

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.

0121161 Communication Skills in English (1) {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: 0171100 Remedial English

0161101 Communication Skills in Arabic (1) {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: 0161100 Remedial Arabic

0161200 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

0161201 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

0152102 Communication Skills in English (2) {3}

Grammar: making comparisons, passives, reported speech, relative clauses, gerunds, infinitives; Vocabulary: moving and travelling, expressions with go, excess, food, cooking, verb phrases about money, prefixes, success, leadership, personality descriptions, phrasal verbs with three parts, crime, law, insurance, newspaper headlines, compound adjectives; Write an essay, a formal letter and a letter of complaint, distinguish between formal and informal language, 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, narrate events, make oral complaints, present views and opinions, pronounce words correctly, use proper intonation.

(Prerequisite: 0121161 Communication Skills in English (1

0162102 Communication Skills in Arabic (2) {3}

Definition of the Arabic language and its levels; Understanding and comprehending extracts; Practicing syntax and morphology: the style of command and demands; Unconditional morphology relevant to interrogative cases; “kad”, [k&d] and its sisters; Adjectival, exaggerated expressions; Adverbs of time and place, the forms of “al-haser” [al-haser]; Dictation exercises; The conditions of writing “al-hamza” (the glottal stop); Numbers; composition, essay writing, listening and spoken extracts.

(Prerequisite: 0161101 Communication Skills in Arabic (1

0161300 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

0162301 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

0411100 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

0132200 Psychology and Life Sociology Science {3}

Human behavior; Fields of psychology; Main approaches to human behavior; Introduce skills based on the understanding of human behavior; Teaching students these skills related to the challenges facing students in their everyday life such as: problem–solving, self–confidence, coping with stress, mental health, establishing healthy relationships with others, motivation, and linking all these terms to real life through discussion and application.

Prerequisite: None

0162302 Media and Public Relations {3}

The nexus between media and society in terms of the social, political, economical 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

0561500 Tourism & Archaeology {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

0161303 Sport and Health {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

0162305 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

0162306 Science and Life {3}

Origin and evolution of life: Origin of universe, solar system formation and the origin of the earth, prebiotic chemistry, water for life sustenance, Importance of carbon, the early atmosphere; water and energy for life: water –an essential liquid, energy – renewable/non-renewable energy– resources and their conservation; Nutrients and household chemicals: nutrients (food aspects), household chemicals (in daily life); Physical parameters and household appliances: perception of distance, mass, time, temperature and force, refrigerators, pumps and resistive heaters; Safety and disposal of electrical/electronic items; Industry and technology in daily life: contributions of polymer industry – natural and synthetic polymers, pharmaceuticals and cosmetics, generic and herbal drugs, drug abuse and its consequences; agrochemicals and soil

supplements (fertilizers), crop protectors (pesticides and herbicides) for improved agriculture productivity; Relevance of organic farming, contribution of electronic industry.

Prerequisite: None

Mathematics (1) {3} 0111101

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

0111201 General Physics {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

0341207 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: 0331200 Remedial Computer Skills.

0611104 First Aid {1}

Introduction to first aid; Patient assessment and cardiopulmonary resuscitation; Transporting and moving the injured emergency respiratory wounds; Bleeding and trauma emergencies; Esoteric injuries; Musculature and structural environmental emergencies

Prerequisite: 0913330 Pathology

0911511 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.

**0911512 General Chemistry Lab {1}**

Basic laboratory techniques: safety rules, handling chemicals and glassware operating balances and Bunsen burner, writing 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: preparing a solution of known concentration; Standardization of a base: titration, molecular weight determination; Indicators, buffers and measurement of pH

Corequisite: 0911511 General Chemistry

0913330 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: 0922221 Physiology (2)

0921117 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:0921713 General Biology.

Corequisite: 0921715 Medical Terminology

0921713 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.

0921714 General Biology Lab {1}

Introduction to Biology Lab; Compound light microscope; Preparing slides of: Plant cells and animal cells; chemical properties macromolecules; Cellular division; Animal tissues and Plant tissues; Preparing bacterial smear; Algae, Fungi, and Bryophytes; Protozoa & Plants and animals Biodiversity.

Corequisite: 0921713 General Biology

**0921715 Medical Terminology {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 Immune System; Respiratory System; Urinary System; Reproductive System; Nervous System; Endocrine system.

Prerequisite: None

0921118 Anatomy & Histology Lab {1}

Epithelial tissues; Connective tissues; Muscular and nervous tissues; Circulatory and lymphatic systems; Integumentary system; Digestive; Respiratory system; Renal system; Reproductive systems (male and female); The skeleton; The body cavities.

Corequisite: 0921117 Anatomy & Histology

0921616 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: 0911511 General Chemistry

0922111 Light Microscopic Techniques {2}

Introduction; Principles 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 trouble shooting.

Prerequisite: 0921117 Anatomy & Histology

0922112 Light Microscopic Techniques Lab {1}

Introduction and safety regulations; Basic histological techniques; Fixation; Dehydration; Washing; Clearing; Paraffin Infiltration and Embedding; Microtome; Spreading the sections and mounting of sections on glass slides; training on using: microtome, embedding center, cryostat, cytospin centrifuge.

Corequisite: 0922111 Microscopic Techniques.

0922213 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; Pancreatic hormones; Gastrointestinal hormones.

Prerequisite: 0922220 Physiology (1)

Corequisite: 0922221 Physiology (2)

0922220 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; Immune system.

Prerequisite: 0921117 Anatomy & Histology

0922221 Physiology (2) {2}

Human central nervous system, Special senses; Endocrine system; Digestive system; Urinary system; Male and female reproductive system.

Prerequisite: 0922220 Physiology (1)

0922222 Physiology Lab {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.

Corequisite: 0922221 Physiology (2)

0922325 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.

Prerequisites: 0921713 General Biology

0921616 Organic Chemistry

0922326 Biochemistry (2) {2}

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: 0922325 Biochemistry (1)

**0922327 Biochemistry Lab {1}**

Introduction and safety regulations; Biologically important chemical compounds; Qualitative and quantitative determination of carbohydrates: glucose, fructose, sucrose, starch; Qualitative and quantitative determination of lipids: saturated and unsaturated fatty acids; Qualitative and quantitative determination of proteins: amino acids, enzymes; nucleic acids.

Corequisite: 0922326 Biochemistry (2)

0922623 Analytical Chemistry {3}

Introduction; Analytical process; Chemical measurements; Math Toolkit; Statistics; Gravimetric and Combustion analysis; Acid base reactions; Buffers; Acid base titrations; Polyprotic Acid.

**Prerequisite: 0921616 Organic Chemistry
0911511 General Chemistry**

0922624 Analytical Chemistry Lab {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.

Corequisite: 0922623 Analytical Chemistry

0923337 Clinical Biochemistry (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: 0922326 Biochemistry (2)

0923338 Clinical Biochemistry Lab (1) {1}

Introduction to clinical biochemistry laboratory; Laboratory tests: handling of patient samples, interpretation of the results, Diagnosis of the disease; Spectrophotometry; Flamephotometry; Electrolytes assay:(sodium and potassium); Renal function tests: complete urine analysis, serum creatinine, urea, uric acid.

Corequisite: 0923337 Clinical Biochemistry (1)

0923339 Clinical Biochemistry (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, Gonadal hormones, GIT hormones; Clinical nutrition:

assessment of nutritional state, nutritional support, parenteral nutrition, malabsorption, obesity; Clinical cases.

Prerequisite: 0923337 Clinical Biochemistry (1)

0923340 Clinical Biochemistry Lab (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.

Corequisite: 0923339 Clinical Biochemistry (2)

0923431 Microbiology {3}

Introduction: discovery of microorganisms, definition of microorganisms, bacterial morphology; Structures of microorganisms: bacteria, viruses, and fungi; Bacterial growth and environmental conditions influencing 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; Bacteria as normal flora.

Prerequisite: 0922221 Physiology (2)

0922326 Biochemistry (2)

0923432 Microbiology Lab {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 tests for bacterial identification: coagulase, catalase, oxidase; Antibiotic susceptibility test; Bacterial counting; Chemical test for antimicrobial activity; Methods of sterilization.

Corequisite: 0923431 Microbiology.

0923433 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: 0923431 Microbiology

0923434 Diagnostic Microbiology Lab {1}

Introduction and safety considerations; Types of bacterial isolation media; Bacterial staining techniques: Gram, 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.

Corequisite: 0923433 Diagnostic Microbiology

0923435 Parasitology {2}

Introduction to Parasitology; Terms and definitions: parasitology, parasitism, and host relationship; Protozoa: Malaria, Leishmania, Toxoplasma, and others; Trematodes; Cestodes; Nematodes; Arthropods; Signs and symptoms of parasitic disease; Serological tests in Parasitology.

Prerequisite: 0922221 Physiology (2)

0923436 Parasitology Lab {2}

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 Arthropods.

Corequisite: 0923435 Parasitology

0923541 Hematology {3}

Hemopoiesis; 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 Introduction to white cells types and formation; granulocytes and 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: 0922221 Physiology (2)

0922326 Biochemistry (2)

Corequisite: 0923542 Hematology Lab

0923542 Hematology Lab {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.

Corequisite: Hematology 0923541

0923543 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:0923541 Hematology

0923544 Blood Transfusion & Blood Banking Lab {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.

Corequisite: 0923543 Blood Transfusion & Blood Banking

0923545 Immunology & Serology {3}

Introduction to immunology; Basic principle; Immune response: innate and adaptive immune response, humoral and cellular immune response; Immunological disorder: Hypersensitivity, Tissue transplantation and Rejection, Tolerance and Autoimmune disease; Tumor Immunology and AIDS.

Prerequisite: 0923431 Microbiology

0923546 Immunology Lab {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.

Corequisite: 0923545 Immunology& Serology

0924351 Biotechnology {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; Monoclonal antibodies production.



Prerequisite: 0923431 Microbiology

0922326 Biochemistry

0924450 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: 0923431 Microbiology

0922628 Medical Instrumental Analysis {2}

Introduction to analytical methods; Important definitions and calculations in analytical procedures; Spectroscopy: U.V.–visible spectrophotometer, fluometer, flame photometer, infrared radiation; Chromatographic techniques: Thin Layer Chromatography, affinity, ion exchange, gel permeation, High Performance Chromatography, Gas Chromatography; Electrophoresis, Centrifugation; Immunoassay; Potentiometer; Automation in medical laboratory.

Prerequisite: 0922623 Analytical Chemistry

0922629 Medical Instrumental Analysis Lab {1}

Introduction and safety consideration, Spectroscopy: UV –visible, flame photometer, Infrared Radiation; Chromatographic Techniques; High Performance Chromatography, Gas Chromatography; Electrophoresis; Centrifugation; pH meter; Discussion in instrumental integrated system used in clinical laboratory.

Corequisite: 0922628 Medical Instrumental Analysis

0924625 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, semi-quantitative testing, and quantitative testing; Calibration, accuracy, and limitation in analytical procedure; Occurrence management; Assessment management and accreditation.

Prerequisite: 0923339 Clinical Biochemistry (2)

0923541 Hematology

0914304 Toxicology {2}

Introduction to Toxicology; Disposition of toxic compounds; Metabolism of foreign compounds; Types of exposure and response; Drugs as toxic substances; Industrial toxicology; Food additives and contaminants; Pesticides; Environmental pollutants; Natural products; Household products; Toxicity testing and risk assessment.

Prerequisite: 0923541 Hematology

0924653 Project & Seminar {3}

Introduction to scientific research; Grant proposal writing; Types of scientific research; Research articles organization and writing; Publication databases; Students will select a project offered by the Department to practice writing of grant proposal; At the end of the course The student must give a seminar on published research article in any topic of interest.

Prerequisite: 0923337 Clinical Biochemistry (1)

0923541 Hematology

0923431 Microbiology

0924855 Field Practical Training (1) {6}

Field training in Clinical Biochemistry for 6 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 all the necessary laboratory investigations independently.

Prerequisite: To finish 110 credit hours.

0923433 Diagnostic Microbiology

0923541 Hematology

0923339 Clinical Biochemistry (2)

0924856 Field Practical Training (2) {6}

Field training in Diagnostic Microbiology for 6 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 all the necessary laboratory investigations independently.

Prerequisite: 0924855 Field Practical Training (1)

0161100 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 (hamzat wasl) and hamza qat', alef following group waw, alif layyinah ('flexible alif) and nuation (tanwin).



Prerequisite: None

Remedial {3} English Language 0171100

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

331200 Remedial Computer Skills {3}0

Introduction to basic computer hardware and software; copyrights; Windows operating system; Microsoft Office: Word, Excel, Power point, Access; Introduction to Internet.

Prerequisite: None