Course description in English language:

1. **Course number Course Name, No. of Credit Hours**
2. **Course Description**
3. **Prerequisite(s)**
4. **Corequisite**

❖ **Punctuations:**

(;) To separate within the course
(,) To separate within the same chapter.
(:) To be followed by items that belong to a main title.
(.) To end the short description.

A0161101 Arabic Communication Skills {3}
Language levels: phonological level, grammatical level, rhetorical level, orthographic level, comprehension and speaking; grammar exercises, nominal sentences, verbal sentences, kana and its sisters, Inna and its sisters, dual, masculine plural, feminine plural, indeclinable nouns, vocative, appositives; exercises in morphology, present participle and past participle; spelling and punctuation, dictionaries, listening and speaking.
Prerequisite: A0161100 Remedial Arabic.

A0161201 English Communication Skills {3}
Course Description: Grammar: question tags, present/future modals of possibility, futures overview, future continuous, future perfect, articles, adjectives, adverbs, if structures, expressing obligation, expressing ability, linking words of contrast; Vocabulary: family and non-family relationships, family birth order in relation to career choices and interests, making adjectives from nouns, work, 'after work' activities, old and new, films, film reviews, war, materials, risk, physical movements, free running, distances, dimensions; write an essay, notes, messages and a formal letter of application, use punctuation marks, capital letters and linking words properly, identify main ideas and details, guess the meaning of words from context, skim, scan for specific information and detail, make generalizations, see beyond the surface meaning, make inferences, identify opinion and attitude, make oral presentations, arguments and persuasive presentations, express agreement and disagreement, talk about future plans, make predictions, ask for someone's general opinion, ask for someone's specific opinion, present views and opinions, talk about materials, possession and inventions, pronounce words correctly, use proper intonation.
***Prerequisite*: A0161200 Remedial English.**

A0161401 Military Sciences {3}
The establishment and development of the Hashemite Kingdom of Jordan; the history of the Arab Legion; peacekeeping troops; preparing the nation for defense and liberation.
***Prerequisite*: None**

A0161301 National Education {3}
Concepts and terms; Geography of Jordan; contemporary political history of Jordan; Jordanian Society; Jordanian constitutional and democratic life; Jordanian national institutions; challenges facing Jordan; threats to civic life: fanaticism, extremism, terrorism, violence; corruption: definitions, types, causes, impact, and prevention.
***Prerequisite*: None**

A0161501 Islamic Culture {3}

Definition of the culture, characteristics of the Islamic culture, Islamic culture and other cultures; the sources of Islamic culture: The Holy Quran, Sunna, the Arabic language, history of Islam; fields of Islamic culture: faith, worship, morals; challenges facing the Islamic culture: orientalism, globalization, secularism; young people and the impacts of foreign cultures, women and Islam, Islam and terrorism.
***Prerequisite*: None**

A0161701 History of Jordan and Palestine {3}
The geography of Jordan and Palestine; Jordan and Palestine in ancient times, general historical look; Jordan and Palestine in the Mamluki period; Jordan and Palestine during the First World War (1914- 1918); Emirate of East Jordan (Transjordan); constitutional and legislative life in Jordan; Palestine under the British Mandate and Jordanian-Palestinian relations.
***Prerequisite*: None**

A0571401 Archeology & Tourism in Jordan {3}
Tourism definition; Classification of Tourism; The difference between tourist and other traveler's concepts, Travel types, The definition of Archaeology and archaeological sites; Archaeological surveys and excavations; Documentation; Jordan through the ages; Components of tourism in Jordan; Elements of tourist attractions in Jordan: Archeological sites, Natural sites, Natural reserves, Forests; Tourist movement and types in Jordan; Economical impact of tourism in Jordan.
***Prerequisite*: None**

A0411601 Legal culture and Human Rights {3}
Identifying the basic concepts of human rights in an analytical way, and then realistic clarify of the international & regional means dealing with human rights such as treaties; recommendations and international organizations that are in the process of formation such imperative rules & customs ; This course also address the content of human rights: the rights of the first generation such as right of living, the second-generation rights such as the right to work, and third-generation rights such as the right of environment; This course deals with the international ways to protect human rights in general ; in addition this subject will study the Jordanian constitution in way of examine its application for the international standards.
***Prerequisite*: None**

A0161901 Media and Public Relations {3}
The nexus between media and society in terms of the social, political, economic and cultural power of the media, the role of the media in giving people the opportunity to express their opinions and promote international relations. Communication and public relations: communication and its types, levels, forms, properties, fields, activities, physical and nonphysical (symbolic) environment, and obstacles to the communicative process. Public relations: its beginnings, development, principles, bases, importance, functions, planning, activities.
***Prerequisite*: None**

A0161203Physical and Health Education {3}
Defining health and fitness: physical education, health education; the cognitive, emotional, skill-oriented, and social goals of physical education; the history of physical education: ancient, medieval, and modern ages, the Olympics, Athletics in Jordan: nutrition and exercising; athletic injuries: bone, joint , muscle, skin injuries; special exercises for figure deformation; diseases related to lack of exercise: diabetes, obesity, being underweight, back pain, cancer; hooliganism: causes and recommended solutions for hooliganism.
***Prerequisite*: None**

A0161801 Environmental and Public Safety {3}
Introduction: The concept of the environment, its laws and relation to other sciences, primary and secondary components, cycle of elements in the natural environment, environmental problems, pollution of the environment, the problem of the depletion of environmental resources, principles of public health and diseases: the concept of public health, pathogens, viruses, bacteria, parasites, fungi, insects; The environment and pathology: organic, genetic, reproductive and psychological pathology. Nutrition and public health: types of food, malnutrition diseases, undesirable eating habits; The environment and public health from an Islamic perspective: Quranic verses and sayings of the Prophet.
***Prerequisite*: None**

A0111101 Mathematics (1) {3}
Introduction to Calculus; The rate of change of a function; Limits; Derivatives of algebraic functions and their applications; Integration; Application of the definite integral.
***Prerequisite*: None**

A0111201 General Physics (1) {3}
Introduction to Physics; Measurement and standards; Physical quantities; Vectors; Addition and multiplication of vectors; Motion in straight line: displacement, velocity, acceleration, finding the motion of an object, free fall, and vertical jumping; Motion in two dimensions; Projectile in Biomechanics; Newton's laws: Static C.G., Levers in the body, muscles and, and jaws of animals; Collisions.
***Prerequisite*: None**

A0341701 Computer Skills (Health) {3}
Topics in modern information technology: Emails and Internet Navigation; Social Networks; Image and Video editing; Context Management Systems; Useful Software applications on the cloud.
***Prerequisite*: A0331700 Remedial Computer Skills**

A0111301 General Chemistry {3}
Chemistry and the atomic/ molecular view of matter; scientific measurements; elements, compounds, and the periodic table; the mole and stoichiometry; molecular view of reactions in aqueous solutions: double-replacement reaction, redox reaction; the quantum mechanical atom: electron configuration, properties of elements; basics of chemical bonding: ionic bonds, covalent bonds, intermolecular forces; chemical kinetics: rates laws; acids and bases: strong acids, weak acids, buffers.
***Corequisite*: A0111302 Practical General Chemistry**

A0111302 Practical General Chemistry {1}
Basic laboratory techniques: safety rules, handling chemicals and glassware operating balances and Bunsen burner, write the scientific report ; identification of chemical substances: physical properties of matter as boiling point and melting point; physical separation of mixtures: distillation, extraction, recrystallization; empirical formula; chemical reaction : metathesis, solubility of salts; preparation of solutions: prepare a solution of known concentration; standardization of a base: titration, molecular weight determination; indicators, buffers and measurement of pH

A1112103 Pathology {3}
Introduction; Fundamental principles of pathophysiology; Cell and tissue injury; Acute and chronic inflammation; Tissue regeneration and repair; Disease of immune system; General pathology of infectious diseases; Neoplasia and hemodynamic disturbances, selected organ-system pathological disorders.
***Prerequisite*: A1112201 Physiology (1)**
***Corequisite*: A1112202 Physiology (2)**

A1111101 Anatomy & Histology {3}
General introduction and revision about the animal cell and cell division; Tissues of the body; Organization of the body; The cardiovascular system and the heart; Lymphatic system; Respiratory system; Digestive system; Urinary system; Male reproductive system; Female reproductive system; Nervous system; Musculo-skeletal system.
***Prerequisite*: A0111401 General Biology**
***Corequisite*: A1111105 Medical Terms**
A1111102 Practical Anatomy & Histology

A1111102 Practical Anatomy & Histology {1}
Epithelial tissues; Connective tissues; muscular and nervous tissues; Circulatory and lymphatic systems; Integumentary system; Digestive system part I; Digestive system part II; respiratory system; renal system; Reproductive system (male and female); The skeleton.

A0111401 General Biology {3}
Introduction: water and life; Macromolecules; The cell; Introduction to metabolism; Cellular respiration; DNA structure and replication; From gene to protein; cell cycle; Introduction to selected microorganisms (biodiversity), Phylogeny and the tree of life; Bacteria and archaea; Protists and fungi; Vascular plant and overview of animal diversity; animal tissues and systems.
***Corequisite*: A0111402 Practical General Biology**

A0111402 Practical General Biology {1}
Introduction to Biology Lab; Compound light microscope; Preparing slides of: Plant cells, and animal cells; Macromolecules chemical properties; Cellular division; Animal tissues and Plant tissues; preparing bacterial smear; Algae, Fungi, and Bryophytes; Protozoan & Plants and animals Biodiversity.

A1111105 Medical Terms {1}
Introduction to Medical Terminology; Analyzing and Building of Medical terms: prefixes, roots, combining forms, and suffixes; The Organization of the Body; Integumentary System; Skeletal System; Muscular System; Digestive System; Cardiovascular System; Lymphatic system and Immunity; Respiratory System; Urinary System; Reproductive System; Nervous System; Endocrine system.

A0914501 First Aid {1}
Introduction to first aid; Patient assessment and cardiopulmonary resuscitation; Transport and moving the injured emergency respiratory wounds; Bleeding and trauma emergencies; esoteric injuries; Musculature and structural environmental emergencies
Prerequisite: A1112103 Pathology

A1111601 Organic Chemistry {3}
Introduction to organic chemistry: Bonding: Polarity, Structural formulas, Isomerism, and Hybridization; Classification of organic compounds; Aliphatic compounds: Nomenclature and reactions, Alkanes, alkenes, alkynes, and cycloalkanes; Aromatic compounds; Alcohols; Ethers; Aldehydes; Ketones; Carboxylic acids; Esters; Acyl halides; Amides; Amines.
Prerequisite: A0111301 General Chemistry

A1112101 Light Microscopic Techniques {2}
Introduction; principels and aims of histological preparation to observe normal and pathological tissue architecture; Basic steps of tissue preparation required to preserve the architecture of the tissue: Fixation, tissue processing, sectioning, embedding, staining for microscopic examination required to reveal the different cellular and components of the tissues; Other microscopic preparation of fluid samples and bone; Automation in light microscopy techniques used in clinical lab. Management, technical faults and remedies.

***Prerequisite*: A1111101 Anatomy & Histology**
***Corequisite*: A1112102 Practical Light Microscopic Techniques**

A1112102 Practical Light Microscopic Techniques {1}
Introduction and safety regulations; Basic histological techniques; Fixation; Dehydration; Washing; Clearing; Paraffin Infiltration and Embedding; Microtome; Spreading the sections and mounting of sections to glass slides; training in the using of: microtome, embedding center, cryostat, cytospin centrifuge.

A0912501 Biostatistics
This is both an introduction and review of biostatistics that provides an introduction to selected important topics in biostatistical concepts and reasoning. This course represents an introduction to the field and provides a survey of data and data types. Specific topics include descriptive statistics both numerical and graphical methods of data sets, measures of central tendency and variability, probability distributions, sampling, estimation, confidence intervals and hypothesis testing. While there are some formulae and computational elements to the course, the emphasis is on interpretation and concepts.
Prerequisite: A0111101 Mathematics (1)

A1112201 Physiology (1) {3}
Introduction to human physiology, homeostasis and feedback mechanisms; Cell structure; Body fluids and membrane transport; Nervous system; Autonomic nervous system; Muscles; heart and circulation; Cardiac output and blood pressure; Respiratory system; Introduction to the immune system.
***Prerequisite*: A1111101 Anatomy & Histology**

A1112202 Physiology (2) {2}
Continuation to physiology 1: human central nervous system, special senses; endocrine system; digestive system; urinary system; male and female reproductive system.
***Prerequisite*: A1112201 Physiology (1)**
***Corequisite*: A1112203 Practical Physiology**

A1112203 Practical Physiology {1}
Introduction osmosis; blood grouping; coagulation tests; blood cell count; differential WBC count; electrocardiogram; sensory physiology; reflexes; special senses; spirometry; ovulation test; pregnancy test; sperm count; motility& morphology.

A1112301 Biochemistry (1) {2}
Introduction to biochemistry; Biological oxidation; Carbohydrates: chemistry of carbohydrates, digestion and absorption of carbohydrates metabolism of carbohydrates, diabetes mellitus; lipids: chemistry of fatty acids, digestion and absorption of lipids, lipids metabolism, hyperlipidemia and fatty liver. Introduction; enzymes; amino acids: chemistry of amino acids, inborn errors of amino acids metabolism, protein structures; Molecular biology: nucleic acids structures and metabolism, central dogma of molecular biology, DNA replication, gene replication, gene expression.
***Prerequisite*: A0111401 General Biology**
A1111601 Organic Chemistry

A1112302 Biochemistry (2) {2}
***Prerequisite*: A1112301 Biochemistry (1)**
***Corequisite*: A1112303 Practical Biochemistry**

A1112303 Practical Biochemistry {1}
Introduction and safety regulations; Biologically important chemical compounds; qualitative and quantitative determination of carbohydrate: glucose fructose, sucrose, starch; qualitative and quantitative determination of lipids: saturated and unsaturated fatty acids; qualitative and quantitative determination of proteins: amino acids, enzymes, and nucleic acids.

A1112602 Analytical Chemistry {2}
Introduction; Analytical process; Chemical measurements; Math Toolkit; Statistics; Gravimetric and Combustion analysis; Acid base reactions; buffers; Acid base titrations; Polyprotic Acid.
***Prerequisite*: A1111601 Organic Chemistry**
***Corequisite*: A1112603 Practical Analytical Chemistry**

A1112603 Practical Analytical Chemistry {1}
Introduction; Glass calibration; Statistical Evaluation of analytical results; Gravimetric determination of Chloride; Gravimetric determination of Nickel; Measuring of the calcium ion content in dried milk powder; Measuring of vitamin C concentration by Redox titration; Precipitation titration.

A1112604 Medical Laboratory Instrumentation and Methodology {2}
Introduction to analytical methods; Important definitions and calculations in analytical procedures; Spectroscopy: U.V.-visible spectrophotometer, flurometer, flame photometer, infrared radiation; Chromatographic techniques: TLC, affinity, ion exchange, gel permeation, High Performance Chromatography, Gas Chromatography; Electrophoresis, Centrifugation; Immunoassay; Potentiometer; Automation in medical laboratory.
***Prerequisite*: A1112602 Analytical Chemistry**

A1113401 Microbiology {3}
Introduction: discovery of microorganisms, definition of microorganisms, bacterial morphology; Structures of bacteria, viruses, and fungi; Bacterial growth and environmental conditions influencing microorganisms: growth; Microbial genetics and mutagenesis; Biofilm formation and quorum sensing; Sterilization and disinfection; Bacterial metabolism; Host pathogen interaction; Mechanisms of pathogenesis; Common pathogenic microorganisms: spread, route of infection, symptoms, diagnosis and treatments. Bactria as normal flora.
***Prerequisite*: A1112202 Physiology (2)**
***Corequisite*: A1113402 Practical Microbiology**

A1113402 Practical Microbiology {1}
Introduction in microbiology Lab & safety; Bacterial smear preparation & staining: simple stain, gram stain, spore and capsule staining, acid fast stain; Bacterial cultivation & types of media: Bacterial isolation technique: streak method, pour method, spread method; Cultivation of anaerobic bacteria; Biochemical for bacterial identification: coagulase, catalase, oxidase: Antibiotic susceptibility test; Bacterial counting; chemical test for antimicrobial activity; Methods of sterilization.

A1113305 Diagnostic Microbiology {3}
Introduction: host pathogen interaction, taxonomy of microorganisms and their importance in clinical microbiology; The microorganisms most frequently isolated in clinical specimens including: the disease they cause, culture and isolation requirements, biochemical, molecular and serological methods used in their identification; Diagnosis by organ system for infection of: blood, gastrointestinal tract, respiratory system, central nervous system, eye, ears and sinuses, urinary tract system, skin and soft tissue; An in- depth study of sample management; Interpretation and reporting of microbiology cultures on clinical specimens ;Other microorganisms including :mycobacteria ,mycoplasma, chlamydia, Rickettsia. Advances in diagnostic microbiology test; Automation in clinical microbiology laboratory.
***Prerequisite*: A1113401 Microbiology**

A1112301 Biochemistry
***Corequisite*: A1113306 Practical Diagnostic Microbiology**

A1113306 Practical Diagnostic Microbiology {1}
Introduction and safety considerations; Types of bacterial isolation media; Bacterial staining techniques: Grame, capsule, spore, acid fast; Biochemical testing of bacterial isolates, enzyme activity test; serological test in bacterial serotyping. Identifying unknown causative agents in samples distributed to students.

A1113403 Medical Parasitology {2}
Introduction to Parasitology; Terms and definitions: parasitology, parasitism, and host relationship; Protozoa: Malaria, Leishmania, Toxoplasma, and others; Trematodes; Cestodes; Nematodes; Arthropodes; Signs and symptoms of parasitic disease; Serological tests in Parasitology.
***Prerequisite*: A1112202 Physiology (2)**
***Corerequisite*: A1113404 Practical Medical Parasitology**

A1113404 Practical Medical Parasitology {1}
Introduction; Types of Specimens, Types of laboratory tests: egg counts, Larval diagnosis, and serological tests; Practical classes on the diagnosis of Parasites of medical importance: Protozoa, Trematodes, Cestodes, Nematodes, and Arthropodes.

A1113301 Clinical Chemistry (1) {3}
Introduction to clinical biochemistry; sampling and types of specimens; Fluid and electrolytes balance; Renal function tests; liver function tests; Diabetes mellitus and hypoglycemia; Calcium metabolism and Bone diseases; Plasma proteins and clinical enzymology; acid-base balance; Cardiac performance; Clinical cases.
***Prerequisite*: A1112301 Biochemistry**
A1112103 Pathology
***Corequisite*: A1113302 Practical Clinical Chemistry (1)**

A1113302 Practical Clinical Chemistry (1) {1}
Introduction to clinical biochemistry laboratory; Laboratory tests: handling patient samples, interpretation the results, diagnose the disease; Spectrophotometry; Flamephotometery: Electrolytes assay:(sodium and potassium); renal function tests: complete urine analysis, serum creatinine, urea, uric acid.

A1113303 Clinical Chemistry (2) {3}
Disorders of plasma lipids and lipids profile; cancer and tumor markers; In-born errors of metabolism; Free radicals and antioxidants; anemia and CBC; Coma; Clinical endocrinology: pituitary gland disorders, adrenal gland disorders, thyroid gland disorders, gonads hormones, GIT hormones: Clinical nutrition: assessment of nutritional state, nutritional support, parenteral nutrition, malabsorption, obesity; Clinical cases.
***Prerequisite*: A1113301 Clinical Chemistry (1)**
***Corequisite*: A1113304 Practical Clinical Chemistry (2)**

A1113304 Practical Clinical Chemistry (2) {1}
Introduction; liver function tests: total protein, albumin, liver enzymes; Cardiac assessment: troponin, cardiac enzymes; Lipids profile: triglycerides, total cholesterol, HDL-cholesterol, LDL-cholesterol.

A1113501 Diagnostic Hematology (1) {3}
Haemopoiesis; Erythropoiesis and general aspects of anemia; Hypochromic anemias; Iron overload; Megaloblastic anemias and other macrocytic anemias; Hemolytic anemias; Genetic disorders of hemoglobin; Aplastic anemia and bone marrow failure; Special laboratory testing & Automation in Hematology.
***Prerequisite*: A1112202 Physiology (2)**
A1112103 Pathology

A1113502 Diagnostic Hematology (2)
Introduction to white cells types and formation; granulocytes monocytes and their benign disorders; Lymphocytes and their benign disorders; The spleen; The etiology and genetics of hematological malignancies; Management of hematological malignancy; Acute myeloid leukemia; Chronic myeloid leukemia; Myeloproliferative disease; Myelodysplasia; Acute lymphoblastic leukemia; The chronic lymphoid leukemia's; Hodgkin lymphoma; Non-Hodgkin lymphoma; Multiple myeloma and related disorders; Introduction to platelets; Blood coagulation and hemostasis; Bleeding disorders caused by vascular and platelet abnormalities; Coagulation disorders; Thrombosis.
***Prerequisite*: A1113501 Diagnostic Hematology (1)**
***Corequisite*: A1113503 Practical Diagnostic Hematology (2)**

A1113503 Practical Diagnostic Hematology {1}
Blood collection process; Hematological technique required for routine clinical laboratory work such as erythrocytes count, hemoglobin determination, hematocrit determination, calculation of red cell indices; Osmotic fragility test; reticulocyte count; Peripheral blood smear preparation and examination; White blood cell count, Platelets count, Automated counting and complete blood count test; Some special staining performed in blood films; examination of pre-prepared abnormal slides of some hematological disorders.

A 1113506 Blood Transfusion & Blood Banking {2}
Introduction to blood bank; the basic concepts in blood banking; reagents used in blood bank; ABO blood group system, Rh blood group system; Minor blood group systems; Compatibility testing in blood transfusion: ABO grouping, Rh typing, cross matching, antibody screening and antibody identification. Transfusion practice: donor selection, testing of blood units, separation of blood components, storage of blood components; quality control in blood bank; adverse reaction of blood transfusion and in pregnancy; Organ transplantations and methods of rejections; HLA typing, bone marrow transplantation.
***Prerequisite*: A1113501 Diagnostic Hematology (1)**
***Corequisite*: A1113507 Practical Blood Transfusion & Blood Banking**

A1113507 Practical Blood Transfusion & Blood Banking {1}
Introduction to blood bank: safety and phlebotomy in blood bank; ABO forward and reverse grouping; Rh-D typing and weak D antigen determination procedure; Direct and Indirect coombs test; Cross-match test; Antibody screen test; Antibody identification test; Local visit to governmental blood bank facility.

A1113504 Immunology & Serology {3}
Introduction to immunology; basic principle; immune response; Innate and adaptive immune response, humoral Hypersensitivity, Tissue transplantation and Rejection, :and cellular immune response; immunological disorder Tolerance and Autoimmune disease; Tumor Immunology and AIDS.
***Prerequisite*: A1113401 Microbiology**
***Corequisite*: A1113505 practical Immunology &Serology**

A1113505 Practical Immunology& Serology {1}
Introduction to serological testing; Antigen- Antibody interactions; Agglutination test; Precipitation techniques; ELISA; and Immunoblot. Serological methodologies for microbial infection, and autoimmune diseases diagnosis. Principles of Immunohistochemistry and Flow cytometry. Lymphocyte separation.

A1113405 Diagnostic Molecular {3}
Introduction and review to molecular biology: DNA and RNA structure, central dogma of biology, DNA replication; human genes and chromosomal arrangements; Genetic regulation and epigenetics; Diagnostic molecular technology: PCR, real-time PCR, DNA sequancening, karyotyping, hybridizations, and cloning; Introduction to cytogenetics and applications; recent technology in cytogenetics and molecular pathology.
***Prerequisite*: A0111401 General Biology**
***Corequisite*: A1113406 Practical Diagnostic Molecular**

A1113406 Practical Diagnostic Molecular Biology {1}
Introduction to molecular biology lab and safety issues; DNA and RNA extraction; Polymerase chain reaction technique; Gel electrophoresis for DNA and RNA; Real-time PCR; DNA karyotype; Tissue culture and applications, Hybridization applications and blotting.

A1114201 Clinical Endocrinology {3}
Introduction to Endocrinology; Biochemistry of hormones; Mechanism of hormonal action; Pituitary gland hormones; Adrenal gland hormones; Thyroid gland hormones; Hormonal regulation of calcium; Male and female reproductive gland hormones; Pancreas hormones; Gastrointestinal hormones.
***Prerequisite*: A1112201 Physiology (1)**
***Corequisite*: A1112103 Pathology**

A1114401 Medical Virology and Mycology {2}
Introduction to virology and mycology; Pathogenesis of virus infections; Families and classifications of viruses: Envelope DNA viruses, non-envelope DNA viruses, envelope RNA viruses, non-envelope RNA viruses; Methods for cultivations, diagnosis, and preventions of viruses; Types of fungi; classification of fungi: cutaneous mycosis, subcutaneous mycoses, systemic mycoses, opportunistic mycoses; Isolations and cultivations of fungi; Laboratory diagnosis, Control of mycological infection.
Prerequisite: A1113401 Microbiology

A1114301 Toxin and Body Fluid Analysis {2}
Introduction to Toxicology; management of poisoned patients; Industrial and household toxicology; Heavy metals toxicology; Drug toxicology; Laboratory detection of toxins drug levels; Laboratory analysis of seminal fluid; Laboratory analysis of CSF; Laboratory analysis of serous fluids: Pericadium, pleural and peritoneum fluids; Urine analysis; other body fluid laboratory applications and Automations.
***Prerequisite:* A1113303 Clinical Chemistry (2)**

A1114605 Quality Control & Laboratory Management {3}
Introduction to quality system essentials; Facility and space organization management; Equipment quality control; Inventory and purchasing quality management; Documents and records managements; Process and laboratory quality assurance for: qualitative testing, seme- qunatitive testing, and quantitative testing; Calibration, accuracy, and limitation in analytical procedure; occurrence management; Assessment management and accreditation.
***Prerequisite*: A1113303 Clinical Chemistry (2)**

A1114606 Ethics &Safety Regulations in Medical Laboratory Sciences {2}
Introduction to ethic in clinical sittings; Regulation and laws (standard framework in laboratory medicine); confidentiality and access to information; Errors and fault; Ethical considerations regarding organ transplantation, samples and human tissue usage; A brief review of ethics in medical research; Introduction to laboratory safety; Medical device safety; Biological safety, including hazard and waste managements; Chemical safety, including hazard and waste management; Physical safety managements; Radiation safety managements; Risk identification and assessments; Personal protective equipment.
Prerequisite: A1113401 Microbiology

A1114607 Seminar in Biomedical Sciences {3}
Introduction to scientific research; Grant proposal writing; Types of scientific research; Research articles organization and writing; Publication data bases; Students select a project offered by the Department to practice

writing of grant proposal; The student at the end of the course must give a seminar, on published research article in any topic of interest.
***Prerequisite*: A1113303 Clinical Chemistry (2)**

A1114700 Field Practical Training (1) {6}
Field training in Clinical Biochemistry for 3 credit hours, the candidates will observe and practice technical skills and experiences in all field of laboratory diagnosis. The candidates will then be able to carry out independently all the necessary laboratory investigations.
Prerequisite: 120 credit hrs.
A1113405 Diagnostic Molecular Biology
A1113303 Clinical chemistry (2)
A1113502 Diagnostic Hematology (2)
A1113504 Immunology & Serology
A1113305 Diagnostic Microbiology

A1114701 Field Practical Training (2) {6}
Field training in Diagnostic Microbiology for 3 credit hours, enable the candidates to acquire technical skills and experiences in all field of laboratory diagnosis. The candidates will then be able to carry out independently all the necessary laboratory investigations.
***Corequisite*: A1114700 Field Practical Training (1)**

A1114302 Biotechnology Applications in Laboratory Medicine {3}
Introduction to biotechnology; cell and gene expression; recombinant DNA technology and its applications; recent methodological approaches used in DNA and protein analysis; animal, plant, environmental, and medical biotechnology; cloning and genetic engineering; plant genetic engineering; gene therapy; vaccines; Technologies monoclonal antibodies production. in assested reproduction; Technological applications in forensic medicine.
***Prerequisite*: A1112302 Biochemistry (2)**

A0612207 Human Growth & Development {3}
This course is designed to introduce students to the main concepts that are related to growth and development of human throughout the life span. It focuses on the biological, psychosocial, cognitive, moral and spiritual characteristics of each developmental stage. The course will introduce the students to the competencies necessary to help the individuals of specific developments period to attain optimal health. The framework of the course will be based on the concept of health maintenance and promotion. Teaching will be promoted using lectures, group discussion, and case studies.

A0612302 Nutrition in Health and Disease {3}
This course is designed to provide the nursing student with the essential knowledge about the importance of nutrition in health and illness. Students will be able to identify the basic nutrient elements and their important for individual through the life span. Students will critically discuss factors affecting individual nutritional habits and use evidence-based strategies to educate patients and their families. Students will also discuss the significance of Anthropometric measurement to assess nutritional status. They will also evaluate the nursing role with regard to nutrition support and discuss relevant evidence related to nutrition and nursing care. Several teaching strategies will be used to promote students' learning including lectures, projects and demonstration.

A0161100 Remedial Arabic Language {3}
The concept of language and its levels, comprehension and speaking; grammar exercises; nominal sentences, verbal sentences, kana and its sisters, inna and its sisters, masculine plural, feminine plural, singular, dual,

numbers, appositives; punctuation marks, exercises in morphology (present and past participles); spelling issues (Hamza/glottal stop writing): conjunctive Hamza (Hamza was) and Hamza cat', alef following group waw, *alif layyinah* ('flexible alif') and nunation (tanwin).
***Prerequisite*: None**

A0161200 Remedial English Language {3}
Grammar: auxiliary verbs, present simple, present continuous, past simple, past continuous, future forms for personal plans, present perfect simple, present perfect continuous, past perfect simple; vocabulary: friendship, relationships, using a computer, quiz shows, T.V programs, newspapers, houses, adjectives describing places, compound nouns associated with appliances, spare time activities, the description of books and films, food, eating out , write a paragraph, distinguish between formal and informal letters, write informal emails, use punctuation marks, capital letters and linking words properly, identify main ideas and details, guess the meaning of words from context, skim, scan for specific information and detail, make generalizations, see beyond the surface meaning, make inferences, identify opinion and attitude, make oral presentations, arguments and persuasive presentations, express agreement and disagreement, make comparisons, narrate events, present views and opinions, make formal phone calls, recommend restaurants, pronounce words correctly, use proper intonation.
***Prerequisite*: None**

A**0331700 Remedial Computer Skills {3}**
Introduction to basic computer hardware and software; copyrights; Windows operating system; Microsoft Office: Word, Excel, Power point, Access; Introduction to Internet.
***Prerequisite*: None**