



Faculty of Pharmacy and Medical Sciences

Department of Medical Sciences

91110 Medical Terminology {1} [1-1]

Introduction to Medical Terminology; Analyzing and Building of Medical terms: prefixes, roots, combining forms, and suffixes; The Organization of the Body; Integumentary System; Skeletal and Muscular System; Digestive System; Cardiovascular System; Respiratory System; Reproductive System; Nervous System.

Prerequisite: -

93111 General Chemistry (1) {3} [3-3]

Introduction to chemical sciences; Matter: Classification, Properties of different types of matter; Elements and the periodic table: Nomenclature, Simple ionic and covalent compounds, Measurements, and significant figures; Stoichiometry: % composition, formulas, and chemical equations; Chemical reactions of aqueous solutions: acids, Bases and salts; Oxidation-reduction reactions; Electronic configuration of atoms: Properties of ionic and covalent bonds, and Lewis structure.

Prerequisite: -

93112 General Chemistry (2) {3} [3-3]

Introduction; Gases and their laws; States of matter and intermolecular forces; Physical and colligative properties of solutions; Chemical kinetics: Reaction mechanisms, and Thermochemistry; Chemical thermodynamics: Principles of chemical equilibrium (K_a , K_c), Equilibrium in solutions of acids and bases (K_w , K_a , K_b), pH of strong acids and strong bases, Weak acids and weak bases, Buffer solutions, and Salts; Equilibrium in precipitation reactions (K_{sp}).

Prerequisite: 93111 General Chemistry (1)

93113 General Chemistry Lab {1} [2-1]

Introduction to laboratory safety Rules; Physical Separation of mixtures: Distillation, extraction, and recrystallization; Empirical formula of compound; Determination of acid and base in vinegar; Indicators; buffers; measurement of pH; Identification of chemical substances; Solutions.

Prerequisite: -

93114 Biology (1) {3} [3-3]



Introduction to general biology; Water; Macromolecules; Cell; Membrane; Metabolism; Cellular Respiration; Cell Cycle; From Gene to Protein.

Prerequisite: -

93115 Biology (2) {3} [3-3]

The biological diversity; Diversity of the five kingdoms of living organisms: Organisms, Monerans, and Protists; The major phyla of the animal kingdom; The structure and function of systems and organs of the animals (using the human body as a model); Survey on plant: Structure, function diversity, and its ecological importance.

Prerequisite: 93114 Biology (1)

93116 Biology Lab {1} [2-1]

Introduction to Biology Lab; Compound light microscope; Preparing slides: Plant tissue, and animal tissue; Physical and chemical properties of cell; Histology; Animal tissue; Basic microbiological techniques to identify gram positive and gram negative bacteria; Plants and its life cycle: Algae, fungi, and bryophytes; Introduction to protozoan: vertebrate, and dissect example of vertebrates

Prerequisite: -

93120 Organic Chemistry {3} [3-3]

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: 93111 General Chemistry (1)

36129 General Physics {3} [3-3]

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: -

36112 Calculus {3} [3-3]



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: -

91471 First Aid {1} [1-1]

Introduction; Manufacturing of pharmaceuticals; Basic principles of industrial processes: Mixing, Milling, Drying, Sterilization; Transfer processes; Unit operation.

Prerequisite: 91215 Physiology (2)

91316 Pathology {2} [2-2]

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.

Prerequisite: 91215 Physiology (2)

29101 Introduction to special education {3} [3-3]

Introduction; Special education; Mental retardation: Hearing impairment, Visual impairment, and Physical impairment; Learning disabilities; Emotional disturbance; Autism; Speech and language disorders; Talent and giftedness.

Prerequisite: -

26152 Principles of Guidance and Conselling {2} [2-2]

Introduction; Counseling and Guidance; Counseling as science and art; Personal qualities of effective helper; Scope of practice; Ethical and legal aspects of counseling.

Prerequisite: -

91213 Physiology (1) {3} [3-3]

Introduction to Physiology; Human body; Normal functions and mechanism of various physiological systems: Nervous system, Cardiovascular system, Muscles system, Blood, and Respiratory system.

Prerequisite: 93115 Biology (2)



91214 Physiology Lab. {1} [2-1]

Introduction; Principles of Practical Physiology; Hematology; Clinical Physiology; Blood Constituents: Quantitative Assay of Blood; Record, and measure of Blood Pressure; ECG; Human Vital Signs; Type of Injections.

Prerequisite: -

91215 Physiology (2) {2} [2-2]

Introduction; Normal functions and Homeostasis: Human nervous system, Sensory system, Gastrointestinal system, Endocrine system, Excretory system, and Reproductive system.

Prerequisite: 91213 Physiology (1)

91210 Anatomy & Histology {3} [3-3]

Introduction to Anatomy & Histology; Theoretical descriptive studies of the human body; Study of various systems: Molecular level, Cellular, Tissue, Organs, Body System levels; Microscopic anatomy: Cells, Tissues, Organs, and Organ systems.

Prerequisite: 91110 Medical Terminology
93115 Biology (2)

91212 Anatomy & Histology Lab. {1} [2-1]

Introduction; Practical study of the human body systems; Study of the microscopic anatomy: Cells, Tissues, Organs, and organ systems.

Prerequisite: -

92211 Biochemistry (1) {2} [2-2]

Introduction to Biochemistry; Chemistry of Carbohydrates; Chemistry of Lipids; Chemistry of Free radicals; Chemistry of some trace elements; Metabolism: Carbohydrates, and Lipids; Clinical correlations; hormones and enzymes.

Prerequisite: 93115 Biology (2)
93120 Organic Chemistry

92213 Biochemistry (2) {2} [2-2]

Introduction; Metabolism of Amino acids; Metabolism of proteins; Metabolism of Nucleic acids; Metabolism of Enzymes, Metabolism of Vitamins; Clinical correlations; hormones and enzymes.



Prerequisite: 91230 Biochemistry (1)

91232 Biochemistry Lab. {1} [2-1]

Introduction; Biologically important chemical compounds; Qualitative and Quantitative determination: Carbohydrate, Lipids, Proteins, Amino acids, Enzymes, and Nucleic acid.

Prerequisite: -

92215 Analytical Chemistry {2} [2-2]

Introduction; Analytical process; Chemical measurements; Math Toolkit; Statistics; Gravimetric and Combustion Analysis; Acid base; Buffers; Acid base titrations; Polyprotic Acid and Base; EDTA titrations; Electrode Potentials; Redox titrations; Light; Beer's Law; Spectrophotometry; Principles of Chromatography

Prerequisite: 93112 General Chemistry (2)

92216 Analytical Chemistry Lab {1} [2-1]

Introduction; Glass calibration; Statistical Evaluation of Analytical Results; Gravimetric Determination of Chloride; Gravimetric Determination of Nickel; Determination of Acetic Acid in Vinegar; Evaluation the Calcium Ion Content in Dried Milk Powder; Determination of Vitamin C concentration by Redox Titration; Precipitation Titration.

Prerequisite: -

92222 Medical Instrumental Analysis {2} [2-2]

Introduction; Electrochemistry; Immunoassay; Spectroscopy; Separation Techniques: Chromatography, HPLC, GC, Electrophoresis, and Centrifugation.

Prerequisite: 92215 Analytical Chemistry

92223 Medical Instrumental Analysis Lab. {1} [2-1]

Introduction; Instrumental Analysis: pH Meter, Spectrophotometer, HPLC, IR, Spectrofluorometer, Electrophoresis, and Flam photometer.

Prerequisite: -

92324 Hematology {3} [3-3]

Introduction to Hematology; Fundamental concepts of Blood: Red blood cells, and Anemia; White blood cells; Malignant white cell disorders; Platelet disorders; Coagulation.



Prerequisite: 91215 Physiology (2)
92213 Biochemistry (2)

92324 Hematology Lab. {1} [2-1]

Introduction to Hematology; Fundamental concepts of Blood: Red blood cells, and Anemia; White blood cells; Malignant white cell disorders; Platelet disorders; Coagulation.

Prerequisite: -

92322 Microtechniques {1} [1-1]

Introduction to Basic Histological Techniques; Stains; Microtome; Histochemistry; Photomicrography and Microscopy.

Prerequisite: 91210 Anatomy & Histology

92323 Microtechniques Lab. {1} [1-1]

Introduction; Application on Basic Histological Techniques: A study of some pathological conditions, Determining the level of hormone in the blood, and the use of immune system analyzes device.

Prerequisite: -

92325 Endocrinology {2} [2-2]

Introduction to Endocrinology; Biochemistry of Hormones; Mechanism of action; Pituitary gland; Thyroid and parathyroid hormones; Adrenal Gland hormones; Hormones of the pancreas; Gastrointestinal hormones; Hormonal control of Growth; Endocrine control of reproductive functions; Endocrine Disorders.

Prerequisite: 91215 Physiology (2)
92213 Biochemistry (2)

92326 Endocrinology Lab. {1} [2-1]

Introduction; Pathological conditions; Determination of Hormone level in blood; ELISA Technique.

Prerequisite: -

92329 Parasitology {2} [2-2]



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: 91215 Physiology (2)
92336 Microbiology

92335 Parasitology Lab. {2} [2-2]

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 Arthropodes.

Prerequisite: -

92336 Microbiology {3} [3-3]

Introduction; Fundamental concepts of microbiology; Bacterial cell structure; Microorganisms and their relation to disease; Classification and bacterial metabolism; Structure function and pathogenesis of viral and fungal disease in different organ systems.

Prerequisite: 91215 Physiology (2)
92213 Biochemistry (2)

92337 Microbiology Lab {1} [2-1]

Introduction; Rules and General Safety; Microorganisms: Isolation, Cultivation, Microscopic examination, and Bacterial counting; (GMP); Mode of action of antibiotics; Problems of natural and acquired microbial resistant to antimicrobial agents.

Prerequisite: -

92340 Diagnostic Microbiology {3} [3-3]

Introduction to Diagnostic Microbiology; Different Species of Microorganisms; Infection Diseases; Differentiation of Infection disease.

Prerequisite: 92336 Microbiology

92341 Diagnostic Microbiology Lab {1} [2-1]

Introduction; Different Laboratory Methods to Differentiate between Different Species of Microorganisms that Cause Infection Diseases.

Prerequisite: -



92346 Clinical Biochemistry (1) {3} [3-3]

Introduction to Clinical Biochemistry; Normal function of body system; Acid-base balance: Kidney, Renal outcome, Gastrointestinal tract, Liver enzymes, Hormones; Cardiac performance; Lipids, lipoproteins; Diabetes; Bone and the metabolic aspect of tumor.

***Prerequisite:* 92213 Biochemistry (2)**

92347 Clinical Biochemistry Lab (1) {1} [2-1]

Introduction to Clinical Biochemistry Laboratory; Laboratory Tests: Handling patient samples, Interpretation the results, Diagnose the disease.

***Prerequisite:* -**

92348 Clinical Biochemistry (2) {3} [3-3]

Introduction; Hypothalamus and Pituitary abnormality; Adrenal Gland disorders; Thyroid gland disorders; Gonads hormones; disorders of Carbohydrates; Disorders of plasma Lipids and Lipoproteins: Disorder of Calcium, Phosphate, and Lipoproteins; Metabolic aspects and select the proper tumors markers.

***Prerequisite:* 92346 Clinical Biochemistry (1)**

92349 Clinical Biochemistry Lab. (2) {1} [2-1]

Introduction; Laboratory Tests; patient samples, Interpretation the results, and Diagnose of disease.

***Prerequisite:* -**

92350 Pharmacology {3} [3-3]

Introduction to Pharmacology; Principle of Pharmacodynamics and Pharmacokinetics; Routes of administration; General mechanisms of drug actions; Types of receptor ligands interactions; Drug affecting the autonomic nervous system; Drug affecting the cardiovascular system Drug affecting Central nervous system; Drug affecting Respiratory tract; Drug affecting Gastrointestinal tract; Drug affecting Endocrine system; Chemotherapy; Anti-inflammatory drugs.

***Prerequisite:* 91215 Physiology (2)**

92351 Blood Transfusion & Blood Banking {1} [1-1]

Introduction; The basic concepts in Blood Banking; Red Cell Antigens; Blood Transfusion; Pathophysiology of Blood Transfusion; Diagnosis and Prevention.



Prerequisite: 92324 Hematology

92352 Blood Transfusion & Blood Banking Lab. {1} [2-1]

Introduction; The basic concepts in Blood Banking; Red Cell Antigens; Blood Transfusion; Pathophysiology of Blood Transfusion; Diagnosis and Prevention.

Prerequisite: 92324 Hematology

92355 Virology {2} [2-2]

Introduction to Virology; Fundamental concepts of virology; Pathogenesis of virus infections; Trends in viral pathogenesis.

Prerequisite: 92336 Microbiology

92357 Quality Control & Lab. {2} [2-2]

Introduction; Safety Precautions in the laboratory; Lab. Management and organization; use and maintenance of Laboratory Equipment; Data handling and Data Processing; Biological Source of Variation; General Measures.

***Prerequisite: 92348 Clinical Biochemistry (2)
92324 Hematology***

92454 Immunology {2} [2-2]

Introduction to Immunology; Basic principle; Immune response; humeral and cellular immune response; Immunological disorder: Hypersensitivity, Tissue rejection, and Autoimmune disease; Tumor immunology.

Prerequisite: 92336 Microbiology

92456 Immunology Lab. {1} [2-1]

Introduction; Antigen- Antibody interaction; Agglutination test; Precipitation; ELISA Technique.

Prerequisite: -

92431 Toxicology {3} [3-3]

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.

Prerequisite: 92350 Pharmacology



92461 Biotechnology {3} [3-3]

Introduction to Biotechnology; Principles of Biotechnology; Application of Biotechnological Techniques; Useful Microorganisms; By-product for industrial, agricultural, pharmaceutical, environmental, and medical uses.

Prerequisite: 92213 Biochemistry (2)
92336 Microbiology

92465 Field Training (1) {3} 100 credit hrs

Field training in the laboratories of teaching hospitals for 9 credit hours, Enable the candidates to acquire technical skills and experiences in all field of laboratory diagnosis of diseases. The candidates will then be able to carry out independently all the necessary laboratory investigations.

Prerequisite: -

92466 Field Training (2) {3}

Field training in the laboratories of teaching hospitals for 9 credit hours, Enable the candidates to acquire technical skills and experiences in all field of laboratory diagnosis of diseases. The candidates will then be able to carry out independently all the necessary laboratory investigations.

Prerequisite: 92465 Field Training (1)

92448 Nutrition and Lab. {3} [3-3]

Introduction; Nutrition: Carbohydrates, Fats, Proteins, Minerals and Vitamins in human nutrition; Nutritional requirements during the various stages of the life cycle.

Prerequisite: 92213 Biochemistry (2)

92449 Food Microbiology and Lab. {3} [3-3]

Introduction; Study of microorganisms in food and their effects.

Prerequisite: 92340 Diagnostic Microbiology

91574 Drug Promotion and Marketing {3} [3-3]

Introduction; Foundation of Marketing; Consumer behavior; Marketing Mix 4P's; product concepts; Factors influencing Prescription; Competitors; Promotion; Marketing Environment; Sales Technique.



Prerequisite: -

92445 Project and Seminar {3} [3-3]

Students select a project offered by the Department of Medical Technology. The practical work must be carried out during the academic semester. The student at the end of the course must give a seminar, to present results.

Prerequisite: 92357 Quality Control & Lab.