

COURSES OFFERED BY THE DEPARTMENT OF MEDICAL LABORATORY SCIENCE

FIRST YEAR FIRST SEMESTER

AH 1101 English & Communication Skills I (Non-credit)

Language Development and Writing (English for Academic Purposes-EAP): Parts of speech, Use of parts of speech in medical context, The main sentence structures in English, Different kinds of phrases, Developing writing skills: schemata and static description. Listening: Introduction to basic listening skills: brain storming, identifying key words, note taking: pattern notes, linear notes, Practicing note taking- flow charts, tree diagrams, labeling diagrams, tables, etc. Reading: Surveying a text book, Skimming and scanning an article, Previewing an article, Identifying the main idea and the topic of a paragraph. Vocabulary: introducing dictionary skills, Phonetics symbols, Pronunciation, etc., Punctuations of sentences (using of capital letters). Speech: Greeting and introducing (self and others), Making requests, Asking for and giving permission, Offering help, Giving instructions and directions, Telephone skills. (Note: All four language skills: Reading, Writing, Listening and Speaking, are incorporated in teaching)

Assignments – 40% End semester -60%

AH 1102 Information Technology (Non-credit)

Fundamentals basic concept of computers, System Analysis and Design, Data Processing, Data Communication, Practical-Internet and E-mail, Web Page Development, Languages.

End semester: Theory – 50%, Practical – 50%

AH 1103 Basic Human Anatomy (Credits -02)

Organization of the human body, embryology, cardiovascular system, lymphatic system, respiratory system, digestive system, genito-urinary system, endocrine system, musculoskeletal system, nervous system, sensory organs.

Assignments – 25% End semester: Theory – 50%, Practical – 25%

AH 1104 Human Physiology I (Credits -02)

Organisation of the body for function, homeostasis, body fluids, blood, temperature regulation, growth and development, ageing, cardiovascular system, lymphatic system, respiratory system, digestive system, urinary system, reproductive system, pregnancy and lactation, endocrine system, musculo-skeletal system, nervous system, sensory organs.

Mid Semester – 30% End semester: 70%

AH 1107 Basic Biochemistry (Credits-02)

Structure and function of cell organelles, structure and function of carbohydrates, lipids, amino acids, proteins and nucleic acids, biochemical tests for identification of carbohydrates, lipids & proteins, pH and buffers, enzyme properties and kinetics, chemistry & function of haemoglobin, chemistry and functions of vitamins, plasma protein and their functions, metabolism of carbohydrates, lipids, proteins and amino acids, integration and regulation of metabolic pathways.

Mid semester -30% End semesters -70%

ML 1101 Laboratory practice, Safety and First Aid (Credits -02)

Introduction to the course & the laboratory tests, the organization and design of a testing laboratory, hazards associated with laboratories and means of prevention, use of the bio safety manual in prevention of laboratory accidents, sterilization and disinfection, laboratory waste disposal, occupation health in the laboratory, introduction to the concept of quality, use of safety cabinets, safety aspects of using radioisotopes, storage of chemicals and safety aspects, safety aspects in processing human samples, washing glassware for laboratory use, waste disposal related to laboratories, design a modern diagnostic laboratory (assignment), First-Aid workshop (compulsory)

Assignments – 20% End semester -80%

ML 1102 General Microbiology (Credits-02)

Introduction to Microbiology, history of Microbiology, taxonomy and classification of microbes, microbial variety (prions, viruses, bacteria, Fungi and parasites), microbial metabolism and growth, microbial habitat and transmission, microbial pathogenicity, Koch's postulates and proof of causation, principles of detection and identification of microorganisms, microbiological specimen collection and transport, microbiology of air and water, storage of microorganisms, bacterial genetics, antimicrobial sensitivity testing, basic microbiological techniques [preparation of Gram stain and quality control, preparation of different types of media (Blood agar/ MacConkey agar/ LJ media) & reagents for biochemical tests (urea/KIA) and inoculation, preparation of smears and perform Gram stain, spore stain, ZeihlNeelsen stain, capsular stain & Albert stain, motility testing, identification of organisms using surface components, antibiotic sensitivity testing]

Assignments /Lab- 20% Mid semester -30% End semester -50%

ML 1103 Basic Physics, Electronics & Instrumentation (Credits-02)

Basic concepts and terminology, electrical circuit analysis, bridge circuits, semiconductor components, diodes, basic electronics, rectification and power supplies, introduction to computer hardware, A/D and D/A conversions, instrumentation, principles and parts of medical equipments (analytical balance, osmometer, refractometer, hydrometer, water bath, incubators, oven, autoclave, safety cabinet, etc.).

Assignments-15% Mid semester -30% End semester -55%

ML 1104 Applied Biochemistry (Credit- 02)

Laboratory resources, laboratory water and cleaning of lab ware, laboratory calculations, preparation of laboratory reagents, titrations, spectrophotometry (atomic absorption spectrophotometry, flame emission photometry, fluorometry), electrophoresis, chromatography, measurement of enzyme activity, centrifugation, Ionometry.

Assignments/Labs-20% Mid semester-20% End semester-60%

ML 1105 Genetics and Molecular Biology (Credits-02)

Mendelian inheritance, laws of inheritance, major genes, polygenes, dominance, recessiveness, sex linked inheritance, pedigree analysis, cytogenetics and chromosomal aberrations, molecular genetics, DNA structure, function, gene expression, genome and human genome project, translation and replication, modern biotechnology, recombinant DNA technology, transformation

products, vaccines, drugs, hormones, gene therapy and disease diagnosis, DNA extraction, PCR, electrophoresis, ELISA.

Mid semester -25% End semester -75%

FIRST YEAR SECOND SEMESTER

AH 1201 English & Communication Skills II (Non-credit)

Language Development and Writing (English for Academic Purposes-EAP): Study of the use of verbs in detail (transitive/ intransitive, active/passive, types of verbs), Introduction to relative clauses, Laboratory report writing: present/past tense, active/passive voice, present perfect tense, modal auxiliary verbs, Dictation. Listening: Improving listening skills through subject based and general talks/mini-lectures/speeches, etc., Activities and exercises based on the above., Reading: Note making while reading, Reading comprehension-general and academic, Identifying contextual references, Rephrasing, Vocabulary development, and Individual loud reading. Prefixes and suffixes, Root words (Latin/Greek) related to medical terminology, Activities incorporated with reading lessons. Speech: Activities consolidated with parallel Grammar, Reading and Listening lessons. (Note: All four language skills: Reading, Writing, Listening and Speaking, are incorporated)

Assignments – 40% End semester -60%

AH 1202 Basic Statistics (Credits -02)

Description of statistics, organizing and displaying data, summarizing data and variation, curve fitting, probability, simple regression and correlation, test of hypothesis and significance, student “t”, “F” and chi-square distributions, analysis of variance.

Assignments – 10% Mid semester -30% End semester -60%

AH 1203 General Pathology (Credits -02)

Introduction to general pathology, acute inflammation, chronic inflammation, cell damage, apoptosis, necrosis, gangrene, principles of fracture healing and complications, wound healing and complications, calcifications / degenerations, hypertrophy / atrophy / hyperplasia / metaplasia / dysplasia, immunology, neoplasia, tumour markers / molecular basis of tumours, ischaemia and infarction, thrombosis / embolism / atherosclerosis / oedema / congestion and heart failure, pigmentation, genetic basis of disease.

Mid semester -25% End semesters -75%

AH 1204 Human Physiology II (Credits -02)

Body fluids, blood, heart and circulatory system, respiratory system, digestive system, urinary system, reproductive system, endocrine system, musculo-skeletal system, nervous system, special senses.

Mid semester -20% End semesters -80%

ML 1201 Haematotechnology I (Credits-03)

Specimen collection, introduction to haematology laboratory and glassware preparation, ESR, haemopoiesis, composition of blood, haemoglobin, determination of Hb & PCV, determination of RCC and red cell indices, preparation of blood film & common problems in film preparation, red cells & red cell inclusions, abnormalities of red cell morphology, reticulocytes & reticulocyte count, white cells & determination of WBC & DC, morphology & function of platelets & platelet count, automated haematology analyzers, determination of laboratory errors, anaemia, iron deficiency anaemia, megaloblastic anaemia.

Assignments/Labs-05% Mid semester -30% End semester -65%

ML 1202 Clinical Biochemistry I (Credits-03)

Structure and function of kidney, formation & composition of urine, principles of renal diseases, systemic disorders associated with biochemical changes in urine, specimen collection for urine analysis, physical and chemical examination of urine, examination of urine deposits, special urine examination, urinary stone diseases & chemical analysis of calculi, identification of the pre-analytical & analytical errors, spermatogenesis & male infertility, seminal fluid analysis, diseases of CNS, CSF analysis, exudates & transudates, examination of other body fluids.

Assignments-10% Mid semester -30% End semester -60%

ML 1203 Systematic Parasitology and Medical Entomology (Credits-02)

Introduction to parasitology and intestinal protozoa, tissue protozoa, intestinal nematodes, tissue nematodes, trematodes, cestodes, medically important mosquitoes & other arthropods

Assignments-10% Mid semester -30% End semester -60%

ML 1204 Tissues of the Body (Credits-01)

Introduction, epithelial tissue, connective tissue, bone, cartilage, muscle and cardiovascular system, urinary system, male and female reproductive system, liver, gastrointestinal tract & associated organs, respiratory system, reticulo-endothelial system, lymphoid tissue, spleen, lymph nodes, Nervous system, introduction to tissue processing.

Mid semester -40% End semesters-60%