		1 CH	Prereq:	0201101	
0301211	**Medical Terminology**	**1**	**0**		

This course provides the technical terms used in the medical field and how to pronounce them by knowing the meaning of the roots, prefixes, suffixes and combining forms. It will help the students to understand the basic rules and terms related to body structure, medical science, hospital service, and the allied health specialties.

		1 CH	Prereq:	0201101	
0301212	**Clinical Laboratory Orientation**	**1**	**0**		

This course covers the theoretical and practical application of clinical duties of the medical technologist working in a hematology laboratory department, urinalysis, body chemistry, and microbiology. it also covers other topics; laboratory orientation, procedures and techniques, and an introduction to clinical laboratory instrumentation.

		2 CH	Prereq:	0201101	
0301222	**Clinical Laboratory Orientation and Safety**	**2**	**0**		

This course covers the theoretical and practical application of clinical duties of the Medical Technologist working in a Hematology, Body Fluids, Clinical Chemistry, Serology, Immunohematology and Diagnostic Microbiology laboratory department. It also covers laboratory orientation, procedures and techniques, and an introduction to clinical laboratory instrumentation. The course also focuses on Laboratory Safety, Infection Control and introduces Biosafety and Biosecurity.

		3 CH	Prereq	0301221	
0301213	**Pathophysiology**	**3**	**0**		

This course introduces the student to the basic mechanisms of diseases, organs affected and the response of normal tissues to injury. It provides a comprehensive and yet, concise account of the important features of disease and to link, where possible, the pathological changes with effects on the patients. This helps students to have an overview of most aspects of pathology, explains the mechanisms of disease processes and provides a strong emphasis on clinic-pathological correlation, which might be helpful in differential diagnosis.

		3 CH	Prereq:	0304131+ Concurrent 0301226	
0301221	**Human Physiology**	**3**	**0**		

The course provides the students with knowledge about the normal functions and mechanism of various physiological systems (cardiovascular, respiratory, renal, immunology, endocrine, neural, muscular and gastrointestinal) as well as basic concepts of cellular physiology.

			1 CH	Prereq:	Concurrent 0301221
0301226	**Human Physiology Laboratory**	**0**	**3**		

This laboratory course is a complementary practical work of the human physiology and must be taken in conjunction with the Human Physiology (301221). The course is designed to illustrate principles of human physiology and the structure and functions of the human body and training in physiological techniques.

			2 CH	Prereq:	None
0301231	**Laboratory Management**	**2**	**0**		

This course teaches students how to maintain an active medical laboratory including general, structural, resource, process and management requirements. It specifies the processes and duties involved with laboratory organization such as the maintenance of lab supplies and equipment, regulations and safety policies, using computers to record data and proper use of medical instruments.

			3 CH	Prereq:	0902101
0301232	**Biochemistry**	**3**	**0**		

The course emphasizes human biochemistry in both health and disease and explores the roles of essential biological molecules focusing on protein chemistry, while covering lipids and carbohydrates. It provides a systematic and methodical application of general and organic chemistry principles. Students examine the structure of proteins, their function, binding to other molecules and the methodologies for the purification and characterization of proteins. Enzymes and their kinetics and mechanisms are covered in detail. Metabolic pathways are examined from thermodynamic and regulatory perspectives.

			3 CH	Prereq:	0201101
0301233	**Molecular Genetics**	**3**	**0**		

The course emphasizes the molecular basis of cellular processes. It includes the identification of human genes and genetic disorders, covering the mechanism of mutation that leads to those disorders, as well as methods applied to diagnose them.

			1 CH	Prereq:	Concurrent 0304231
0301241	**Basic Microbiology Laboratory**	**0**	**3**		

The course covers basic techniques of media preparation, aseptic techniques, how to grow and identify microorganisms based on culture features, staining, and biochemical metabolic differences. It enables student to identify a mixture of more than two microorganisms.

			1 CH	Prereq	0301212
0301251	**Phlebotomy and Laboratory Safety**	**1**	**0**		

This course provides an introduction and practical experience on locating and assessing skin puncture, arterial draws, venipuncture sites, and capillary puncture methods for adults and children and infants from patients in medical settings.

			2 CH	Prereq	0304231

0301252	**Immunology**	**2**	**0**		

This course concentrates on the basic structure and function of the reticulo-endothelial system and the role of its organs and cells in defense against foreign substances, antigens and antibodies, immune mechanisms in health and diseases, antigen-antibody reactions in vivo and in vitro, immune deficiency, transplantation, and vaccines.

		1 CH	Prereq	0310226	
0301311	**Histological Techniques**	**0**	**1**		

The course concentrates on the bases of routine histology methods and the elementary principles, constituents and use of apparatuses in the histopathology laboratory.

		1 CH	Prereq	0304218	
0301321	**Analysis of Body Fluids**	**1**	**0**		

The course concentrates on the macroscopic and microscopic analysis of various body fluid samples in health and disease, including urine, seminal fluid, CSF, sputum, stool, synovial fluid, peritoneal, pericardial, and pleural fluid, and their compositions in health and pathological conditions.

		2 CH	Prereq:	0301232	
0301322	**Molecular Endocrinology**	**2**	**0**		

This course emphasizes molecular and cellular effects of hormones in health and disease, hormone-receptor interaction; synthesis, transport and targeting of hormones, growth factors, and hormonal disorders in diabetes, hypertension, osteoporosis and cancer.

		2 CH	Prereq:	Completion of 60 credit hours
0301324	**Current Topics in Medical Laboratories**	**2**	**0**	

The course provides recent knowledge for interpretation and correlation of laboratory data to patient care and builds critical thinking and problem solving skills. Students are encouraged to present a topic selected from recent literature that reports new areas of research and its uses in clinical laboratory sciences.

		1 CH	Prereq	Concurrent 0301321
0301326	**Analysis of Body Fluids Laboratory**	**0**	**3**	

The course covers principles and standard techniques involved in laboratory analysis of body fluids, including, cerebral spinal fluid, synovial fluid, seminal fluid, urine, pleural, peritoneal, pericardial, stool and sputum; their normal characteristics and pathological changes in diseases. There are some case studies emphasizing the correlation of results with pathological status.

				2 CH	Prereq: 0301232
0301331	**Clinical Biochemistry-1**	**2**	**0**		

This course studies the biochemical alterations arising in the human body due to numerous diseases and the valuation of disorders in sugars, proteins, lipids, enzymes, non-protein nitrogen products, bile pigments and mineral metabolism in addition to electrolytes, blood gases and acid base balance.

				2 CH	Prereq: 0301331
0301332	**Clinical Biochemistry-2**	**2**	**0**		

This course focuses on clinical significance and approaches of investigation of hormones and metabolites, trace elements, vitamins, therapeutic drugs, toxicology, and laboratory calculation as well as the diagnostic measures that help in assessing the competence of diverse body organs.

				1 CH	Prereq: Concurrent 0301331
0301336	**Clinical Biochemistry-1 Laboratory**	**0**	**3**		

The course provides the student with the skills of analyzing various biochemical constituents of body fluids such as enzymes, serum proteins, amino acids and non-protein nitrogen compounds, sugars, lipid and lipid profiles.

				1 CH	Prereq: Concurrent 0301332
0301337	**Clinical Biochemistry-2 Laboratory**	**0**	**3**		

This course deals with the useful application of clinical biochemistry in blood gas analysis, electrolyte and acid– base balance, liver function test; kidney function test; calcium and phosphorus, iron, trace element, hormones, drugs , toxicology and vitamins.

				2 CH	Prereq: 0304231
0301341	**Clinical Microbiology-1**	**2**	**0**		

This course introduces the student to microorganisms leading to disease development with emphasis on the study of morphology, physiology, biochemistry, molecular biology, epidemiology, pathogenesis, diagnostic aspects and treatment of medically important bacteria.

				2 CH	Prereq: 0301341
0301342	**Clinical Microbiology-2**	**2**	**0**		

The course concentrates on the diseases caused by pathogenic microorganisms, collection, storage, and transport of samples of diagnostic value, and implementation of international standard methodology for the isolation, identification, antimicrobial susceptibility testing, and reporting of results to physicians, health authorities, and infection control committees for contagious diseases

			2 CH	Prereq	0304231
0301343	**Medical Parasitology**	**2**	**0**		

This course is a comprehensive study of the parasites of humans, emphasizing parasite structure, life cycle, epidemiology, disease development, symptoms, diagnostic samples, prevention and control.

			2 CH	Prereq:	0304231
0301344	**Medical Virology**	**2**	**0**		

This course provides a basic understanding of the biochemical and molecular mechanism of viral infection by studying viral replication, virulence, host-parasite relationships, molecular mechanisms of infection, and the host response to infections. It also provides the tools to diagnosis viral infections, vaccines and control of viral infections.

			2 CH	Prereq:	0301233
0301345	**Molecular Diagnostics**	**2**	**0**		

This course introduces the basic principles and techniques of molecular diagnostics, nucleic acid amplification technologies, hybridization technologies, cytogenetics, molecular diagnosis of genetic diseases, Identity analysis, molecular diagnosis of hematopoietic neoplasms and solid tumors.

			1 CH	Prereq:	Concurrent 0301342
0301347	**Clinical Microbiology-2 Laboratory**	**0**	**3**		

The course concentrates on the technical laboratory diagnosis of human infectious diseases. It provides students skills to perform microbiological cultivation of pathogens from clinical specimens utilizing quality controlled standard procedures and techniques, conventional and non-conventional methods, accurate reporting and interpretation of the findings. It includes the implementation of professional ethics

			1 CH	Prereq:	Concurrent 0301343
0301348	**Medical Parasitology Laboratory**	**0**	**3**		

This course concentrates on the laboratory methods and diagnostic features and samples for identification of parasites of medical importance using prepared slides. Clinical specimens will be provided to students when available to stain, examine and identify the parasites when present.

			1 CH	Prereq:	Concurrent 0301345
0301349	**Molecular Diagnostics Laboratory**	**0**	**3**		

This course concentrates on applying practical the techniques used in molecular diagnosis including isolation, quantification, amplification, restriction, separation and detection of nucleic acids. It focuses also on Chromosomes preparation and analysis, DNA hybridization techniques (reverse hybridization, FISH), and animal tissue culture.

			3 CH	Prereq:	0301221
0301351	**Basic Hematology**	**3**	**0**		

This course offers a learning of the hematopoietic system, and its association to other organ systems, erythropoiesis and leucopoiesis in health and illness, coagulation tests, as well as the estimation of the normal values of blood cells, and hemoglobin.

			1 CH	Prereq:	Concurrent 0301351
0301356	**Basic Hematology Laboratory**	**0**	**3**		

This course provides an introduction and practical experience on Phlebotomy: locating and assessing skin puncture, arterial draws, venipuncture sites, and capillary puncture methods for adults and children and infants from patients in medical settings. It also focuses on the different types of clinical specimens and their collection conditions and preservatives and includes routine hematology procedures.

			2 CH	Prereq:	0301351
0301353	**Clinical Hematology**	**2**	**0**		

This course offers a broad study of hemostasis abnormalities, thrombosis, determination of blood sedimentation rates, numerous diagnostic tests for leukocyte, platelets, and coagulation disorders, anemia, leukemia, lymphocytic and myelo-proliferative disorders.

			1 CH	Prereq:	Concurrent 0301353
0301358	**Clinical Hematology Laboratory**	**0**	**3**		

This course provides a complete clarification on the usage of specialized hematologic tests in the diagnosis of blood cell disorders. Students apply knowledge and skills to interpret lab results, and use a problem solving approach as they read case studies.

			3 CH	Prereq:	0301213
0301411	**Introduction to Clinical Pathology**	**3**	**0**		

This course deals with the diagnosis of disease based on the laboratory investigations of bodily fluids such as blood, urine, and tissues.

			3 CH	Prereq:	0301332
0301421	**Clinical Endocrinology**	**3**	**0**		

This course studies the endocrine system in relation to its function, disorders and diseases. It will emphasize the epidemiology, risk factors, impacts and establishment of diagnosis of different diseases such as calcium metabolic diseases, obesity, diabetes mellitus, and cardiovascular risk factors.

			2 CH	Prereq:	0301332
0301424	**Clinical Endocrinology**	**2**	**0**		

This course studies the endocrine system in relation to its function, disorders and diseases. It will emphasize the epidemiology, risk factors, impacts and establishment of diagnosis of

different diseases such as calcium metabolic diseases, obesity, diabetes mellitus, and cardiovascular risk factors.

		1 CH	Prereq:	0301342
0301422	**Seminar in Physiology and Endocrinology**	**1**	**0**	

The course provides recent knowledge for interpretation and correlation of laboratory data to patient care and builds critical thinking and problem solving skills. Students are encouraged to present a topic selected from recent literature that reports new areas of research and its uses in clinical laboratory sciences, particularly physiology and endocrinology.

		1 CH	Prereq:	0301332
0301436	**Clinical Urinalysis Laboratory/ Hospital Laboratory Practice**	**-**	**3**	

This course provides standard methods of macroscopic and microscopic urine examination for physical, chemical, and cellular elements, and stresses the importance of urine analysis in health and pathological conditions.

		2 CH	Prereq:	0301331
0301440	**Quality Assurance in Clinical Laboratories**	**2**	**0**	

This course provides the knowledge behind establishing and maintaining quality in medical laboratories which implies a smoothly, safely and error-free running laboratory in the pre-analytical, analytical and post-analytical phases of procedures followed in a medical laboratory. It focuses also on Standard Operating Procedures (SOPs) and Clinical Lab Improvement Amendments (CLIA).

		2 CH	Prereq:	0301342
0301443	**Medical Mycology**	**2**	**0**	

This course is a comprehensive study of the fungal infections of humans, emphasizing fungi structure, epidemiology, disease development, symptoms, diagnostic samples, prevention and control.

		1 CH	Prereq:	0301212
0301442	**Laboratory Education and Management**	**1**	**0**	

This course provides several subjects linked to laboratory tasks, ethics, teamwork, laboratory safety; infection control, patient safety orientation, communication, professional development, interview skills, laboratory budget, laboratory information systems; quality assessment, and work flow.

		3 CH	Prereq:	0301252
0301451	**Clinical Immunology and Serology**	**3**	**0**	

This course integrates basic and clinical immunology featuring theories and techniques of clinical immunology, relationships between infection and immunity, immunopathology, diagnostic techniques, and treatment of immunologically related diseases.

		3 CH	Prereq:	0301353	
0301452	**Blood Bank – Immunohematology**	**3**	**0**		

The course offers the knowledge and abilities necessary to study human blood groups, blood group genetics, hemolytic disease, transfusion therapy, current blood bank practice, and the performance of clinical laboratory techniques and the understanding of results.

		1 CH	Prereq:	Concurrent 0301451	
0301456	**Clinical Immunology and Serology Lab**	**0**	**3**		

The course introduces the student to common serological testing used in a clinical lab comprising agglutination reaction, precipitation reaction, complement fixation test, indirect hemagglutination, hemagglutination inhibition test, Elisa, and more.

		1 CH	Prereq:	Concurrent 0301452	
0301457	**Blood Bank – Immunohematology Lab**	**0**	**3**		

The course covers the study of blood group antigens and antibodies related to the ABO and Rh systems and other major blood group systems, identification of factors responsible for mismatches and the investigation of methods for blood processing, management and storage.

		3 CH	Prereq:	Completion of 90 credit hours	
0301471	**Biochemistry /Hospital Laboratory Practice**	**-**	**9**		

This course deals with instructions and practices of laboratory measures in clinical biochemistry and automation in an appropriate hospital laboratory. It is an application of material learned in the clinical biochemistry courses.

		3 CH	Prereq:	Completion of 90 credit hours+ 0301332	
0301471	**Biochemistry /Training**	**-**	**9**		

This course deals with instructions and practices of laboratory measures in clinical biochemistry and automation in an appropriate hospital laboratory. It is an application of material learned in the clinical biochemistry courses.

			3 CH	Prereq:	Completion of 90 credit hours
0301472	**Clinical Microbiology/Hospital Laboratory Practice**	**-**	**9**		

This course practices techniques in an appropriate hospital laboratory for processing specimens for the isolation and identification of various microbe causing diseases in addition to techniques for antimicrobial susceptibility testing.

			2 CH	Prereq:	Completion of 90 credit hours
0301473	**Blood Bank Laboratory/ Hospital Laboratory Practice**	**-**	**6**		

This training course offers instructions and practice of laboratory procedures in a blood bank in an appropriate hospital laboratory.

			2 CH	Prereq:	Completion of 90 credit hours+ 0301452
0301473	**Blood Bank Laboratory/ Training**	**-**	**6**		

This training course offers instructions and practice of laboratory procedures in a blood bank in an appropriate hospital laboratory.

			3 CH	Prereq:	Completion of 90 credit hours
0301474	**Immunology and Serology/Hospital Laboratory Practice**	**-**	**9**		

This training course offers instructions and practice of laboratory procedures in immunology/serology in an appropriate hospital laboratory.

			1 CH	Prereq:	Completion of 90 credit hours
0301475	**Clinical Microscopy/ Hospital Laboratory Practice**	**-**	**3**		

This training course offers instructions and practice of laboratory procedures in an appropriate hospital laboratory. It covers identification of blood diseases, chemical and microscopic examination of body fluids such as urine, synovial, cerebrospinal, peritoneal, pericardial, and pleural fluids, and certain tissues.

				2 CH	Prereq:	Completion of 90 Cr. Hrs. + 0301353
	0301476	**Clinical Hematology/ Training**	**-**	**6**		

This training course offers instructions and practice of laboratory procedures in Hematology in an appropriate hospital laboratory.

				1 CH	Prereq:	Completion of 90 credit hours
	0301475	**Clinical Microscopy/ Training**	**-**	**3**		

This training course offers instructions and practice of laboratory procedures in an appropriate hospital laboratory. It covers identification of blood diseases, chemical and microscopic examination of body fluids such as urine, synovial, cerebrospinal, peritoneal, pericardial, and pleural fluids, and certain tissues.

				2 CH	Prereq:	Completion of 90 credit hours+ 0301342
	0301477	**Clinical Microbiology/ Training**	**-**	**6**		

This course practices techniques in an appropriate hospital laboratory for processing specimens for the isolation and identification of various microbe causing diseases in addition to techniques for antimicrobial susceptibility testing.

				2 CH	Prereq:	Completion of 90 credit hours+ 0301451
	0301478	**Immunology and Serology/ Training**	**-**	**6**		

This training course offers instructions and practice of laboratory procedures in immunology/serology in an appropriate hospital laboratory.