SYLLABUS FOR
B.Sc MEDICAL LABORATORY TECHNOLOGY COURSE
(With effect from the academic year 2025-26
Under CBCS system)

KAKATIYA UNIVERSITY
HANMAKONDA 506 009
TELANGANA STATE

KAKATIYA UNIVERSITY
CREDIT DISTRIBUTION FOR THE COURSE
Annexure-I (Credits)
Proposed CBCS Structure from 2025-2026 for Undergraduate Course

Courses		Papers	Total Credits	Credits for each paper/ Semester B.Sc					
				I	II	III	IV	V	VI
Core Courses (DSC)	Major-1	6	30	5	5	5	5	5	5
	Major-2	6	30	5	5	5	5	5	5
	Minor-1	4	20	5	5	5	5	---	----
MIL/AEC (First language)	English	4	20	5	5	5	5	---	----
Second Language (Telugu, Hindi, Urdu etc.,)		4	20	5	5	5	5	---	----
Multi Disciplinary Course	MDC-1	1	4	---	----	---	----	4	----
SEC 1,2		2	4	---	----	---	----	2	2
SEC 3,4		2	4	---	----	---	----	2	2
Value added course (VAC)	VAC 1,2	2	6	---	----	---	----	3	3
Internships	Internship/Project	1	4	---	----	---	----	---	4
Total Credits in each semester		----	142	25	25	25	25	21	21
Total Credits in UG		---	142						

Sl.No	Paper	Credits
1	Major - 1	30
2	Major -2	30
3	Minor - 1	20
4	AEC (Ability Enhancement Course) - English	20
5	Second Language	20
6	MDC (Multi-Disciplinary Course) - 1	4
7	SEC (Skill Enhancement Course) – 1,2,3,4	8
8	VAC (Value Added Course) -1,2	6
9	Project	4
	TOTAL	**142**

KAKATIYA UNIVERSITY, WARANGAL - 506 009
B.Sc. PROGRAMME - Under CBCS System Scheme wef A.Y: 2025-26

Subject: MEDICAL LABORATORY TECHNOLOGY COURSE

FIRST YEAR - SEMESTER – I

Category	Title of the Paper	Credits No. of	Hrs PW	Max. Marks			Total Marks
				Internal Exam	End Exam	Lab	
Theory							
DSC-Major-1	Human Anatomy Part-I	4	4	20	80	-	100
DSC-Major-2	Human Physiology Part-I	4	4	20	80	-	100
DSC-Minor-1	Clinical Laboratory Practice-I	4	4	20	80	-	100
Practical							
DSC-Major-1	Human Anatomy Part-I	1	3	-	-	25	25
DSC-Major-2	Human Physiology Part-I	1	3	-	-	25	25
DSC-Minor-1	Clinical Laboratory Practice-I	1	3	-	-	25	25
	TOTAL:	**15**	**-**	**60**	**240**	**75**	**315**

FIRST YEAR - SEMESTER-II

Category	Title of the Paper	Credits No. of	Hrs PW	Max. Marks			Total Marks
				Internal Exam	End Exam	Lab	
Theory							
DSC-Major-1	Human Anatomy Part-II	4	4	20	80	-	100
DSC-Major-2	Human Physiology Part-II	4	4	20	80	-	100
DSC-Minor-1	Clinical Laboratory Practice-II	4	4	20	80	-	100
Practical							
DSC-Major-1	Human Anatomy Part-II	1	3	-	-	25	25
DSC-Major-2	Human Physiology Part-II	1	3	-	-	25	25
DSC-Minor-1	Clinical Laboratory Practice-II	1	3	-	-	25	25

SECOND YEAR - SEMESTER – III

Code	Course Category	Title of the Paper	Credits No. of	Hrs PW	Max. Marks			Total Marks
					Internal Exam	End Exam	Lab	
Theory								
DSC	Major-1	Microbiology-Part-I	4	4	20	80	-	100
DSC	Major-2	Biochemistry- Part-I	4	4	20	80	-	100
DSC	Minor-1	Pathology-Part-I	4	4	20	80	-	100
Practical								
DSC	Major-1	Microbiology-Part-I	1	3	-	-	25	25
DSC	Major-2	Biochemistry- Part-I	1	3	-	-	25	25
DSC	Minor-1	Pathology-Part-I	1	3	-	-	25	25
		TOTAL:	**15**	**-**	**60**	**240**	**75**	**315**

SECOND YEAR - SEMESTER – IV

Code	Course Category	Title of the Paper	Credits No. of	Hrs PW	Max. Marks			Total Marks
					Internal Exam	End Exam	Lab	
Theory								
DSC	Major-1	Optional-I Microbiology-Part-II	4	4	20	80	-	100
DSC	Major-2	Optional-I: Biochemistry- Part-II	4	4	20	80	-	100
DSC	Minor-1	Optional-I: Pathology-Part-II	4	4	20	80	-	100
Practical								
DSC	Major-1	Optional-I Microbiology-Part-II	1	3	-	-	25	25
DSC	Major-2	Optional-I: Biochemistry- Part-II	1	3	-	-	25	25
DSC	Minor-1	Optional-I: Pathology-Part-II	1	3	-	-	25	25

THIRD YEAR - SEMESTER – V

Code	Course Category	Title of the Paper	Credits No. of	Hrs PW	Max. Marks		Total Marks
					Internal Exam	End Exam	
DSC	Major-1	Andrology & Endocrinology (Theory)	4	4	20	80	100
		Andrology & Endocrinology (Practical)	1	3	-	25	25
DSC	Major-2	Histotechnology & Cytotechnology (Theory)	4	4	20	80	100
		Histotechnology & Cytotechnology (Practical)	1	3	-	25	25
MDC	MDC	MDC	4	4	20	80	100
SEC	SEC-1	SEC-1	2	2	10	40	50
SEC	SEC-2	SEC-2	2	2	10	40	50
VAC	VAC-1	VAC-1	3	3	15	60	75

THIRD YEAR - SEMESTER – VI

Code	Course Category	Title of the Paper	Credits No. of	Hrs PW	Max. Marks		Total Marks
					Internal Exam	End Exam	
DSC	Major-1	Immune Hematology, Blood Banking & Blood (Theory)	4	4	20	80	100
		Immune Hematology, Blood Banking & (Practical)	1	3	-	25	25
DSC	Major-2	Clinical Research & Toxicology (Theory)	4	4	20	80	100
		Clinical Research & Toxicology (Practical)	1	3	-	25	25
SEC	SEC-3	SEC-3	2	2	10	40	50
SEC	SEC-4	SEC-4	2	2	10	40	50
VAC	VAC-2	VAC-2	3	3	15	60	75
Internship		Project Work or Internship	4	4	20	80	100

SYLLABUS

FOR

B.Sc MEDICAL LABORATORY TECHNOLOGY

COURSE

(With effect from the academic year 2025-26
Under CBCS system)

KAKATIYA UNIVERSITY
HANMAKONDA 506 009
TELANGANA STATE

1st YEAR

KAKATIYA UNIVERSITY
Undergraduate Course (Under CBCS 2025-26)
B.Sc. Medical Laboratory Technology Course I Year
SEMESTER-I

DSC Paper-I: HUMAN ANATOMY – Part-I

Theory : 4 Hours per Week	4 Credit	Internal Marks = 20 External Marks = 80

Unit-I: HUMAN BODY, LOCOMOTION & SUPPORT

1.1 Definitions, Subdivisions of Anatomy, Terms of location and positions, Fundamental Planes.
1.2 Vertebrate structure of man and organisation of the body cells and tissues.
1.3 Types of bones, structure of bone, divisions of the skeleton, Appendicular skeleton, Axial skeleton - names of all the bones and their parts.
1.4 Joints - classification, types of movements with examples.

Unit-II: ANATOMY OF THE DIGESTIVE SYSTEM

2.1 Components of Digestive system, Alimentary tract, Anatomy of organs of Digestive System.
2.2 Anatomy of Mouth, Pharynx, Salivary Glands and Esophagus,
2.3 Anatomy of Liver, Biliary apparatus, Pancreas
2.3 Anatomy of Pancreas & Intestine.

Unit-III: ANATOMY OF THE RESPIRATORY SYSTEM

3.1 Organs of Respiratory System – Nose-nasal cavity.
3.2 Anatomy of Larynx and Trachea.
3.3 Anatomy of Main Bronchi.
3.4 Anatomy of Lungs and Respiratory Membrane.

Unit-IV: ANATOMY OF CIRCULATORY SYSTEM

4.1 Anatomy of circulatory system parts (Heart structure & Blood Components)
4.2 Anatomy of Blood Vessels (Arteries, Veins & Capillaries).
4.3 Anatomy of circulatory system circuits (The pulmonary circuit, The systemic circuit & Coronary circuit)
4.4 Anatomy of lymphatic system.

KAKATIYA UNIVERSITY
Undergraduate Course (Under CBCS 2025-26)
B.Sc. Medical Laboratory Technology Course I Year
SEMESTER-I

DSC Paper-II: HUMAN PHYSIOLOGY – Part-I

Theory : 4 Hours per Week	4 Credit	Internal Marks = 20 External Marks = 80

Unit-I: PHYSIOLOGY OF DIGESTIVE SYSTEM

1.1 Activities Occurring in the Mouth, Pharynx and Esophagus.
1.2 Activities of the Stomach (Composition of gastric juice, digestion in stomach.
1.3 Activities of the Small Intestine (Composition of Pancreatic Juice, Bile Juice, Intestinal Juice and digestion in Small Intestine)
1.4 Absorption of food.

Unit-II: PHYSIOLOGY OF EXCRETORY SYSTEMS

2.1 Physiology of Urine Formation.
2.2 Properties and composition of normal urine, urine output.
2.3 Names & Abnormal constituents in urine, Micturition, Cystourethrogram.
2.4 Diuretics, Renal Function Tests; Actions of ADH, aldosterone, PTH on kidneys.

Unit-III: PHYSIOLOGY OF RESPIRATORY SYSTEM

3.1 Respiration, Mechanics of Breathing & Control of Respiration.
3.2 External, Internal Respiration and Gas Transport.
3.3 Spirometry: Spirogram, Spirometer.
3.4 Respiratory Volumes & Capacities (Tidal Volume, Inspiratory reserve volume, Expiratory reserve volume, Residual volume, Vital capacity, Dead space volume, Functional volume)

Unit-IV: PHYSIOLOGY OF CARDIOVASCULAR SYSTEM

4.1 Intrinsic conduction system of the Heart, The pathway of the conduction system.
4.2 Cardiac cycle, Heart Sounds and Cardiac Output.
4.3 Physiology of Circulation, ECG-Definition, determination, significance.
4.4 Cardiovascular Vital Signs (Blood Pressure, Pulse-Jugular & Radial pulse)

KAKATIYA UNIVERSITY
Undergraduate Course (Under CBCS 2025-26)
B.Sc. Medical Laboratory Technology Course I Year
SEMESTER-I

DSC Paper-III: CLINICAL LABORATORY PRACTICE – Part-I

Theory : 4 Hours per Week	4 Credit	Internal Marks = 20 External Marks = 80

Unit-I: Laboratory Maintenance

1.1 Laboratory Services: levels of laboratories – Primary level, Secondary level and tertiary level.
1.2 Reference laboratories, Research laboratories and specific disease reference laboratories.
1.3 Infrastructure in the laboratories: Laboratory space-Reception, specimen collection, quality water supply, power supply, work area, specimen / sample / slide storage, cold storage, record room, wash room, biomedical waste room, fire safety, etc.
1.4 Qualifications as per NABL document.

Unit-II: Principles of Clinical Laboratory Practices-1

2.1 Listing, cleaning, maintenance, SOP.
2.2 Verification of performance: Internal quality control.
2.3 Accidents and emergencies in the laboratory and protection.
2.4 Quality assurance: Internal and external quality assessment.

Unit-III: Principles of Clinical Laboratory Practices-2

3.1 Audit in a Medical Laboratory.
3.2 Introduction and Importance, NABL & CAP.
3.3 Responsibility, Planning, Horizontal, Vertical and Test audit.
3.4 Frequency of audit & Documentation

Unit-IV: Principles of Clinical Laboratory Practices-3

4.1 Awareness/Safety in a clinical laboratory, General safety precautions.
4.2 Safety: General safety measures, biosafety precautions.
4.3 Levels of biosafety laboratories: BSL1, BSL2, BSL3 & BSL4.
4.4 Patient management for clinical samples collection, transportation and preservation.

KAKATIYA UNIVERSITY
Undergraduate Course (Under CBCS 2025-26)
B.Sc. Medical Laboratory Technology Course I Year
SEMESTER-I

DSC Paper-I: HUMAN ANATOMY - Part-I

PRACTICAL

Practical : 3 Hours per Week	1 Credit	Marks = 25

1. Demonstration to illustrate Circulatory, Digestive, Excretory and Reproductive Systems.
2. Demonstration of various parts of male & female reproductive system from models
3. Demonstration of all bones.
4. Demonstration of various joints & X-rays of all normal bones and joints.
5. Demonstration of structural differences between skeletal, smooth and cardiac muscles.

Suggested Readings *(Theory and Practical):*

1. Ross & Wilson ,(2014),Anatomy & Physiology in health & illness,11th edition, Elsevier Publications
2. Chaurasia B D, (2016), Human Anatomy, 7th edition, CBS publishers
3. Gerard J. Tortora and Bryan H.Derrickson,(Principles of Anatomy and Physiology,14th edition,Wiley Publications.

AKATIYA UNIVERSITY
Undergraduate Course (Under CBCS 2025-26)
B.Sc. Medical Laboratory Technology Course I Year
SEMESTER-I

DSC Paper-II: HUMAN PHYSIOLOGY - Part-I

PRACTICAL

Practical : 3 Hours per Week	1 Credit	Marks = 25

1. Collection of blood and study of haemocytometry, Haemoglobinometry.
2. Determination of specific gravity of blood.
3. Red Blood Cell Count, Leishman's staining and differential WBC count
4. Determination of Blood Groups
5. Determination of Erythrocyte Sedimentation Rate
6. Determination of packed cell volume

Suggested Readings *(Theory and Practical):*

1. Text book of Physiology for BDS students by Dr. Jain
2. Ross & Wilson,(2014),Anatomy & Physiology in health & illness,11th edition, Elsevier Publications
3. Sujit Chaudhury,(2011),Concise Medical Physiology,6th edition, NCBA
4. Sembulingam k,(2012),Essentials of Medical Physiology,6th edition, Jaypee Publications
5. Guyton and Hall,(2011) Textbook of Medical Physiology,12th Edition,Saunder/Elsevier
6. Gerard J. Tortora and Bryan H.Derrickson,(Principles of Anatomy and Physiology,14th edition, Wiley publications.

KAKATIYA UNIVERSITY
Undergraduate Course (Under CBCS 2025-26)
B.Sc. Medical Laboratory Technology Course 1st Year
SEMESTER-I

DSC Paper-III: CLINICAL LABORATORY PRACTICE-Part-I

PRACTICAL

Practical : 3 Hours per Week	1 Credit	Marks = 25

1. Writing SOP of equipment maintenance, practical procedures done in the laboratory.
2. Internal / External quality control.
3. Sample collection, labeling, storage, transportation.
4. Biowaste management.
5. Biosafety.

Suggested Readingss *(Theory and Practical):*

1. Teitz,(2007), Fundamentals of Clinical Chemistry,6th edition, Elsevier Publications
2. Bishop(2013),Clinical Chemistry,7th edition, Wiley Publications
3. Henry's Clinical Diagnosis and Management by Laboratory Methods,(2011),22nd edition,Elsevier.
4. Good Clinical Laboratory Practices, Indian Council of Medical Research, 2008
5. Good Clinical Laboratory Practices, World Health Organisation, 2009.
6. Understanding the principles of Good Clinical Laboratory Practices (GCLP), Global Health Laboratories, 2014.

KAKATIYA UNIVERSITY
Undergraduate Course (Under CBCS 2025-26)
B.Sc. Medical Laboratory Technology Course I Year
SEMESTER-II

DSC Paper-I: HUMAN ANATOMY – Part-II

Theory : 4 Hours per Week	4 Credit	Internal Marks = 20 External Marks = 80

Unit-I: ANATOMY OF MUSCULAR, SKELETEON AND INTEGUMENT SYSTEM

1.1 Microscopy anatomy of Skeletal Muscle, Cardiac muscle, smooth muscle.
1.2 Anatomy of Axial (Skull, vertebral column and Sternum) and Appendicular Skeleton system (Pelvic & Pectoral girdles, Forelimb and Hind limbs).
1.3 Anatomy of different types of Joints
1.4 Anatomy of the integumentary system (Skin, Hair and Nails).

Unit-II: ANATOMY OF EXRETORY & REPRODUTIVE SYSTEM

2.1 Anatomy of the Urinary System (Structure of Kidney, Nephron, Ureters, Urinary bladder and urethra).
2.2 Anatomy of Male Reproductive system.
2.3 Anatomy of Female Reproductive System.
2.4 Anatomy of Male and Female Reproductive accessory glands.

Unit-III: ANATOMY OF NERVOUS SYSTEM

3.1 Organization of the Nervous System (Structural and Functional Classification); Nervous Tissue Structure and Functions.
3.2 Anatomy of Central Nervous System (Brain, Spinal cord).
3.3 Anatomy of Peripheral Nervous System (Cranial Nerves and Spinal Nerves).
3.4 Anatomy of Autonomic, Sympathetic and Parasympathetic Nervous System.

Unit-IV: ANATOMY OF SPECIAL SENSES AND ENDOCRINE SYSTEM

4.1 Anatomy of the Eye (External and Accessory structures; Internal Structures)
4.2 Anatomy of the Ear (External, Middle and Internal Ear).
4.3 Structure and Hormones of Hypothalamus & Pituitary Gland.
4.4 Structure and Hormones of Thyroid, Parathyroid, Adrenal and Gonads.

KAKATIYA UNIVERSITY
Undergraduate Course (Under CBCS 2025-26)
B.Sc. Medical Laboratory Technology Course I Year
SEMESTER-II

DSC Paper-II: HUMAN PHYSIOLOGY – Part-II

Theory : 4 Hours per Week	4 Credit	Internal Marks = 20 External Marks = 80

Unit-I: PHYSIOLOGY OF MUSCULAR, SKELETEON AND INTEGUMENT SYSTEM

1.1 Mechanism of Muscle Contraction (Sliding Filament Theory).
1.2 Function of the Skeletal System.
1.3 Physiology of the Integumentary system (Development of Skin color, Hair and Nail Growth).
1.4 Age related physiological changes in the muscular, skeleton and integument system.

Unit-II: PHYSIOLOGY OF REPRODUTIVE SYSTEM

2.1 Mechanism of Fertilization Events.
2.2 Physiology of Parturition (Birth).
2.3 Spermatogenesis and Oogenesis.
2.4 Physiology of Female Sexual cycles

Unit-III: PHYSIOLOGY OF NERVOUS SYSTEM

3.1 Propagation of nerve impulses and its pathway.
3.2 Neurotransmitters and their functions.
3.3 Synapse types and Synaptic Transmission.
3.4 Autonomic Functioning, Sympathetic Division and Parasympathetic Division.

Unit-IV: PHYSIOLOGY OF SPECIAL SENSES AND ENDOCRINE SYSTEM

4.1 Pathway of Light through the eye and light refraction.
4.2 Mechanism of Hearing.
4.3 The Chemistry of Hormones (Classification and types).
4.4 Mechanisms of Hormone Action and Control of Hormone Release.

KAKATIYA UNIVERSITY
Undergraduate Course (Under CBCS 2025-26)
B.Sc. Medical Laboratory Technology Course I Year
SEMESTER-II

DSC Paper-III: CLINICAL LABORATORY PRACTICE – Part-II

Theory : 4 Hours per Week	4 Credit	Internal Marks = 20 External Marks = 80

Unit-I: Laboratory Ethics

1.1 Ethical Considerations: Non – maleficence, beneficence, risk minimization, institutional arrangement, ethical review.
1.2 Ttransmission of ethical values, voluntariness, compliance.
1.3 Standard Operating Procedures: Definition, format, text of SOP, types of SOP.
1.4 Human Biosafety Ethical Committees and functions

Unit-II: Good Laboratory Practices-1

2.1 Good Laboratory Practice (GLP), Introduction to Basics of GLP and Accreditation.
2.2 Aims of GLP and Accreditation.
2.3 Brief knowledge about National and International Agencies for clinical laboratory Accreditation.
2.4 Awareness/Safety in a clinical laboratory, General safety precautions. HIV: pre- and post-exposure guidelines, Hepatitis B & C: pre and post-exposure guidelines.

Unit-III: Good Laboratory Practices-2

3.1 Introduction and importance of calibration and Validation of Clinical Laboratory instrument.
3.2 Ethics in Medical laboratory Practice.
3.3 Sample analysis: Introduction, factors affecting sample analysis.
3.4 Reporting results. basic format of a test report, reported reference range, clinical alerts, abnormal results.

Unit-III: Good Laboratory Practices-3

4.1 Results from referral laboratories, release of examination results, alteration in reports.
4.2 Sample accountability.
4.3 Purpose of accountability.
4.4 Methods of accountability.

KAKATIYA UNIVERSITY
Undergraduate Course (Under CBCS 2025-26)
B.Sc. Medical Laboratory Technology Course I Year
SEMESTER-II

DSC Paper-I: HUMAN ANATOMY - Part-II

PRACTICAL

Practical : 3 Hours per Week	1 Credit	Marks = 25

1. General Slides: Hyaline Cartilage, Fibro Cartilage, Elastic Cartilage, T.S & L.S.Bone.
2. General Slides: Blood Vessels, Tonsils, Spleen, Thymus, Lymph node, Epithelial Tissue, Skeletal and Cardiac Muscle, Peripheral nerve and optic nerve.
3. Systemic Slides: G.I.T – Fundamental structure of G.I.T. & Liver, Stomach, Small intestine

i. R.S. - Lung, Trachea. Kidney TS.

4. Systemic Slides: Kidney, Pituitary, Thyroid, Parathyroid, Adrenal, Pancreas.
5. Systemic Slides: Ovary & Testis, Uterus.

Suggested Readings:

1. Ross & Wilson ,(2014),Anatomy & Physiology in health & illness,11th edition, Elsevier Publications
2. Chaurasia B D, (2016), Human Anatomy, 7th edition, CBS publishers
3. Gerard J. Tortora and Bryan H.Derrickson,(Principles of Anatomy and Physiology,14th edition,Wiley Publications.

AKATIYA UNIVERSITY
Undergraduate Course (Under CBCS 2025-26)
B.Sc. Medical Laboratory Technology Course I Year
SEMESTER-II

DSC Paper-II: HUMAN PHYSIOLOGY - Part-II

PRACTICAL

Practical : 3 Hours per Week	1 Credit	Marks = 25

1. Calculation of Blood Indices.
2. Osmatic Fragility Test for R.B.C
3. Determination of Bleeding Time & Clotting Time
4. Blood Pressure Recording
5. Determination of Vital Capacity

Suggested Readings:

1. Text book of Physiology for BDS students by Dr. Jain
2. Ross & Wilson,(2014),Anatomy & Physiology in health & illness,11th edition, Elsevier Publications
3. Sujit Chaudhury,(2011),Concise Medical Physiology,6th edition, NCBA
4. Sembulingam k,(2012),Essentials of Medical Physiology,6th edition, Jaypee Publications
5. Guyton and Hall,(2011) Textbook of Medical Physiology,12th Edition,Saunder/Elsevier
6. Gerard J. Tortora and Bryan H.Derrickson,(Principles of Anatomy and Physiology,14th edition,Wiley publications.

KAKATIYA UNIVERSITY
Undergraduate Course (Under CBCS 2025-26)
B.Sc. Medical Laboratory Technology Course 1st Year
SEMESTER-II

DSC Paper-III: CLINICAL LABORATORY PRACTICE - Part-II

PRACTICAL

Practical : 3 Hours per Week	1 Credit	Marks = 25

1. Demonstration of automation in clinical laboratory.
2. Sterilization by heat (Hot air oven, Autoclave).
3. Sterilization by filtration (Membrane filter & HEPA).
4. Sterilization by radiation (Ionizing and Non- ionizing), Sterilization by chemicals (Alcohol, Phenols, Aldehydes, Ethylene oxide).
5. Disinfection Techniques by Tube- dilution technique, Phenol-coefficient technique, Agar plate technique.

Suggested Readings:

1. Teitz,(2007), Fundamentals of Clinical Chemistry,6th edition, Elsevier Publications
2. Bishop(2013),Clinical Chemistry,7th edition, Wiley Publications
3. Henry's Clinical Diagnosis and Management by Laboratory Methods,(2011),22nd edition,Elsevier.
4. Good Clinical Laboratory Practices, Indian Council of Medical Research, 2008
5. Good Clinical Laboratory Practices, World Health Organisation, 2009.
6. Understanding the principles of Good Clinical Laboratory Practices (GCLP), Global Health Laboratories, 2014.

2ND YEAR

KAKATIYA UNIVERSITY
Undergraduate Course (Under CBCS 2025-26)
B.Sc. Medical Laboratory Technology Course 2nd Year
SEMESTER-III

DSC: Paper-I: MICROBIOLOGY, PART-I

Theory : 4 Hours per Week	4 Credit	Internal Marks = 20
		External Marks = 80

Unit-I: Principles of Microbiology

1.1 Historical Perspective.
1.2 Koch's Postulates.
1.3 Importance of Microbiology.
1.4 Microscopy, Classification of Microbes.

Unit-II: General Characters of Microbes

2.1 Morphology, staining methods.
2.2 Bacterial growth & nutrition. Culture media and culture methods +ABS, Collection of specimen, transport and processing.
2.3 Antimicrobial mechanism and action.
2.4 Drug Resistance Minimization.

Unit-III: Sterilization and Disinfection

3.1 Concept of sterilization.
3.2 Disinfection asepsis.
3.3 Physical methods of Sterilization, Chemical methods (Disinfection),
3.4 OT Sterilization, Biological waste and Biosafety & Biohazard.

Unit-IV: Infection and Infection Control

4.1 Infection, Sources, portal of entry and exit.
4.2 Standard (Universal) safety Precautions & hand hygiene.
4.3 Hospital acquired infections.
4.4 Hospital Infection Control.

KAKATIYA UNIVERSITY
Undergraduate Course (Under CBCS 2025-26)
B.Sc. Medical Laboratory Technology Course 2nd Year
SEMESTER-III

DSC: Paper-II: BIOCHEMISTRY-PART-I

Theory : 4 Hours per Week	4 Credit	Internal Marks = 20 External Marks = 80

Unit-I: Introduction to Biochemistry-I

1.1 Introduction to apparatus.
1.2 Chemical balance, principles and practice.
1.3 Preparation of solution and reagents.
1.4 Normal solution, molar solutions, percent solution.

Unit-II: Introduction to Biochemistry-II

2.1 Buffer solution, dilutions, w/v, v/v, standard solution, aqueous solutions.
2.2 Concepts of acid and base reactions.
2.3 Units of measurement: SI unit, reference range, conversion factor.
2.4 Units for measurement of bio metabolite, enzymes, protein, drugs, hormones, vitamins.

Unit-II: Tools in Biochemistry-I

3.1 Specimen collection and processing of blood, urine & CSF.
3.2 Separation of serum and plasma, deproteinization of sample.
3.3 Handling of specimens for testing, preservation of specimen.
3.4 Transport of specimen, factors affecting the clinical results, effect of storage on sample.

Unit-II: Tools in Biochemistry-II

4.1 Principle, working, care & maintenance and calibration of Weighing balance.
4.2 Hotplate, Magnetic stirrer, Centrifuges, Incubator, Hot air oven, Colorimeter. Spectrophotometer,
4.3 Water distillation plant, Deionizers Henderson Hassel balch equation.
4.4 pH paper, pH meter, method of pH measurement.

KAKATIYA UNIVERSITY
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B.Sc. Medical Laboratory Technology Course 2nd Year
SEMESTER-III

DSC Paper-III: PATHOLOGY-PART-I

Theory : 4 Hours per Week	4 Credit	Internal Marks = 20 External Marks = 80

Unit-I: Introduction to Pathology-I

1.1 Introduction & History of pathology.
1.2 Basic definitions and familiarization with the common terms used in pathology.
1.3 Causes and mechanisms of cell injury,
1.4 Necrosis and apoptosis.

Unit-II: Introduction to Pathology-II

2.1 Infectious Diseases: pathogenesis, prevention and control with suitable examples like Typhoid, Dengue.
2.2 Cancer: Definitions, characteristics of benign and malignant neoplasm.
2.3 Metastasis, Carcinogens and cancer.
2.4 Concept of oncogenes, tumour suppressor genes.

Unit-III: Haematology & Cytology-I,

1.1 Physiological and pathological variations on blood parameters (CBP).
1.2 Normal values in Haematology.
1.3 Leukopoiesis, Stages of Leukocyte Maturation, Features of Cell Identification.
1.4 Leucocytosis and leukocytopenia.

Unit-IV: Haematology & Cytology-II,

1.1 Qualitative and quantitative disorders of platelets.
1.2 Hemoglobinopathies, qualitative and quantitative Sickle cell anaemia.
1.3 Bone Marrow -Techniques of aspiration.
1.4 Preparation and Bone marrow biopsy.

KAKATIYA UNIVERSITY
Undergraduate Course (Under CBCS 2025-26)
B.Sc. Medical Laboratory Technology Course 2nd Year
SEMESTER-III

DSC: Paper-I: MICROBIOLOGY, PART-I

PRACTICAL

Practical : 3 Hours per Week	1 Credit	Marks = 25

1. Microscopes – Types and Operation.
2. Demonstration of autoclave and sterilization of glass wares.
3. Demonstration of Hot air oven and sterilization of glass wares.
4. Study of Morphology of Bacteria:
   - Unstained – Hanging drop preparation
   - Stains: Simple staining, Gram staining, Ziehl Neelsens's staining.
   - Staining for capsule.
   - Culture media: Types and uses.
   - Inoculation methods.
   - Anaerobic culture methods
   - Antibiotic sensitivity methods.
   - Biochemical reactions in identification of bacteria.
   - Isolation and identification of bacteria from various clinical specimens.
5. Agglutation Tests: Slide & Tube, Widal.

Suggested Readings:

1. Text book of Microbiology, Baweja 2002 Vikas
2. Text book of Microbiology, Satish Gupta, 2004 Jaypee
3. Medical Lab Technology, Dr.Raghavendra Rao

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SEMESTER-III

DSC: Paper-II: BIOCHEMISTRY, PART-I

PRACTICAL

Practical : 3 Hours per Week	1 Credit	Marks = 25

1. Introduction to apparatus, instruments and use of chemical balance.
2. Preparation of normal solutions, molar solutions, percent solutions and reagents, dilution techniques.
3. Maintenance of Laboratory, Glassware and Apparatus.
4. Demonstration of photocolorimeter.
5. Demonstration of spectrophotometer.

Suggested Readings:

1. Text book of Bio-chemistry - Debajyothi Das
2. Essentials of Biochemistry by U.Satyanarayana.
3. Varley's Clinical Chemistry-IV Edition.
4. Clinical Chemistry -Teitz.

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SEMESTER-III

DSC: Paper-III: PATHOLOGY-PART-I

PRACTICAL

Practical : 3 Hours per Week	1 Credit	Marks = 25

1. Processing, Embedding, preparation of blocks, Section cutting, use and care of Microtome and Microtome knives and H & E staining.
2. Complete Urine Analysis.
3. Cavity Fluids and miscellaneous samples Cerebrospinal Fluid in Health & Disease Semen analysis.
4. Stool examination for Occult blood.
5. Complete Haemogram

Suggested Readings:

1. Clinical Diagnosis & Laboratory methods by Todd & Sanford.
2. Histopathology Techniques by Culling.
3. Histopathology Techniques by Bancroft.
4. Aspiration Biopsy cytology by Tilde Kline.
5. Cytology by Koss.

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SEMESTER-IV

DSC: Paper-I: MICROBIOLOGY, PART-II

Theory : 4 Hours per Week	4 Credit	Internal Marks = 20 External Marks = 80

Unit-I: Virology

1.1 Common Viral infection of eye.
1.2 Introduction, General Properties.
1.3 Outline of lab diagnosis & Classification.
1.4 HIV Virus, Hepatitis -B Virus**.**

Unit-II: Mycology

2.1 Introduction, Classification, Outline of lab diagnosis.
2.2 Common fungal infections of eyes.
2.3 Superficial Mycoses.
2.4 Deep mycoses & opportunistic.

Unit-III: Systemic Bacteriology

3.1 Introduction, Gram Positive Cocci & Gram Negative Cocci.
3.2 Enterobacteraecea & Gram negative bacilli,
3.3 Mycobacteria, Anaerobic bacteria & Spirochaetes.
3.4 Zoonotic diseases, Common Bacterial infections of eye.

Unit-IV: Parasitology

4.1 Morphology, Life Cycle & Outline of Lab Diagnosis & Classification.
4.2 Common parasite infection of eye, Protozoa: *E, histolytica*. Malarial Parasite General properties, classification.
4.3 List of diseases caused by Cestodes and Trematodes,
4.4 Intestinal Nematodes & Tissue Nematodes, Vectors.

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SEMESTER-IV

DSC: Paper-II: BIOCHEMISTRY-PART-II

Theory : 4 Hours per Week	4 Credit	Internal Marks = 20

Unit-I: Biomolecules-I

1.1 Carbohydrates chemistry – Reactions of Carbohydrates.
1.2 Metabolism of glucose – Glucose Tolerance Test – Normal and Diabetic patterns.
1.3 Classification & Structure of Amino acids.
1.4 Properties and Biological functions of Amino acids.

Unit-II: Biomolecules-II

2.1 Chemistry of Proteins. Non-protein nitrogenous compounds: urea, creatinine and uric acid formation, significance and tests.
2.2 Renal clearance tests, concentration and dilution tests.
2.3 Lipids: Classification of lipids, Classification of fatty acids, Saturated & Unsaturated fatty acids, their biological functions,
2.4 Digestion and absorption of lipids, introduction of lipoproteins.

Unit-III: Nucleic acids & Vitamins

3.1 Nucleic acids: Structure, Function and types of DNA and RNA, Nucleotides, Nucleosides.
3.2 Nitrogen bases, purines and pyrimidines and role of Nucleic acid.
3.3 Classification and functions of Vitamins.
3.4 Disease associated with vitamins.

Unit-IV: Minerals & Enzymes

3.1 Minerals and ions: Requirement, function.
3.2 Biological importance of Calcium, Iron, Iodine, Zinc, Phosphorus, Copper, Sodium and Potassium.
3.3 Enzymes: Definition, Classification of enzymes.
3.4 Cofactor & Coenzymes, factor affecting enzyme activity.

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SEMESTER-IV

DSC: Paper-III: PATHOLOGY-PART-II

Theory : 4 Hours per Week	4 Credit	Internal Marks = 20 External Marks = 80

Unit-I: Histopathology

1.1 Introduction of histopathology & histotechniques.
1.2 Basic concepts of fixation and various types of fixative used in histopathology and cytopathology.
1.3 Tissue and its types, Location and function.
1.4 Grossing of tissues, whole mount, sections, smears, tissue processing and its steps.

Unit-II: Histotechniques,

2.1 Microtome, its type and working, various type of microtome.
2.2 Section cutting, fault and remedies, Section adhesive.
2.3 Cryostat, frozen sections of tissue, freeze drying.
2.4 Rapid frozen sections and staining.

Unit-III: Immunohaematology & Immunohistochemistry-I

3.1 Introduction, Overview and applications of Immunohistochemistry**.**
3.2 PAP Technique – principle.
3.3 Preparation of reagents and procedure for PAP.
3.4 ABO Blood Group System.

Unit-IV: Immunohaematology & Immunohistochemistry-II

4.1 Rh typing and weaker variants in Rh system.
4.2 Investigations of transfusion reactions.
4.3 HLA Antigens and their significance in Blood transfusion.
4.4 Preservation of blood, principles and its application in blood banking.

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SEMESTER-IV

DSC: Paper-I: MICROBIOLOGY-PART-II

PRACTICAL

Practical : 3 Hours per Week	1 Credit	Marks = 25

1. Latex agglutination: RF, ASO, CRP
2. Precipitation: VDRL test.
3. Common Skin Tests: Tuberculin.
4. Bacteriological Examination : Water, Milk and Air
5. Processing and reporting of swabs received from operation theatre.

Suggested Readings:

1. Medical Lab Technology, Sood, 1999 Jaypee
2. Textbook of Microbiology: Anantha Narayan & Jayaram Panicker.
3. Medical Mycology: Jagadish Chandra.
4. Parasitology: S.C. Parija.

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SEMESTER-IV

DSC: Paper-II: BIOCHEMISTRY-PART-II

PRACTICAL

Practical : 3 Hours per Week	1 Credit	Marks = 25

1. Demonstration of pH meter.
2. Collection of blood sample and separation of serum and plasma.
3. Practical aspects of Photometry, factors affecting wavelength: calibration and care of cuvettes. Reagent blank absorption curve, calibration curve, deviations of Beer's law.
4. Identification of sugars by qualitative tests; quantitative method for blood glucose estimation, qualitative screening test for urine glucose (Strip tests), qualitative test for reducing substances in urine.
5. Non protein nitrogenous compounds: determination of blood urea, ammonia, uric acid, creatinine. Creatinine clearance.

Suggested Readings:

1. D M Vasudevan, (2011), Text book of Medical Biochemistry,6th edition Jaypee Publishers
2. M N Chatterjea & Rana Shinde (2012), Text book of Medical Biochemistry,8th edition, Jayppe Publications
3. Singh & Sahni,(2008),Introductory Practical Biochemistry,2nd edition, Alpha science
4. Lehninger, (2013), Principles of Biochemistry,6th edition, W H Freeman
5. U Satyanarayan (2008), Essentials of Biochemistry,2nd edition, Standard Publishers.

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SEMESTER-IV

DSC: Paper-III: PATHOLOGY-PART-II

PRACTICAL

Practical : 3 Hours per Week	1 Credit	Marks = 25

1. Bone marrow smears - staining and examination.
2. Routine mounting of specimens, Mounting in glass jars & special methods of mounting
3. Preparation of blood films
4. Blood grouping.
5. AFB Staining –(for tissue sections of Tuberculosis and Leprosy)

Suggested Readings:

1. Practical Haematology by Davis & Lewis.
2. 50 Diagnostic special stains for Surgical Pathology by Erwin Haaf.
3. Text Book of Pathology by Harsh Mohan
4. Lab Techniques WHO Manual.
5. Harshmohan (2017), Textbook of Pathology,7th edition, Jaypee Publications
6. C F A Culling,(1974),Handbook of Histopathological and Histochemical Techniques: Including Museum Techniques,3rd edition, Butterworths Publishers.

3rd YEAR

KAKATIYA UNIVERSITY
Undergraduate Course (Under CBCS 2025-26)
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SEMESTER-V

Paper-I: ANDROLOGY & ENDOCRINOLOGY (THEORY)

Theory : 4 Hours per Week	4 Credit	Internal Marks = 20 External Marks = 80

Unit-I: Fundamentals of Endocrinology

1.1 Hormone biosynthesis, secretion, and mechanisms of action
1.2 Hypothalamic-pituitary axis: structure and function
1.3 Feedback regulation and endocrine rhythms
1.4 Hormone receptors and signal transduction pathways

Unit-II: Male Reproductive Physiology & Andrology

2.1 Spermatogenesis and testicular function
2.2 Male reproductive tract anatomy and physiology
2.3 Semen analysis and interpretation
2.4 Erectile dysfunction and ejaculatory disorders

Unit-III: Endocrine Disorders Affecting Reproduction

3.1 Hypogonadism: primary and secondary
3.2 Endocrine causes of male infertility (e.g., hyperprolactinemia, thyroid dysfunction)
3.3 Disorders of sexual differentiation
3.4 Endocrine tumors affecting reproductive function

Unit-IV: Diagnostic and Therapeutic Approaches

4.1 Hormonal assays and interpretation in andrology
4.2 Imaging techniques in reproductive endocrinology
4.3 Pharmacological management of endocrine and andrological disorders
4.4 Assisted reproductive technologies (ART) and hormonal manipulation

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SEMESTER-V

Paper-I: ANDROLOGY & ENDOCRINOLOGY (PRACTICAL)

Theory : 3 Hours per Week	2 Credit	Internal Marks = 20 External Marks = 80

1. Semen Collection, Analysis, and Interpretation
2. Hormonal Assay Techniques: ELISA and RIA for Reproductive Hormones
3. Assessment of Testicular Volume and Examination Techniques
4. Evaluation of Erectile Dysfunction: Penile Doppler and Nocturnal Penile Tumescence
5. Sperm Preparation Techniques for Intrauterine Insemination (IUI)
6. Cryopreservation of Human Spermatozoa
7. Endocrine Profiling in Male Infertility: Case-Based Interpretation
8. Ultrasound Imaging of Male Reproductive Organs
9. Stimulation Protocols and Hormonal Monitoring in ART
10. Interpretation of Karyotyping and Genetic Screening in Andrology

Reference Books

1. Griffin, J. E., & Ojeda, S. R. (2004). *Textbook of endocrine physiology* (5th ed.). Oxford University Press.
2. Nieschlag, E., Behre, H. M., & Nieschlag, S. (Eds.). (2010). *Andrology: Male reproductive health and dysfunction* (3rd ed.). Springer.
3. Melmed, S., Polonsky, K. S., Larsen, P. R., & Kronenberg, H. M. (2022). *Williams textbook of endocrinology* (14th ed.). Elsevier.
4. Wein, A. J., Kavoussi, L. R., Partin, A. W., & Peters, C. A. (Eds.). (2020). *Campbell-Walsh-Wein urology* (12th ed.). Elsevier.

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SEMESTER-V

Paper-II: HISTOTECHNOLOGY & CYTOTECHNOLOGY (THEORY)		
Theory : 4 Hours per Week	4 Credit	Internal Marks = 20
		External Marks = 80

Unit I: Fundamentals of Histotechnology

1.1 Introduction to histology and histopathology
1.2 Fixation: types of fixatives and mechanisms
1.3 Tissue processing: dehydration, clearing, embedding
1.4 Microtomy: types of microtomes and sectioning techniques

Unit II: Staining Techniques

2.1 Hematoxylin and eosin (H&E) staining
2.2 Special stains: PAS, Masson's trichrome, reticulin, etc.
2.3 Staining for microorganisms: Ziehl-Neelsen, Gram stain
2.4 Mounting, labeling, and slide preservation

Unit III: Cytotechnology Principles

3.1 Introduction to exfoliative and aspiration cytology
3.2 Collection and fixation of cytological specimens
3.3 Staining methods in cytology: Papanicolaou, MGG
3.4 Cytological interpretation of normal and abnormal cells

Unit IV: Advanced Techniques & Quality Control

4.1 Immunohistochemistry and enzyme histochemistry
4.2 Frozen section technique and cryostat use
4.3 Automation in histopathology and cytology labs
4.4 Laboratory safety, quality assurance, and accreditation

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SEMESTER-V

Paper- II: HISTOTECHNOLOGY & CYTOTECHNOLOGY (PRACTICAL)

Theory : 3 Hours per Week	2 Credit	Internal Marks = 20 External Marks = 80

1. Preparation and use of fixatives
2. Tissue processing and paraffin embedding
3. Microtomy and section cutting
4. Routine H&E staining and special stains
5. Cytological smear preparation and staining
6. Identification of normal and abnormal histological and cytological features
7. Use of cryostat for frozen sections
8. Demonstration of immunohistochemical staining
9. Maintenance of laboratory records and slide cataloging
10. Quality control procedures in histopathology and cytology

Reference Books

1. Carson, F. L., & Hladik, C. (2015). *Histotechnology: A self-instructional text* (4th ed.). ASCP Press.
2. Dey, P. (2022). *Basic and advanced laboratory techniques in histopathology and cytology* (2nd ed.). Springer.
3. Bancroft, J. D., & Gamble, M. (2008). *Theory and practice of histological techniques* (6th ed.). Churchill Livingstone.
4. Gill, G. W. (2012). *Cytopreparation: Principles & practice*. Springer.
5. Sood, R. (2023). *Medical laboratory technology: Methods and interpretations* (Vol. 2). Jaypee Brothers Medical Publishers.

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SEMESTER-VI

Paper-I: IMMUNO HEAMATOLOGY, BLOOD BANKING & BLOOD (THEORY)

Theory : 4 Hours per Week	4 Credit	Internal Marks = 20
		External Marks = 80

Unit I: Basics of Immunohematology

1.1 Introduction to antigens, antibodies, and immune response
1.2 ABO and Rh blood group systems
1.3 Other blood group systems (Kell, Duffy, Kidd, MNS)
1.4 Hemolytic disease of the newborn (HDN) and its prevention

Unit II: Blood Collection and Processing

2.1 Donor selection, screening, and phlebotomy techniques
2.2 Anticoagulants and preservatives used in blood collection
2.3 Blood component separation and storage
2.4 Quality control in blood banking

Unit III: Compatibility Testing and Transfusion Practices

3.1 Crossmatching techniques and antibody screening
3.2 Pre-transfusion testing and compatibility evaluation
3.3 Transfusion reactions: types, causes, and management
3.4 Massive transfusion protocols and special transfusion needs

Unit IV: Advanced Techniques and Regulatory Aspects

4.1 Apheresis, leukoreduction, and irradiation of blood products
4.2 Molecular typing and automation in immunohematology
4.3 Blood bank accreditation, legal, and ethical issues
4.4 Hemovigilance and transfusion safety

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SEMESTER-VI

Paper-I: IMMUNO HEAMATOLOGY, BLOOD BANKING & BLOOD (PRACTICAL)

Theory : 3 Hours per Week	2 Credit	Internal Marks = 20 External Marks = 80

1. Blood grouping (ABO and Rh typing)
2. Crossmatching: major and minor
3. Antibody screening and identification
4. Coombs test (Direct and Indirect Antiglobulin Test)
5. Preparation and storage of blood components
6. Donor screening and blood collection techniques
7. Compatibility testing and transfusion reaction workup
8. Use of gel card and column agglutination techniques
9. Quality control procedures in blood banking
10. Documentation and inventory management in a blood center

Reference Books

1. Ajmani, P. S. (2020). *Immunohematology and blood banking: Principles and practice*. Springer.
2. Turgeon, M. L. (1995). *Fundamentals of immunohematology: Theory and technique*. Williams & Wilkins.
3. Harmening, D. M. (2018). *Modern blood banking and transfusion practices* (7th ed.). F.A. Davis Company.
4. Roback, J. D., Grossman, B. J., Harris, T., & Hillyer, C. D. (2011). *Technical manual* (17th ed.). AABB Press.
5. Daniels, G. (2013). *Human blood groups* (3rd ed.). Wiley-Blackwell.

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SEMESTER-VI

Paper-II: CLINICAL RESEARCH & TOXICOLOGY (THEORY)		
Theory : 4 Hours per Week	4 Credit	Internal Marks = 20
		External Marks = 80

Unit I: Fundamentals of Clinical Research

1.1 Introduction to clinical research: phases and types of clinical trials
1.2 Good Clinical Practice (GCP) and regulatory guidelines (ICH-GCP, CDSCO, FDA)
1.3 Ethics in clinical research: informed consent, IRB/IEC roles
1.4 Study design: observational vs. interventional, randomization, blinding

Unit II: Clinical Trial Management

2.1 Protocol development and case report forms (CRFs)
2.2 Subject recruitment, screening, and enrollment
2.3 Adverse event reporting and pharmacovigilance
2.4 Data management, monitoring, and auditing

Unit III: Principles of Toxicology

3.1 Introduction to toxicology: scope and classification of toxic agents
3.2 Dose-response relationship and toxicokinetics
3.3 Mechanisms of toxicity: cellular and molecular basis
3.4 Target organ toxicity: liver, kidney, CNS, and reproductive systems

Unit IV: Applied and Analytical Toxicology

4.1 Preclinical toxicology: acute, subacute, and chronic toxicity studies
4.2 Behavioral and developmental toxicology
4.3 Analytical methods in toxicology: chromatography, spectrometry, immunoassays
4.4 Risk assessment, safety evaluation, and regulatory toxicology

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SEMESTER-VI

Paper-II: CLINICAL RESEARCH & TOXICOLOGY (PRACTICAL)

Theory : 3 Hours per Week	2 Credit	Internal Marks = 20 External Marks = 80

1. Designing a clinical trial protocol
2. Preparation of informed consent forms and CRFs
3. Simulated subject recruitment and screening
4. Case studies on adverse event reporting
5. Dose calculation and LD_{50} determination in animal models
6. Toxicity testing: acute and subacute models
7. Use of software for data analysis in clinical research (e.g., SPSS, GraphPad)
8. Analytical techniques: TLC, HPLC, UV-Vis spectrophotometry
9. Interpretation of toxicological histopathology slides
10. Report writing and presentation of clinical and toxicological findings

Reference Books

1. Derelanko, M. J., & Auletta, C. S. (2014). *Handbook of toxicology* (3rd ed.). CRC Press.
2. Gupta, S. K. (2011). *Basic principles of clinical research and methodology* (3rd ed.). Jaypee Brothers Medical Publishers.
3. Hayes, A. W., & Kruger, C. L. (2014). *Hayes' principles and methods of toxicology* (6th ed.). CRC Press.
4. Chow, S. C., & Liu, J. P. (2013). *Design and analysis of clinical trials: Concepts and methodologies* (3rd ed.). Wiley.
5. Gad, S. C. (2016). *Clinical trials handbook* (2nd ed.). Wiley.

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SEMESTER-VI

PROJECT WORK

4 Credit	Internal Marks = 20
	External Marks = 80

Project Work Paper Structure

1. Title Page
- Project Title
- Student Name and Roll Number
- Institution Name
- Department
- Supervisor's Name
- Date of Submission

2. Abstract
- A concise summary of the project (150–250 words)
- Includes background, objectives, methodology, key findings, and conclusion

3. Introduction
- Background and significance of the study
- Statement of the problem
- Objectives and scope
- Research questions or hypotheses

4. Literature Review
- Summary of existing research related to the topic
- Identification of research gaps
- Theoretical framework (if applicable)

5. Materials and Methods
- Study design (experimental, observational, etc.)
- Sample selection and size
- Data collection tools and techniques
- Analytical methods and software used

6. Results
- Presentation of data using tables, graphs, and charts
- Statistical analysis and interpretation

7. Discussion
- Interpretation of findings in context of existing literature
- Implications of the results
- Limitations of the study

8. Conclusion and Recommendations

- Summary of key findings
- Practical applications or policy suggestions
- Recommendations for future research

9. References

- Cited using APA or other approved academic style

10. Appendices

- Questionnaires, raw data, consent forms, etc.

Final Examination: Question Papers Pattern

B.A./B.Sc. (Medical Laboratory Technology Course)

Theory Question Paper Pattern

WEF Academic Year: 2025-2026

Time: 3 hours] [Max. Marks: 80

Section - A

Answer ALL questions. All questions carry equal marks. (4Qx12m=48)

Q1. (a)	From Unit-I
[OR]	
Q1. (b)	
Q2. (a)	From Unit-II
[OR]	
Q2. (b)	
Q3. (a)	From Unit-III
[OR]	
Q3. (b)	
Q4. (a)	From Unit-IV
[OR]	
Q4. (b)	

Section – B

Answer any EIGHT questions. All questions carry equal marks. (8Qx4m=32)

Q5	From Unit-I
Q6	
Q7	
Q8	From Unit-II
Q9	
Q10	
Q11	From Unit-III
Q12	
Q13	
Q14	From Unit-IV
Q15	
Q16	

B.A./B.Sc. (Medical Laboratory Technology Course)

Practical Question Paper Pattern

WEF Academic Year: 2025-2026

Time: 2 hours] [Max. Marks: 25

1 Major Experiment (10 M)

2 Minor Experiment (5 M)

3 Record (5 M)

4 Viva (5 M)

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Internal Examinations:

1. Two Internal exams are to be conducted and best of two internal marks is considered.
2. First internal exam is to be conducted after completion of Unit-I & II.
3. Second internal exam is to be conducted after completion of Unit-III & IV.
4. Internal Examination duration: 1 hr 30 min
5. Internal Theory QP consists of 20 marks.
6. 10 Short questions are to be given (5Q from each of 2 Completed units); 10Q are to be answered (10Q X 2m = 20m).