

COURSES OFFERED BY THE DEPARTMENT OF MEDICAL LABORATORY SCIENCE

SECOND YEAR FIRST SEMESTER

AH 2101 English & Communication Skills III (Non-credit)

Language Development and Writing: The four main types of sentences, Different kinds of clauses, Expansion of sentence structures, Cause-effect relationship, Comparisons, Listening: Developing listening skills through audio/video based learning, Exposure to native and non-native speakers of English (different accents), TOEFL practice tests, Reading: Practicing the reading skills (skimming, scanning, etc.) developed in AH 1101 and AH 1201 through activities such as, pre-reading (discussion through brain storming, puzzles, etc.), skimming and scanning, comprehension, vocabulary expansion related activities leading towards a final speech activity: presentation of a report, poster, etc., and Individual loud reading. Vocabulary: Vocabulary related to specific fields (law, business, politics, etc.), Fixed expressions: Everyday expressions, Idioms, Proverbs, etc., Speech: Mini-presentations based on Reading and Listening activities. Presenting reading reports.

Assignments – 40% End semester -60%

AH 2102 Basic Research Methodology (Credits-01)

Philosophy of science and the notion of truth, principles of evidence based practice and clinical effectiveness/efficiency, traditions, preferences and positions in applied qualitative research, narrative methodologies and their use in clinical/professional practice, quantitative reasoning and its application in clinical/professional practice, data gathering tools/approaches – qualitative and quantitative methods and analysis, practice based inquiry/participative inquiry/generating evidence based practice, case studies, ethics in research, describe the foundations used for ethical decision-making, patients' rights, need of a code of ethics for practice.

Assignments -25% End semester-75%

ML 2101 Clinical Biochemistry II (Credits-03)

Regulation and abnormalities of carbohydrate metabolism, diabetes mellitus, specimen collection and methods of glucose determination, tests of glucose metabolism & lipoprotein metabolism, abnormalities of lipid metabolism, liver function tests, jaundice and bilirubin metabolism, acute and chronic liver disease, uses of liver function test, protein metabolism.

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

ML 2102 Cytotechnology (Credits-02)

Introduction to cytotechnology, overview of cytopreparatory techniques, cytological sampling of female genital tract, respiratory tract, GIT & body cavities, CSF and urine cytology, skin scrapings, needle aspiration biopsies, basic cervical cytology, ancillary techniques in cytology, error identification, techniques of concentration of cytological samples, quality assurance in cytology.

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

ML 2103 Haematotechnology II (Credits-03)

Haemolytic anaemia, reticulocyte count, G6PD deficiency, thalassaemia and haemoglobinopathies, investigations and interpretation of thalassaemia and other haemoglobinopathies, interpreting haemoglobin electrophoresis, leukaemia, pancytopenia and aplastic anaemia, myeloproliferative disorders, bone marrow smears, LE cells, paraproteinaemias, blood coagulation disorders and coagulation tests.

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

ML 2104 Virology and Mycology (Credits-02)

Introduction to fungi, classification and general properties of fungi, yeasts (*Candida*, *Cryptococcus*), dimorphic fungi, dermatophytes, filamentous fungi pathogenic to humans. Practicals on diagnostic mycology; Gram, colony, germ tube testing and negative stain; KOH preparation of material – skin, hair, nails and culture on Saboraud's agar and slide culture.

Introduction to viruses-classification and general properties of viruses; DNA viruses (Pox, Parvo, Papova and Adeno viruses; Herpes viruses); Hepatitis viruses; RNA viruses (Respiratory viruses; gut related viruses – Enteroviruses and diarrhoeal viruses; arboviruses (dengue, JE, chikungunya and others); zoonotic viruses including rabies; retroviruses and prions); maternal viral infection that affect the foetus and neonate; pathogenesis and control of viral diseases. practicals on diagnostic virology (Rapid assays and ELISA); Cell culture and the use of cell culture in the viral diagnosis.

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

ML 2105 Systematic Bacteriology (Credits-02)

Characteristic features, pathogenicity, clinical conditions and identification tests of Staphylococci, Streptococci, Gram positive bacilli, Enteric Gram negative bacilli, Pseudomonas and other non-enteric Gram negative bacilli, Vibrio, campylobacter and Helicobacter, Parvobacteria, Neisseria, Anaerobes, Mycobacteria, Spirochaetes, Mycoplasma, Chlamydia and Rickettsiae.

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

ML 2106 Histotechnology (Credits-02)

Introduction to histotechnology and histotechnology equipment, sample collection and fixation basic steps in histotechnology, tissue processing, paraffin embedding & section cutting (microtomy), haematoxylin and eosin staining and staining artifacts, special staining techniques, frozen sections, processing of fresh specimens and cryostat sectioning, micrometry, immunohistochemistry (immunofluorescence and enzyme histochemistry), quality assurance methods in histotechnology.

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

ML2107 Diagnostic Parasitology (Credits-01)

Microscopy, micrometry relevant to parasitology, collection, transport and preservation of specimens, faecal examination- wet smears (Iodine, saline, eosin), concentration techniques, culture techniques, permanent staining trichrome, iron- haematoxylin, acid fast stains, blood examination- malaria, blood examination- filariasis, concentration techniques, immunodiagnosis and molecular diagnosis, arthropods of medical importance- preservation and transport to reference labs, quality control and quality assurance in parasitology, Preservation and transport of medical important arthropods to reference labs.

Assignments/Lab-10% Midsemester-30% End semester-60%

SECOND YEAR SECOND SEMESTER

AH 2201 English & Communication Skills IV (Non-credit)

Language Development and Writing: Development of writing skills–Transitional devices, paragraph building, process writing, reports such as nurse’s reports etc., Listening: Developing listening skills through audio/video based learning, Exposure to native and non- native speakers of English (different accents), TOEFL practice tests. Reading: Reading comprehension activities leading towards a final speech activity: presentation of a report, poster, etc., and Individual loud reading. Homonyms, Synonyms, Acronyms, Homophones, Phrasal verbs, Varieties of English, Abbreviations. Speech: Presenting reports, Debates, 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%

ML 2201 Diagnostic Microbiology (Credits-02)

Normal flora and collection and transport of specimens, respiratory tract infections, gastrointestinal infections, sexually transmitted infections, central nervous system infections, bacteraemia/infective endocarditis, skin and wound infections, urinary tract infections, ENT and eye infections, infection in the compromised host, antibiotics and antibiotic sensitivity testing, choice of appropriate test in an infective disease and quality assurance in a microbiology Laboratory.

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

ML 2202 Clinical Biochemistry III (Credits-03)

Enzymes, Clinical Enzymology, Disease markers in heart disease, Tumor markers, Gynecological tumour markers, Renal diseases and renal function tests, Water & mineral metabolism, serum electrolytes, Flame photometry, Endocrine Physiology, Endocrine system and functions, Thyroid function Tests, Thyroid disorders

Assignments/Lab-05% Quizzes-05% Mid semester -30% End semester -60%

ML 2203 Haematotechnology III (Credits-02)

Sample collection for different tests, Blood bank, Blood grouping, Blood transfusion, Cross matching, Compatibility testing, Rh blood group system, Coomb's test – Direct and Indirect, Leucodepletion, Laboratory diagnosis of Hepatitis B virus, Haemolytic disease of new born, Preparation of reagents.

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

ML 2204 Public Health Microbiology (Credits-01)

Introduction to public health microbiology, Food borne disease outbreaks, Food-borne microbial pathogens, General mechanisms of pathogenesis of food borne pathogens - Food borne infections, Infection dose, colonization and adhesion factors, invasion and intracellular residence, iron acquisition, motility and chemotaxis, Evasion of immune system, Intoxication, Toxicoinfection, Genetic regulation and secretion systems for virulence factors, Control of microorganisms in food, Microbial indicators of faecal contamination of food and water, Microbial quality of drinking water, Detection and enumeration of microorganisms in food and water, Conventional methods, Rapid/ advanced methods, International standards and certification relating food and water safety.

Mid semester -30% End semesters -70%

ML 2205 Specimen Collection & Transport (Credits-02)

Venepuncture, Finger prick specimen, Anticoagulants, Serum separation & effects of various procedures, Specimen collection for haematology, biochemistry, Microbiology, histopathology Specimen collection in urine analysis, special conditions, Preparation of patients for investigations, Specimen processing, Safety aspects in specimen collection, Detecting problems in specimen collection

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

ML 2206 Immunotechnology (Credits- 02)

Immunology : Introduction, Antigens, Antibodies & humoral immunity, Antigen - antibody reactions, Complement system, Lab. diagnosis of autoimmunity, Lab. diagnosis of immunodeficiency, Immunotechnology, Immunoagglutination, Immunohistochemistry, Antibody titres, Immunofluorescence, Radio-immunoassay, ELISA, Immuno-electrophoresis, Flowcytometry

Mid semester-30% End semester -70%

ML 2207 Laboratory Quality Assurance (Credits-02)

Introduction to Quality Assurance (QA), Concepts of Quality Control (controls, precision and accuracy, specificity, sensitivity, standards and calibrators, random and systematic errors, internal and external quality control, reference ranges), QA procedures, documentation and interpretation (basic terms, Leve Jennings charts, Westgard rules, cumulative summation limit, Youden plot), systematic troubleshooting (troubleshooting, corrective action), establishment of verification of method performance specifications, monitoring quality, quality indicators, internal audit, tools that support the quality, guidelines of clinical laboratory accreditation.

Tutorials-10% Mid semester -30% End semester -70%

ML 2208 Management for Laboratory Manager (Credits -02)

Scope of medical laboratory management, laboratory planning and organization, specimen management and processes, personal management and training, equipment management, financial management, chemical management and ordering process, data management and statistics, health and safety in laboratory, medical laboratory waste management (routine and special), basics of quality management system.

Assignments/Lab-10% Mid semester -20% End semester -70%