

B.Sc. in Medical laboratory sciences

Study Plan

■ University Compulsory Courses 16 C.H

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■ University Elective Courses 9 C.H

Pages (64 & 65)

■ Faculty Compulsory Courses 27 C.H

Line No.	Code	Course	
102181	MED218A	GROSS ANATOMY & HISTOLOGY	3
102182	MED218B	GROSS ANATOMY & HISTOLOGY (LAB)	0
102304	MED230A	HUMAN PHYSIOLOGY	3
102305	MED230B	HUMAN PHYSIOLOGY (LAB)	1
103021	MED302A	MEDICAL ETHICS	1
183111	PH311A	BIostatISTICS	2
911031	CHEM103A	GENERAL CHEMISTRY	3
911072	CHEM107B	GENERAL CHEMISTRY LAB	1
921031	PHY103A	GENERAL PHYSICS	3
931030	BIO103	GENERAL BIOLOGY	3
931070	BIO107	GENERAL BIOLOGY (PRACTICAL)	1
1114580	P.T458	MANAGEMENTS IN ALLIED MEDICAL SCIENCES	3
1731160	CS116	SELECTED PROGRAMMING LANGUAGES (FOR NON COMPUTER SCIENCE INFORMATION STUDENTS)	3

■ Department Compulsory Courses 86 C.H

Line No.	Code	Course	
102113	MED211A	MOLECULAR GENETICS	3
102121	MED212A	PATHOLOGY	3
102222	MED222B	BIOCHEMISTRY	3
102234	MED223D	BIOCHEMISTRY (LAB)	1
102320	MED232	IMMUNOLOGY	3
102422	MED242B	MICROBIOLOGY	3
102430	MED243	MICROBIOLOGY (LAB)	1
172200	LM220	MICRO TECHNIQUES	1
172201	LM220	MICRO TECHNIQUES (LAB)	0
172220	LM222	CLINICAL LABORATORY INSTRUMENTATION	2
172510	LM251	BASICS IN HEMATOLOGY	3
172511	LM251	BASICS IN HEMATOLOGY (LAB)	0
173210	LM321	CLINICAL BIOCHEMISTRY (1)	4
173211	LM321	CLINICAL BIOCHEMISTRY (1) LAB	0
173220	LM322	CLINICAL BIOCHEMISTRY(II)	4
173221	LM322	CLINICAL BIOCHEMISTRY(II) (LAB)	0
173310	LM331	CLINICAL MICROBIOLOGY (1)	4
173311	LM331	CLINICAL MICROBIOLOGY (1) LAB	0
173321	LM332A	CLINICAL MICROBIOLOGY(II)	4
173322	LM332	CLINICAL MICROBIOLOGY(II) (LAB)	0
173330	LM333	DIAGNOSTIC IMMUNOLOGY & SEROLOGY	3
173331	LM333	DIAGNOSTIC IMMUNOLOGY & SEROLOGY (LAB)	0
173570	LM357	HEMATOLOGY	4

173571	LM357	HEMATOLOGY (LAB)	0
173580	LM358	DIAGNOSTIC HEMATOIOGY & BLOOD BANK	3
173581	LM358	DIAGNOSTIC HEMATOIOGY & BLOOD BANK(LAB)	0
173620	LM362	MEDICAL PARASITOLOGY	4
173621	LM362	MEDICAL PARASITOLOGY (LAB)	0
174230	LM423	MOLECULAR DIAGNOSTIC AND CYTOGENETICS	2
174250	LM425	MOLECULAR DIAGNOSTIC AND CYTOGENETICS(LAB)	1
174590	LM459	VIRUSES&MEDICAL FUNGI	3
174591	LM459	VIRUSES & MEDICAL FUNGI (LAB)	0
174630	LM463	CLINICAL MICROSCOPY	2
174631	LM463	CLINICAL MICROSCOPY	0
174740	LM474	BIOCHEMISTRY HOSPITAL LABORATORY PRACTICE	4
174760	LM476	CLINICAL MICROBIOLOGY HOSPITAL LABORATORY PRACTICE	4
174800	LM480	LMMUNOLOGY & SEROLOGY HOSPITAL LABORATORY PRACTICE	3
174820	LM482	HEMATOLOGY HOSPITAL LABORATORY PRACTICE	4
174840	LM484	CLINICAL MICROSCOPY - HOSPITAL LABORATORY PRACTIC	2
174950	LM495	RESEARCH PROJECT	1
912170	CHEM217	ORGANIC CHEMISTRY	3
912330	CHEM233	ANALYTICAL CHEMISTRY	3
912340	CHEM234	ANALYTICAL CHEMISTRY LAB.	1

TOTAL

138 C.H

*** For prerequisite & equivalent courses see the Courses' Description.**

B.Sc. in Medical Laboratory Sciences Courses' Description

LM 220 Micro techniques 1 CH

- An introduction to microtechniques, safety measures, specimen types and selection of material for examination, fixation.
- Manual and automated processing methods, microtomy, paraffin embedding and alternatives including the use of polymerizing resins for semi-fine sections, frozen sections.
- Theoretical basis of staining methods, routine staining techniques (manual and automated).

(Prerequisite: MED 218 or Co requisite)

LM 222 Clinical Laboratory Instrumentation 2 CH

- Principles of clinical laboratory instruments.
- Emphasis is on the principles of instrumental methods of analysis including visible and ultraviolet spectrophotometry, nephelometry, fluorometry, flame photometry, refractometry, chromatography, electrophoresis, osmometry, radiation counters and automated chemical analyzers.

(Prerequisite: PHY 103)

LM 251 Basics in Hematology 3 C.H

- Formation, blood cell derivation, maturation, physiology & function of blood cell component and plasma, normal cell morphology and numbers.

(Prerequisite: BIO103, BIO107)

LM 321 Clinical Biochemistry I 4 C.H

- An introduction to general principles of biochemical investigation.
- Analysis of the biochemical component of body fluids.
- Analysis of enzymes and serum proteins, amino acids and non-protein nitrogen compounds, carbohydrate and diabetes, Lipid and hyperlipidaemia.
- Discussion of biochemical screening and of method validation and quality control.

(Prerequisite: MED 222, MED 223)

LM 322 Clinical Biochemistry II 4 C.H

- Practical application of clinical biochemistry in blood gas analysis electrolyte and acid-base balance.
- Biochemical investigations of gastrointestinal and liver diseases and liver function test,
- Kidney function test.
- Bone calcium and phosphorus metabolism and related disorders, iron, trace element.

(Prerequisite: LM321)

LM 331 Clinical Microbiology I 4 C.H

- Practical application and technical performance of procedures for isolation and identification of bacterial organisms infecting humans.
- Microorganisms growth, isolation, identification, antibiotic susceptibility testing, and special anaerobic procedures.

(Prerequisite: MED 242, MED 243)

LM 332 Clinical Microbiology II 4 C.H

- Practical application and technical performance of procedures for isolation and identification of mycobacterium, mycotic and viral organisms infecting humans.
- Microorganisms growth, isolation, and identification.

(Prerequisite: LM331)

LM 333 Diagnostic Immunology and Serology 3 C.H

- Technical performance of common serological testing used in a clinical lab including agglutination reactions, precipitation reactions, complement fixation test (CFT), direct and indirect hemagglutination (HA and IHA), hemagglutination inhibition (HAI), RIA and ELISA.
- Production of immune serum, labeling of antigen, commercial kits, immunodiffusion, immunoelectrophoresis, direct and indirect fluoroimmunoassays (FIA), ELISA, immunoblotting, Ptc.

(Prerequisite: MED 232)

LM 351 Hematology 4C.H

- Descriptions of the blood (erythrocytes, leukocytes, platelets) including the haemopoietic cells development, morphology and functions.
- Methods for analysis of blood cells.
- Investigation of anaemias and other disorders involving erythrocytes, leukocytes and platelets are discussed.
- Cell counts, cellular differentiation.

(Prerequisite: LM 251)

LM 356 Diagnostic Hematology & Blood Bank 3 C.H

- Technical performance of blood bank procedures required for transfusion of blood and blood components and for handling and storage of blood and blood components.
- Cellular coagulation factors, coagulation mechanisms and blood group antigens antigen-antibody reactions and compatibility testing between donor and recipient blood and between maternal and fetal blood and identification of factors responsible for incompatibilities.

(Prerequisite: LM 351, MED 232)

LM 362 Medical parasitology 4 C.H

- A study of medically significant parasitic agents of human disease.
- Life cycle of common parasites, the diseases they can cause and measures for controlling them.

(Prerequisite: BIO103, BIO107)

LM 423 Molecular Diagnostic & Cytogenetics 2 C.H

- Study of hereditary mechanisms, including classical, biochemical and population concepts using appropriate examples.
- Chromosome structure and morphology. Meiosis, mitosis and recombination. No disjunction and genetic disorders, Karyotype preparation.

(Prerequisite: MED 223, MED 211a)

LM 425 Molecular Diagnostic & Cytogenetics Lab 1 C.H

- Complete description of general methods for genetic manipulation including restriction analysis, cloning vectors, library construction, Southern blots, sequencing, genetic transformation and polymerase chain reaction.
- Applications to biotechnology and diagnostics include overexpression of genes, transgenic organisms and diagnosis of viral infections.

(prerequisite: LM423, or Co requisite)

LM 459 Viruses & Medical Fungi 3 C.H

- Study of structure and function of viruses & fungi, classification, cultivation, and examples of viral and fungi diseases, emphasizing laboratory diagnostic methods.

LM 463 Clinical Microscopy 2 C.H

- Practical application and technical performance of microscopic examination of urine fecal specimens, gastric, spinal fluid, and other body fluids.

(Prerequisite: LM 361)

LM 474 Biochemistry Hospital Laboratory Practice 4C.H

- Two hospital assignments, 4 weeks each.
- Clinical laboratory providing supervised practice in Clinical Biochemistry Lab that includes laboratory morning report.
- Results interpretations and discussions ,students' presentations of their work.

(Prerequisite: LM322, LM321)

LM 476 Clinical Microbiology Hospital Laboratory Practice 4C.H

- Two hospital assignments, 4 weeks each
- Clinical Laboratory providing supervised practice in Clinical Microbiology Lab that includes laboratory morning report.
- Results interpretations and discussions , students presentations of their work.

(Prerequisite: LM331,LM332)

LM 480 Immunology & Serology Hospital Laboratory Practice 3 C.H

- Two hospital assignments, 2 weeks each .
- Clinical laboratory providing supervised practice in immunology & Serology Lab that includes laboratory morning report.
- Results interpretations and discussions, students' presentations of their work.

(Prerequisite: LM333)

LM 482 Hematology Hospital Laboratory Practic 4C.H

- Blood pathologies and measurement of various constituents of blood..
- Use of automated equipment in counting blood cells and quality control.
- Hematopoiesis, anemias, polycythemias, non-neoplastic leukocyte disease.

(Prerequisite :LM 356)

LM 484 Clinical Microscopy Hospital Laboratory Practice 2C.H

Application of microscopic techniques in the analysis of urine, CSF, stool,seminal fluid and the body fluids.
(Prerequisite: LM 463)

LM 495 Research Project 1C.H

- A seminar that provides student with exposure to current issues of concern to the clinical laboratory scientist
- Topics include methods of diagnostic testing, selected disease conditions, chemical hygiene and safety issues in the clinical laboratory.
- Utilization of computers and current topics in health care.

(Prerequisite: PH 311 or Co requisite)