrishna(S) Prasanna(KG), Rajra A Text cook of Medical Biochemistry Latest Ed Orient longman Bombay 1980
- 5 Vasudevan (DM) Sreekumari(S) Text book of Biochemistry for Medical students, Latest Ed 6DAS(Debajyothi)

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				Theory		Pract	ical				
Subject Code	Category	Subject Name		Teacher Assessment (20%)	End Sem University Exam (60%)	Teacher Assessment (40%)	L	Т	P	CREDITS	
DMLT204	CC	Microbiology & Serology-II	60	20	20	00	00	3	0	0	3

Legends: L - Lecture; T - Tutorial/Teacher Guided Student Activity; P - Practical; C - Credit;

Course Objectives

- 1. To understand basic characteristics of micro-organisms
- 2. To provide basic understanding of various types of micro-organisms.

Course Outcomes

- 1. Students will be able to understand the growth process of micro-organisms.
- 2. Students will be able to understand various types of pathogens and their mode of actions.

Unit-I

Introduction to Microbial Sterilization Techniques & Culture Methods:

- Sterilization and Disinfection, Principles, and use of equipment of sterilization.
- Handling of waste, waste segregation and management.

Unit-II

Parasitology:

- Introduction & classification of medically important parasites.
- Malaria parasite, Leishmanial parasites, Tapeworms
- E.histolylica, Giardia Primary Amoebic meningoencephalitis.

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DMLT204	СС	Microbiology & Serology-II	60	20	20	0	0	3	0	0	3

Legends: L - Lecture; T - Tutorial/Teacher Guided Student Activity; P - Practical; C - Credit;

Unit III

Human pathogenic bacteria and lab diagnosis

- Definition of diseases: Epidemic, Endemic, Pandemic.
- Tuberculosis, Diphtheria, Meningitis. Pneumonia.
- Enteric fever, cholera, leprosy.
- Urinary tractinfections, STD.

Unit-IV

Human pathogenic Protozoa and lab diagnosis

- Morphology, lifecycle, pathogenicity, clinical features, lab diagnosis: Entamoeba histolytica, Entamoeba coli and Giardia lambia.
- Morphology, lifecycle, pathogenicity, clinical features, lab diagnosis: Trichomonas vaginalis, Plasmodium vivax, and Plasmodium falciparum.

Unit-V

Virology

- Introduction to medical virology.
- General characteristics of viruses.
- Storage of samples for viral diagnosis.
- Hepatitis viruses, HIV and Rotavirus.

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				7	Teaching a	and Evaluation Scheme					
				Theo	ry	Pract	ical				
Subject Code	Category	Subject Name	End Sem University Exam (60%)	Two Term Exam (20%)	Teacher Assessment (20%)	End Sem University Exam (60%)	Teacher Assessment (40%)	L	Т	P	CREDITS
DMLT204(P)	CC	Microbiology & Serology-II (Practical)	00	00	00	30	20	0	0	2	1

Legends: L - Lecture; T - Tutorial/Teacher Guided Student Activity; P - Practical; C - Credit;

List of Practical's

- 1. Physical agents of control by moist heat and dry heat.
- 2. Identification of pathogenic organisms.
- 3. Mechanical agents of control UV radiation
- 4. Antibiotic susceptibility test.
- 5. Usage of sterilization equipments.
- 6. Hanging drop method for motility
- 7. Counting bacterial colonies by coulter colony counter.

> Practical's will be modified as per the feasibility.

REFERENCE BOOKS Microbiology

- 1 Anathanarayana & Panikar Medical Microbiology
- 2 Roberty Cruckshank Medical Microbiology The Practice of Medical Microbiology
- 3 Chatterjee Parasitology Interpretation to Clinical medicine.
- 4 Rippon Medical Mycology
- 5 Emmons Medical mycology
- 6 Basic laboratory methods in Parasitology, 1si Ed. J P Bros, New Delhi 199
- 7 Base laboratory procedures in clinical bacteriology, EC, J P Brothers. New Delhi

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				Theor	y	Practi	ical				
Subject Code	Category	Subject Name	End Sem University Exam (60%)	Two Term Exam (20%)	Teacher Assessment (20%)	End Sem University Exam (60%)	Teacher Assessment (40%)	L	Т	P	CREDITS
DMLT203	CC	Haematology & Blood Banking-II	60	20	20	0	0	3	0	0	3

Legends: L - Lecture; T - Tutorial/Teacher Guided Student Activity; P - Practical; C - Credit;

Course Educational Objectives (CEOs): The students will-

CEO1: To understand basic ideas and techniques of Pathology. **CEO2**:To understand the basic principles of pathological tests.

Course Outcomes (COs): Student should be able to -

CO1: develop competency in techniques of Haematology.

CO2: acquire knowledge and understand the basic pathologies of biological fluids.

Unit-I Introduction to Transfusion Medicine:

- History and discovery of Transfusion medicine. Modern concepts of Blood group systems.
- ABO and Rh Blood group systems and importance of determination of blood groups.

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Subject Code	Category	Subject Name	End Sem University Exam (60%)	Two Term Exam (20%)	Teacher Assessment (20%)	End Sem University Exam (60%)	Teacher Assessment (40%)	L	Т	P	CREDITS
DMLT203	CC	Haematology & Blood Banking- II	60	20	20	0	0	4	0	0	4

Legends: L - Lecture; T - Tutorial/Teacher Guided Student Activity; P - Practical; C - Credit;

Unit II

Basic of Transfusion Medicine:

- Compatibility test in blood transfusion: Principles, Blood typing, Crossmatching, Antibody screening and identification.
- Indication and Contraindication of Blood transfusion.
- Laboratory investigation of transfusion reaction and mismatched transfusion.

Unit-III

Advance techniques in Transfusion Medicine

- Techniques of Blood component preparation.
- Techniques of Direct Antiglobuline Test (DAT).
- Techniques of Albumine, Immunoglobulines and Clotting factor separation.

Unit-IV

Transfusion related diseases:

- Precautions during blood donation.
- Transfusion transmitted diseases.
- Blood Transfusion in the operating room.

Unit-V

Transfusion Therapy:

- Transfusion therapy for Haemoglobinopathies.
- Plasma transfusion therapy.
- Coagulation therapy in Haemophilia.

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DMLT203(P)	CC	Haematology & Blood Banking-II (Practical)	00	00	00	30	20	0	0	2	1

Legends: L - Lecture; T - Tutorial/Teacher Guided Student Activity; P - Practical; C - Credit;

Course Educational Objectives (CEOs): The students will-

CEO1: understand, analyze and interpret Haemotology. **Course Outcomes (COs): Student should be able to -**

CO1: memorize and perform haematology tests.

CO2: analyze and interpret the results of haematology.

List of Practical's:

- Demonstration of Blood banking equipments.
- Blood donation procedures.
- Crossmatching.
- Separation of blood cells.
- Various serological tests for blood screening.

REFERENCE BOOKS Pathology —

- Porter R. (1997) The greatest benefit to mankind: a medical history of humanity from antiquity to the present. HarperCollins, London.
- B. Rosai J (1997). Pathology: a historical opportunity. Americal Journal of Patholog. Muir's Textbook of Pathology.
- M.I. Filipe et.al. (202). Histochemistry in Pathology. Churchill Livingstone, London.
- * Textbook or MLT by Prafull B Godkar

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