



**(304101) General biology 101**

**3 credit hours**

This course introduces the principles and concepts of biology. Emphasis is on basic biological chemistry, cell structure and function, metabolism and energy transformation, genetics, evolution, classification, and other related topics.

**(306101) General Chemistry101**

**3 credit hours**

This course is designed to provide a survey of inorganic and physical chemistry and an introduction to organic chemistry for non-science and allied health majors.

**(902108) Medical Terminology**

**3 credit hours**

This course focuses on the principles of medical word building to help the student develop the extensive medical vocabulary used in health care occupations. Students receive a thorough grounding in basic medical terminology through a study of root words, prefixes and suffixes.

**(901215) Human Physiology**

**3 credit hours**

This course covers a range of topics that include organs, cells, biological compounds, and how they all interact to make life possible. It uses basic science to measure human responses to internal and external stimuli (such as changes in activity levels, varying environmental conditions, and disease processes), and applies this knowledge to the promotion of human health.

**(901320) Epidemiology &  
Biostatistics**

**3 credit hours**

This course will introduce the students to process of statistical data collection, organization, recording, and preparing data for statistical analysis, and then to use the required statistical procedures to test the preset hypothesis of the research. Subjects to be covered will include types of variables, types of samples, methods of data collection and the common statistical analysis in research applications. Statistical tests including descriptive and inferential statistics of both parametric and nonparametric variables will be covered; Statistical analysis by SPSS software will cover all the studied tests as a parallel laboratory computer-training. Tabulations and plots of results presentation followed by results interpretation and discussion will be the final step of this course.



**(306103) General Chemistry Laboratory 1** **1 credit hour**

This course provides an introduction to the laboratory study of the physical and chemical properties of matter; the principles and applications of gravimetric, volumetric, chemical, and quantitative analysis

**(304103) General Biology Laboratory 1** **1 credit hour**

Laboratory experiments deal with the topics covered by the theoretical part of the course such as microscope, installation of plant and animal cell, the detection of biological molecules, tissues and cell division (mitosis & meiosis).

**(306235) Organic Chemistry for non-chemistry student** **3 credit hours**

This course studies the structural formula and the main physical and chemical properties of basic organic compounds including aliphatic hydrocarbon compounds (cyclic and non-cyclic), aromatics, alcohols, amines, aldehydes, halides, ketones, and carbohydrates. The practical part of this course concentrates on studying the chemical properties of the above-mentioned compounds.

**(902119) Practical Human physiology** **1 credit hour**

The course introduces students to laboratory techniques in the study of physiology and provides demonstrations of processes learned in the Human Physiology lectures. Laboratory exercises cover a wide range of topics from classic experiments in muscle, nerve, and cardiac physiology to human exercise and ventilation studies. It provides hands-on experience for topics and principles of physiology presented in the lecture and experience working together in small groups to achieve each lab's objectives. It helps to learn some of the fundamental concepts of human physiology.

**(306211) Analytical Chemistry** **3 credit hours**

This course covers gravimetric, complexometric, volumetric, analysis such as acid base titration and standardization, oxidation-reduction, and precipitation titration. Also, it deals with potentiometer and spectrophotometric analysis. The practical part of the course provides the students with skills and application of the theoretical part.

**(902225) Microbiology** **3 credit hour**

This course will provide an introduction to microbiology: bacteria, viruses, and fungi. Major emphasis is placed upon bacteria: classification, genetics, morphology,

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physiology, and physical and chemical control. The course will also focus on the impact of microorganisms on humans, including their pathogenicity strategies and the host defense mechanisms used to combat infectious diseases.

**(902226) Microbiology Laboratory** **1 credit hour**

The practical microbiology course is designed to introduce the main essential laboratory techniques used in microbiology laboratories. This course includes a number of practical labs that begin with a preparatory session aims to discuss the main ideas related to safety procedures to be followed in microbiology laboratories. It covers aseptic techniques, isolation of a single colony, stained smears, culturing microorganisms, preparation of a pure culture, and studying microbial growth control methods.

**(902231) Histology & Tissue Sample Preparation** **3 credit hours**

This course deals with the structure and function of human tissues and organ systems, and the microscopic study of tissues and the tissue organization of organs in relation to their function using light microscopy ,it is also will provide overview of tissue processing. Tissue preparation for microscopic study, histochemistry, stains and stain technology is also included.

**(902232) Histology & Tissue Sample Preparation Laboratory** **1 credit hour**

The course aims to train students to recognize and interpret microscopic tissue images and understand how the cellular organization of organs enables them to tissue images and understand how the cellular organization of organs enables them to perform their specific functions.

**(902234) Pathology** **2 credit hours**

In this course, students will learn about general principles and terminology in the field of pathology. The student also recognizes the types of diseases, the state of their occurrence and their characteristics, and how the body responds to any stimuli from the external environment of the body. The abnormal and harmful effects of immune responses, tumors, infections and metabolic disorders are an important part of this course. In addition to that, the student learns how cell damage and death, acute and chronic inflammation, and cell repair and wound healing. The student also takes a good idea of the possible imbalances in the immune system, the physiology of the following devices: skin, cardiovascular, blood, lymphatic, respiratory, urinary, reproductive, digestive, structural, endocrine and nervous.

**(902235) Pathology Laboratory** **1 credit hour**

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Students will be learning about the preparation and staining of pathological samples and how to diagnose some pathological samples.

**(902261) Methods of Instrumental Analysis** **2 credit hour**

This course is designed to impart knowledge of clinical instrumentation, their use, and principles of detection, as well as instrumentation, maintenance, and calibration. The course will cover the main instruments used in clinical laboratories such as centrifuges, pipettes, balances, spectrophotometers, fluorometers, flow cytometers, ELISA readers, ion-selective electrodes, atomic absorption spectrophotometers, gel-electrophoresis setups, and chromatography systems.

**(902281) Biochemistry** **3 credit hours**

This course focuses on the general structural and functional properties of biomolecules such as, carbohydrates, lipids, amino acids, proteins and nucleic acids. During this course you shall be exposed extensively to major metabolic processes and pathways e.g. metabolism of carbohydrates (glucose, fructose, lactose, glycogen), lipids (fatty acids, cholesterol, lipoproteins, bile salts) Proteins (amino acids, urea synthesis, conversion of amino acids to specialized products), purines and pyrimidine their disorders and interrelationship in various situations, with emphasis on relevant clinical situation.

**(902282) Biochemistry Laboratory** **1 credit hour**

This course provides a detailed study of the chemical structures and vital functions of the major biochemical molecules, including sugars, proteins, and lipids. And also learn the laboratory methods of detection of these macromolecules.

**(902283) Clinical Chemistry 1** **3 credit hours**

This course is an introduction to general fundamentals and principles of clinical bioanalytical chemistry in health and diseases. It covers methods of analysis as well as the biochemical components of body fluids. Topics include analysis of blood electrolytes, blood gases, trace elements, Vitamins, plasma proteins, and lipids. Quality control and assurance are also covered in this course.

**(902284) Clinical Chemistry Laboratory 1** **1 credit hour**

This course provides the student with practical experience in the techniques of experimental clinical chemistry. For examples, list of experiments includes: Electrolytes ( $\text{Na}^+$ ,  $\text{K}^+$ ,  $\text{Cl}^-$ , and  $\text{Ca}^{++}$ ), Lipid Profile (TG, Total Cholesterol, and HDL

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Cholesterol), Iron (total Iron, and TIBC), Glucose, HbA<sub>1</sub>C, total plasma proteins, albumin fraction, uric acid... etc.

**(902317) Endocrinology**

**3 credit hours**

This is a comprehensive study of the endocrine system which will allow the student to integrate and better understand the functions of the other systems of the body. The relationship of the nervous system to the endocrine system is explored in the context of signaling within a multicellular organism. Also, the pathological conditions and diagnostic procedures associated with endocrine imbalance are investigated.

**(902318) Endocrinology Laboratory**

**1 credit hour**

This course gives the students an opportunity to practice on the laboratory tests used for the diagnosis of the more commonly encountered endocrine disorders. Identify the clinical disorders associated with each of the endocrine glands and the role of specific laboratory tests in their diagnosis.

**(902327) Medical Virology**

**3 credit hours**

The course covers the fundamental principles related to the interaction of mainly animal viruses with host cells and molecular events during viral replication. General topics include chemical and physical properties of viruses, virus classification, and cultivation of viruses, laboratory diagnosis and prevention and control of infection.

**(902328) Medical Parasitology**

**2 credit hours**

In this course of medical parasitology, students will study the parasites and protozoa that infect humans and the types of relationships between hosts and parasites. The course provides information about the taxonomy, epidemiology of human parasitic infections, life cycles, routes of transmission, pathogenesis, laboratory diagnosis, treatment and prevention. It focuses on the routinely used laboratory diagnostic methods, clinical picture, and treatment. Lectures will cover the fundamentals and diagnostic methods for each parasite. The practice and the importance of medical parasitology are explored through examples on water borne and food borne outbreaks.

**(902329) Medical Parasitology  
Laboratory**

**1 credit hour**

This course covers different methods of diagnosis of pathogenic parasites, including the use of light microscopy, wet droplets and serological assays, in addition to identifying methods of concentration and sedimentation, identifying some medical parasites that transmit parasitic infections. In addition, identifications of parasites eggs and the adult worms which could be detected sometimes.



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**(902371) Hematology 1**

**2 credit hours**

Students will be exposed to learn about hematopoiesis, cell morphology and hematologic evaluation of peripheral blood and bone marrow. In addition, students have to know about causes, mechanism of appearance, diagnosis and treatments of different types of anemias including microcytic anemia (Iron deficiency anemia, thalassemia, sideroblastic anemia and anemia of chronic diseases), Macrocytic anemia (Megaloblastic anemia and non-megaloblastic anemia), and Normocytic normochromic anemia (Hemolytic anemia). Furthermore, lecture and laboratory course integrates theory with application of hematology diagnostic procedures such as withdrawing the blood, measuring hemoglobin levels and counting RBCs, WBCs, PLTs and erythrocyte sedimentation rate (ESR). Also student should have knowledge about the interpretation, problem solving and correlation of laboratory findings with disease states.

**(902372) Hematology Laboratory 1**

**1 credit hour**

In this course, students will learn about the blood withdraw, recognize and differentiate cells. In addition, measuring hemoglobin levels and counting RBCs, WBCs, PLTs and erythrocyte sedimentation rate (ESR). Also student should have knowledge about the interpretation, problem solving and correlation of laboratory findings with disease states.

**(902373) Hematology 2**

**2 credit hours**

This course is considered complementary to hematology 1. Topics such as hemoglobinopathies, myelodysplastic syndromes, leukemia (acute and chronic), leukemoid reactions and hemostasis (its components and role of each component as well as the coagulation inhibition factors) will be provided for the students in details.

**(902374) Hematology Laboratory 2**

**1 credit hour**

Student will learn how to recognize and differentiate different types of normal cells and leukemic cells. In addition, laboratory procedures such as writing the blood film report for the normal and abnormal cases, counting of reticulocytes, sickling tests, bleeding time, clotting time, measuring prothrombin time and partial thromboplastin time will be provided.

**(902375) Blood Bank**

**2 credit hours**

This course deals with the bases of blood immunity, blood groups, types of antigens and antibodies, selection of blood donors, blood collection, treatment, storage and preparation of some of its components. The course covers the methods used to classify blood, such as the Rhesus factor, detection and identification of antibodies, anti-gluten testing, and identification of blood compatibility.

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**(902376) Blood Bank Laboratory**

**1 credit hour**

This course deals with laboratory methods to identify the different blood groups, matching tests and tests before blood donation and how to detect antibodies that may appear.

**(902377) Body Fluids & Urine  
Analysis**

**2 credit hours**

This course provides the student with the knowledge and laboratory skills required to function effectively in a Urinalysis and Body Fluid laboratory. Urinary and metabolic diseases as they relate to urinalysis findings will be discussed. An introduction to body fluids and their clinical significance will be examined. Specific diseases/disorders and associated abnormal findings will also be covered.

**(902378) Body Fluids & Urine  
Analysis Laboratory**

**1 credit hour**

In this course the students practice on physical and chemical analysis of urine, microscopic examination of urine sample to detect the presence of urinary sediments, abnormal number of cells, bacteria or parasites.

**(902385) Clinical Chemistry 2**

**2 credit hours**

This course is a continuation of Clinical Chemistry I. It provides advanced knowledge of the body fluids chemistry in healthy and diseased people. The theoretical lectures help in explanation of the biochemical alterations under pathological conditions, while the practical part covers the most important laboratory investigations of various diseases. Topics include kidney and liver function tests, gastrointestinal disorders, Gout and hyperuricaemia, tumour markers, endocrine disorders, Clinical biochemistry in pediatrics and the elderly.

**(902386) Clinical Chemistry  
Laboratory 2**

**1 credit hour**

This course aims to deepen the student's understanding of the principles of the quantitative analytic chemistry of clinical applications through experimentation. For examples, list of experiments includes: KFT (creatinine and Urea), LFT (AST, ALT, and ALP), Total and Direct Bilirubin, CK, Tn I, Tumor Markers...etc.

**(902387) Molecular & Cell Biology**

**3 credit hours**

This course is about genes - their structure and function. Therefore, students will study nucleic acid structure and the mechanics of replication, repair, transcription, and translation in bacteria, archaea and eukaryotes. A central goal is to understanding gene



regulation at all levels, and the structure-function relationships of nucleic acids and proteins

**(902388) Molecular & Cell Biology Laboratory** **1 credit hour**

This course deals with the current molecular and cellular biology research procedures in a hands-on environment, transformation, isolation of plasmid DNA, PCR, analysis of sequencing results, database searches.

**(902426) Clinical Microbiology** **3 credit hours**

Introduction to microbes in terms of structure, growth, genetics, pathological characteristics, laboratory diagnosis, major pathogenic microbial agents. This course describes of medically important bacteria, pathogenic bacteria in the intestines and outside the intestines, respiratory tracts and other organs. Methods of diagnosis of the above-mentioned bacteria with a focus on the most common microbes in Jordanian society will be studied. Emphasizes the laboratory procedure used in their diagnosis and organism characteristics used for identification .The course also presents in brief an overview of pathogenic fungi and the most common diseases caused.

**(902427) Clinical Microbiology Laboratory** **1 credit hour**

This course will help students acquire the essential skills in clinical microbiology, including collection and processing of clinical specimens as well as the isolation, and identification of pathogens, with a focus on colonial, microscopic, biochemical characteristics and susceptibility tests. Most commonly used media for culturing urine and stool samples will be examined

**(902461) Medical Ethics** **1 credit hour**

The main objective of this course is to show how ethical theory can illuminate problems in health care system; the course exposes the student to principles, methods, and justification of morality. It also discusses ethics in the following topics: genetics, gender concept, manipulation, justice, professional-patient relationship, artificial insemination, cloning, and behavior control.

**(902462) Quality Control & Lab Management** **2 credit hours**

Factors and procedures to be followed to ensure the correct results of laboratory tests. These include sample collection, preservation, transportation, and analysis of laboratory results

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**(902463) Quality control & Lab  
Management Laboratory**

**1 credit hour**

This course is intended to give the students a thorough understanding of the quality systems as implemented in clinical laboratories with practical examples in order to relate theory to practice. The course includes all the basic elements and tools required to implement the quality system essentials across all phases of the laboratory workflow: pre-analytical, analytical, postanalytical.

**(902478) Clinical Immunology**

**3 credit hours**

The course covers the major topics in cellular and molecular immunology, including innate immunity, B cells, T cells, dendritic cells, cytokines and mucosal immunity. Other lectures cover autoimmune, allergic and immunodeficiency diseases, as well as new advances in interventional and clinical immunology and the molecular and genetic basis of immunologically-mediated diseases.

**(902479) Clinical Immunology  
Laboratory**

**1 credit hour**

In this course, the student will explore how the immune system protects us against diseases, and how it can harm you if it is disturbed. Autoimmunity, Hypersensitivity and immunodeficiency are studied briefly. The student will be familiarized with the serological tests used in the lab diagnosis of diseases.

**(902491) Laboratory Field  
Training 1**

**3 credit hours**

The students will perform all tests that address disorders of hemoglobin (Hb) and cell production, synthesis and function, and they will learn more about the special tests in hematology section. They will understand interpretation of the results to determining several blood disorders (anemias, abnormal bleeding and clotting, inflammation ... etc).

**(902492) Laboratory Field  
Training 2**

**1 credit hour**

The students will be involved in the quality management system of the medical laboratory from management, to administration, to bench-work laboratorians. They will experience the important procedures for achieving, maintaining and improving accuracy and reliability of the clinical laboratory results. They should learn the methods of quality assessment and practice the procedures required for prevention human and instrumental errors (such as instrument performance check, check of calibration and running control sample).

**(902493) Laboratory Field**

**Training 3**



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### 3 credit hours

The students will work on analysis and examination of urine, stool, sputum, cerebrospinal fluid (CSF), seminal fluid, synovial fluid, pleural, and peritoneal fluid. They will practice on various techniques of clinical microscopy. In addition, the students will practice on culturing bacteria from different types of body samples (blood, swabs, and body fluids) and differentiate between pathogenic and non-pathogenic organisms. And they will perform antimicrobial sensitivity tests for each group of organisms.

#### **(902494) Laboratory Field Training 4** **2 credit hours**

The students will perform several tests to check for the presence of specific antigen or antibody base on antigen-antibody reactions for diagnosis of infectious diseases, autoimmune disorders, immune allergies and neoplastic disease. They will complete their understanding about the principles of the manual and automated tests.

#### **(902495) Laboratory Field Training 5** **3 credit hours**

Students will learn what kind of specimens are received & processed in clinical biochemistry and endocrinology sections. And will perform blood chemicals and hormonal. They will learn how to establish the pattern of abnormalities by interpretation the results of several tests. They will understand the principle behind each automated machine and learn how and what the purpose of running controls and making machines calibration. analysis by using manual and automated methods and will know more about the special tests in clinical biochemistry.

#### **(902101) Management in Health Sciences** **1 credit hour**

This course provides an overview of health delivery systems, organizational theory, and the conceptual basis of traditional managerial and executive leadership roles in health care facilities.

#### **(902210) Computer Applications in Health care Sciences** **3 credit hours**

By this course, students will acquire knowledge and skills to be able to participate in the requirements engineering, the development, the introduction, the improvement and the evaluation of computer applications in healthcare, including heterogeneous settings, while considering interoperability, organizational, ethical and legal aspects.

#### **(902219) Human Embryology** **3 credit hours**

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Course Description

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This course focuses on human prenatal development from fertilization to birth. It focuses on the morphological changes that take place during development. It includes gametogenesis (spermatogenesis and oogenesis), embryogenesis, the embryonic development that takes place during the first month after fertilization, and organogenesis, the development of the individual organ systems. Underlying molecular mechanisms and relevant congenital anomalies are briefly considered.

**(902239) First aid for accidents and injuries** **3 credit hours**

The purpose of this course is to train undergraduate students, to respond appropriately to emergency situations. The course content and activities will prepare students to better recognize emergencies, make first aid decisions, and provide care with little or no first aid supplies and equipment. This course teaches students the skills needed to manage emergency situations until emergency medical services personnel arrive and take over.

**(902250) Cell and Tissue Culture** **3 credit hours**

This course introduces students to the theory and practice of animal tissue culture with their role and applications in biotechnology and biochemical research. The topics covered in this course include media preparation, sterile techniques, aseptic handling, initiation and routine maintenance of cells in culture, common contaminants of animal cell culture, and understanding of some of the applications of cell culture technology e.g. mutagenicity and carcinogenicity; Cell viability and cytotoxicity.

**(902252) Cancer Biology** **3 credit hours**

This course will educate students on various genetic and molecular changes normal cells undergo during transformation into malignant cancer cells. These modifications include unregulated cell proliferation, evasion of cell death, and metastasis. This course will describe factors that contribute to cancer development and discuss cancer prevention and currently available therapeutic approaches.

**(902322) Genetic counseling** **3 credit hours**

This course introduce the students to basic knowledge around the genetics of clinic and genetic guidance to be able to be aware about when and how patients should be referred further to genetic investigations and/or to be able to be participation in genetic investigations.

**(902455) In Vitro Fertilization Technology** **3 credit hours**



**Course Description**

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This course provides a comprehensive training in the clinical management and laboratory practices of IVF. It introduces the students to embryology and assisted reproduction techniques, embryo selection, optimization of embryo culture conditions, essential instruments and disposable supplies for an IVF laboratory.

**(902456) Special Topics**

**3 credit hours**

This course provides Lecture, discussion, and readings on topics of current interest in the clinical laboratory sciences

**(901481) Research Methodology**

**3 credit hours**

The primary objective of this course is to enable the students to use the scientific research methodologies during the study of clinical and administrative problems of health Professions practice. Subjects to be covered will include the major considerations in selecting a research problem, the steps of research applications, common design and components of the research, literature review and documentation, results presentation, analysis and discussion and the final statement of conclusions and recommendations of the research.