Course Description of Courses Offered to Medical Students Enrolled in the Degree Bachelor of Medicine and Surgery program at Jordan University of Science and Technology

M112 (Introduction to Anatomy & Embryology) (3 credit hours: 2 hours lectures, 3 hours lab)
This is an introductory course in gross anatomy which provides medical students with knowledge of the anatomy of human body. The course also provides an overview of the very early development of human starting from gametogenesis going through the different embryonic stages. This course covers major birth defects in relation to human embryology.

M114 Histology and Molecular Biology (3 credits hours)
This course provides fundamental basic knowledge of histology and cell biology. The course provides students with basic knowledge of different aspects of cellular and tissue parts (membrane, cytoskeleton, matrix). It explores the histology and properties of the basic human tissues (Epithelium, connective tissue, Muscle and nervous tissues).

M123 Biochemistry (3 credit hours)
This course provides students with basic knowledge about structure and properties of main biomolecules in human body, such as amino acids, proteins, carbohydrates, lipids, and nucleic acids. The course emphasizes the relationship between protein structure and its biological function. It also helps students understand generation and storage of metabolic energy, main metabolic pathways and their key steps. In addition, it discusses the role of phospholipids in determining the properties of biological membranes and their function.

M132 General Physiology (3 credits)
This introductory physiology course introduces basics concepts in physiology of human body. The course familiarizes students with basic definitions and principles related to physiology. The course emphasizes the concept of internal environment and homeostasis and the concept of feedback in a biological system. It also helps students to understand body fluid and cellular physiology including membrane ionic basis of excitability, molecular mechanism, and mechanics of contraction. The course gives an overview on the physiology and functions of nervous system, cardiovascular system, respiratory system, digestive and renal systems and the endocrine system. It prepares students to understand future disease process and pathophysiology.

M211A Molecular Genetics (3 credit hours)
This course is designed to give students good understanding of basic principles of molecular genetics. It emphasizes those principles that have application in medicine and disease process. This includes areas related to structure of DNA and RNA as the genetic material. It also covers DNA organization and its replication, mutation and repair in both prokaryotes and eukaryotes. Furthermore, gene expression is also discussed. Finally, the course gives an overview of certain aspects of cancer genetics as well as cyto genetic and molecular aspects of different biology techniques.
M211B Biochemistry and Molecular Genetics Lab (1 credit hour, 3 hours lab). This course is intended to acquaint medical students with some basic biochemical and molecular biology lab techniques, help them to perform some independent lab work and learn to cooperate with their colleagues in a laboratory environment. In the laboratory sessions, students are expected to learn how to use the centrifuge, pH meter, and spectrophotometer. Titration curves of weak, strong acids and amino acids will be constructed using pH meter. Protein concentration, glucose and cholesterol level in the plasma will be determined using spectrophotometer. In addition, students will be familiarized with chromatography, electrophoresis and PCR techniques. Study the enzymatic activity of specific enzymes. DNA isolation, characterization and amplification using PCR techniques will be performed.

M231 General Pathology (3 Credit hours: 2 hours lectures, 3 hours lab) The course allows students to learn basic concept of the various disease processes in the body as well the basic molecular, cellular and reactions to various injurious agents. Cell injury including adaptations, necrosis & apoptosis. Pathology of Inflammation including causes and manifestations and hemodynamic are also discussed. The course also emphasizes neoplasia including classification, epidemiology, and characteristics of benign and malignant tumors. The major grading and staging systems of neoplasms will be covered in detail. Knowledge of etiology of tumors and its consequences on health are also covered.

M 232 Medical Immunology (3 Credit Hours) This introductory course in medical immunology includes a series of lectures stressing basic concepts in immunology. Topic covered in this course are innate immunity, acquired immune response, cells and organs of the immune system, immunoglobulin structure and genetics, antigen-antibody reactions, the major histocompatibility complex and antigen presentation. This course also explores T cell, B cell and natural killer cells functions. The T cell receptors genetics, structure, selection apoptosis and adhesion molecules, phagocytic cell function are explored. Immune responses to infections, tumors, transplantation autoimmune diseases, allergies, and immune deficiency diseases are also covered.

M251 General Pharmacology (3 credit hours) This course is designed to provide medical student with basic knowledge in pharmacology. In this course emphasis is placed on drug groups and prototypes in general. A brief introduction on the basic principles of pharmacokinetics and pharmacodynamic are discussed in relation to different drug group. Mechanism of action and drug adjustment according to drug metabolism are also emphasized.

M265 Microbiology. (3 credit hours: 2 hours lectures, 3 hours lab) This introductory course covers basic principles of bacteriology, virology, mycology, immunology and parasitology. It also covers basic concepts of infection control in hospitals, sterilization and disinfection, diagnosis of infectious diseases including specimen collection for the clinical microbiology laboratory, epidemiology of infectious diseases. The laboratory part covers basic techniques in microbiology.

M283 Introduction to Community Medicine (3 Credit Hour) The students are introduced to community medicine via the principles of epidemiology and primary health care concept and practice. The course emphasizes the primary health domains including: environmental health, mother and child health, disease prevention and health promotion, and community nutrition.
M291-Biostatistics. (2 Credit Hour)
The course focuses on descriptive and inferential statistics as applied to medical practice. The course starts with descriptive measures and probability concepts and application. The students are trained to draw statistical inferences by two main methods: estimation and hypothesis testing. Chi-square variants are discussed with relevant clinical examples. Statistical design of experiments is dealt with concentrating on ANOVA and regression analysis.
Students are trained to use computer software as Excel and SPSS in solving assigned exercises. The students are provided with necessary software at the beginning of the course to be used during the course in solving practical exercises and in data analysis.

M252 Respiratory system (6 credit hours, 5 weeks)
This multidisciplinary integrated respiratory system module provides comprehensive and integrated coverage of anatomy, histology, physiology and embryology of the respiratory system. Microbiology, biochemistry, and pharmacology relating to the system are discussed. Pathology of the upper and lower respiratory system is presented along with clinical presentations of diagnostic and treatment modalities. Teaching methods include lectures, labs as well as small group discussion, and clinically oriented seminars to enhance self-directed learning.

M262 Cardiovascular System. (6 credit hours, 8 weeks).
This system-based integrated module gives a comprehensive overview of cardiovascular system. Each topic of basic science is incorporated into an integrated body of knowledge covering biochemistry, physiology, pathological, and pharmacology, anatomy, histology and microbiology of the cardiovascular system. Developmental aspects of the heart as well as congenital disorders of the heart are explored. Pathology, pathophysiology, and pharmacology of the common disorder of the cardiovascular system including hypertension, arrhythmias, and ischemic heart diseases are emphasized. Teaching methods include lectures, labs, as well as small group discussion, and clinically oriented seminars to enhance self-directed learning.

M272 Hematopoietic and Lymphoid System (6 credit hours, 5 weeks).
This integrated multidisciplinary module gives a comprehensive coverage of the anatomy and physiology, and pathology of the hematopoietic and lymphatic system. The basic classification of anemia's, leukemia's and bleeding disorders and other common hematological diseases are introduced. All relevant pharmacological, biochemical, microbiological, and public health aspects related to this system are handled in relation to specific diseases. The teaching methods include lecture labs as well as seminars and small group discussions of clinical oriented problems to enhance self-directed learning.

M311 gastrointestinal systems (6 credit hours, 5 weeks)
Interdisciplinary integrative course which explores fundamental concepts of biochemistry, anatomy, histology, physiology, nutrition and public health problems, pathology, pharmacology, and microbiology as they relate to issues and common diseases of gastrointestinal and hepatobiliary system. Pharmacology and therapeutic management of common GI problems are also explored. Teaching methods include lectures and labs. In addition, small group discussions of common clinical problems are part of the teaching strategy of this module. This enhances integration of basic sciences and clinical knowledge and students' self-directed learning.
M 321 Endocrine System (6 credit hours, 5 weeks)
This Interdisciplinary, integrated course of endocrine system gives a comprehensive coverage of anatomy, microbiology, pathology, pharmacology, physiology and biochemistry the course materials is correlated with clinical aspect of clinical endocrine disorders. Essential background for understanding of clinical medicine related to endocrine regulation and homeostasis are emphasized. The teaching methods include lecture, labs as well as seminars and small group discussions of clinical oriented problems to enhance self directed learning.

M322 Neuroscience I (4 credit hours, 4 weeks).
This system-based course is a multidisciplinary integrates basic sciences into the study of neuroscience and human behavior in both health and disease states. The overall goal of the course is to provide comprehensive knowledge and understanding of the structure, function of the nervous system, biochemical basis of human behavior, as well as the pathological basis of neurological and mental disorders. The goal of the course will be achieved via selected lectures and relevant laboratory sessions. Small group discussion and seminars of clinically oriented topics are incorporated to in the course to enhance and self-directed learning.

M331 Musculoskeletal System (6 credit hours, 5 weeks)
This is Interdisciplinary integrated module of musculoskeletal system. Basic sciences of anatomy, biochemistry microbiology, pathology, pharmacology, and physiology of the musculoskeletal system are correlated with clinical disorder of this system. The goal of this integrated course is to provide the medical student with comprehensive knowledge about bones, joints muscles, tendons, ligaments, skin and associated soft tissues related to clinical manifestations of diseases. The teaching methods include lecture labs as well as seminars and small group discussions of clinical oriented problems to enhance self directed learning.

M332 Neuroscience II (4 credit hours, 4 weeks)
This is an integrated system based course which emphasizes anatomy, physiology, pharmacology, microbiology and pathology of the peripheral nervous system. The course provides integrated knowledge covering the peripheral nervous system including peripheral nerves, nerve plexuses and peripheral nerve branches cranial nerves and special senses. The objectives of this course are achieved via selected lectures, relevant laboratory sessions. To enhance integration of basic and clinical sciences as well as and self directed learning, common clinical disorders related to this system are also explored using case based small group discussions and seminars.

M352 Genito-urinary system (8 credit hours, 8 weeks)
This course is a multidisciplinary integrated course giving a comprehensive coverage of the normal anatomy, physiology, pathology, pharmacology microbial infections of the male and female genito-urinary system. Developmental aspects of the system correlated with congenital abnormalities are also discussed. Pathogenesis, therapy and basic laboratory investigations of common diseases of the genitourinary system are explored. The teaching methods include lecture labs as well as seminars and small group discussions of clinical oriented problems are part of the teaching strategy of the course to enhance self directed learning.
M 314 Clinical Psychologies (3 Credit Hours):
This course on behavioral science (clinical psychology) aims to introduce students to psychosocial aspects of medical practice and to offer them an overview of clinical psychiatry. This course also deals with other allied disciplines of sociology and psychology. It also covers behavioral science includes behavioral biology as well as biochemical, physiological and pharmacological correlates of behavior; individual behavior. It allow students to understand human emotions, life cycle, motivation, personality and its psychopathology; and interpersonal and social behavior.

M362 Medical Ethics (One credit hour)
This course covers selected issues in the biomedical ethics. The course focuses on prominent ethical topics and new medical ethics issues appeared with recent development in medicine. The course includes careful examination of the philosophical theories of ethics which have guided medical ethics since its inception.

M382 Health Services Administration (one credit hour)
This course is a short course that focuses on teaching students how to apply management principles within the health system and health care delivery. Importance of local factors that affects the delivery of health services as well as economic challenges in health care system are addressed.

ED411 (Clinical & Communication Skills, 9 credit hours, 4 weeks)
This course is offered to medical students at the beginning of the 4th year this course introduces medical students to basic clinical knowledge, skills and attitudes that prepare them to start clinical rotation. It also gives students needed competencies to obtain medical history and to perform basic physical examination. During the first week students are given a series of selected lectures and have opportunity to watch videos of history taking and physical examination of different body systems. The other three weeks includes rotation in 3 main clinical departments (pediatrics, medicine and surgery). These weekly rotation aims to teach students how to conduct a medical interview, document the medical history, and perform a supervised physical examination. In addition, ethical and professional values and communication skills are emphasized throughout the course.

M412 (General Surgery I (9 Credits hours, 10 weeks)
The ten-week surgical rotation is an intense clinical experience that introduces students to the basic principles of surgery. Students rotate on the Surgical Teams at our main teaching hospital (KAUH) as well as other various hospitals that are affiliated to our medical school. Eight weeks of general surgery and two-week blocks of surgical subspecialties make up this 10 week rotation. During the rotations, students are exposed to medical encounters wit patients with common surgical problems. The course allow students to practice history taking relevant to surgical disorders as well as performing focused relevant physical examination needed to assess patients with surgical problems The pre-operative and post-operative evaluation and management of surgical diseases are covered. Rotation includes attending surgical wards, outpatient clinics, and operating room.

M422 General Internal Medicine I (9 Credits hours, 10 weeks)
This course introduces students to general principle of internal medicine. Students are exposed to many common medical conditions. Knowledge about common medical diseases affecting various organ systems including sings, symptoms, deferential diagnosis, investigations and management are also discussed. Skills related to clinical history taking, physical examination are the main objectives of this course.

M 423 Pediatrics I (9 Credit hours, 10 weeks)
This course gives 4th year medical students competences relevant to medical history taking of common pediatric disorders. Skills related to performing physical examination on infant, children and decedents are also emphasized. Principle of preventive medicine such as vaccination and nutrition are covered in this course. During this 10 weeks rotation, students are directly supervised by clinical instructors on the common pediatric diseases. This course also covers normal developmental and disorders related to behavioral aspects of children at different age group.

**M433 Community Medicine (9 Credit Hours, 8 weeks)**
The course is divided into two equal parts, each for 4 weeks during the summer semester of the fourth year. The first part is the case study part during which simulated case studies are presented to students for discussion and comments. The second 4 weeks are devoted to field practice in community medicine. Field practice demonstration areas are based in selected health centers in and around Irbid. One health centre is allocated for each students group of about 40 students.
The students practice data collection, data analysis and data presentation in the form of tables and figures. The report that each individual student submits follows the 'standard" protocol of research writing.

**M510 Obstetrics and Gynecology (9 Credits hours, 8 weeks)**
This 8-week course provides the students with the basic knowledge of common obstetric and gynecology diseases. It also focuses on providing the students with the basic skills of history taking and skills of conducting physical examination relevant to obstetric and gynecology. At the end of this course students are expected to generate appropriate assessment of common obstetrics and gynecology disease presentations including generating differential diagnosis and able to utilize laboratory and imaging facilities to reach appropriate diagnosis. Management of common disorders is discussed. Preventive medicine related to health during pregnancy and birth control is also emphasized.

**M530 Family Medicine and Primary health care (4.5 credit hours, 4 weeks)**
Medical students spend this 4 week family medicine rotation in university health center and other affiliated primary health care centers in Irbid area. Students during this rotation are exposed to different health problems commonly seen in these primary health care centers. Their role includes communication with patients, physical examination and active participation in management plan Lectures and seminars are conducted on common disease as well as on disease prevention and health promotion in the context of national health system.

**M540 Psychiatry (4.5 credit, 4 weeks)**
This is a 4 weeks clinical rotation in psychiatry. The rotation emphasizes principles and methods of psychiatric assessment, principles of psychiatric diagnosis, recognition of key signs and symptoms in psychiatry. Diagnoses of the most common psychiatric disorders and understanding the general principles of treatment and management of these disorders are also emphasized.
M550  **Ear, Nose and Throat (ENT): (2.5 credit, 2 weeks)**
This is an introductory two weeks clinical rotation offered to fifth year medical students. During the rotation, common diseases of ear nasopharynx oral cavity are emphasized. Students see patients in the clinic with the attending staff and gain preliminary experience in performing otoscopic examinations of the ears, examinations of the nose, nasopharynx, and oral cavity and larynx. Students will be familiar with the diagnosis and management of the common presenting problems in otolaryngology as well as emergency Otolaryngology cases. Skills necessary to take relevant medical history and examination are well emphasized.

M551  **Orthopedics (2.25 Credits hours, 2 weeks)**
This is a two week clinical rotation for fifth year medical students during which the students will be introduced to general orthopedic disorders. Students at the end of the course are expected to have covered all aspects regarding assessing fractures, general management and complications of fractures, evaluation and assessment of orthopedic disorders affecting bone and joints are also covered. Students are trained to obtain relevant history and to perform physical examination of patients with common musculoskeletal disorders. General management of common orthopedic problems is also covered. Throughout the course, students will be involved in the daily morning report, clinical rounds, outpatient clinics and interactive seminars.

M554  **Anesthesia (2.25 credit hours, 2 weeks)**
This 2-week course is offered to the fifth year medical students. During this clinical rotation students will spend their morning hours in the operating theater learning basic principles of anesthesia including airway management, fluid management, induction and maintenance of anesthesia, patient’s monitoring, and recovery. Students will be given daily seminars that cover important aspects of anesthesia.

M555  **Neuroscience (2.3 Credits hours, 2 weeks)**
This 2 week course is given as part of the clinical rotations for 5th year medical students. It is an integrated neurology/ neurosurgery course that covers common neurological and neurosurgical problems. The course also emphasizes fundamentals of the neurological history taking, neurological examination, pathophysiology and management of common neurological and neurosurgical diseases. Care in areas of head and spine injuries, congenital anomalies, brain tumors, spinal diseases, stroke, demylinating diseases, and neuromuscular diseases are also covered.

M560  **Ophthalmology (2.25 credits hours, 2 weeks)**
Ophthalmology course is a two weeks rotation for 5th year medical students. During this course the student attends daily clinical round in the ward. They participate in seeing patients in the clinics. Seminars on common ophthalmology disease are given in the afternoon. By the end of the course, the student should be familiar with basics in ophthalmology and aware of the common ophthalmic disorders and conditions. Throughout the course, students will be involved in the clinical rounds and consults, outpatient clinics and interactive seminars.
**M571 Dermatology (2.25 credit hours 2 weeks)**
This 2-week course is offered to the 5th year medical students. During this course students will attend daily general dermatology clinics where they will encounter patients and learn about a variety of dermatological conditions. They will interview and examine patients and discuss under direct supervision of the teaching staff. Students will have daily seminars that will cover common and important skin disorders. Students are expected to learn how to obtain dermatological history and examination with application of knowledge of specific dermatological terms used to describe various dermatological lesions and rashes. Throughout the course, students will be involved in the consultations, outpatient clinics and interactive seminars.

**M580 Diagnostic Radiology (2.25 Credits, 2 weeks)**
This clinical rotation in radiology is offered to fifth year medical students. The goal of this course is to present a basic introduction of the common radiological exams procedures and techniques as well as familiarize medical students with indications and contraindications of different radiological exams. The course also emphasizes basic radiological anatomy and train medical students to identify and diagnosis common and emergency pathological conditions using different radiological modalities.

**M590 Forensic Medicine (2.5 credit hours, 2 weeks)**
This course gives students introduction about forensic terminology with emphasis on the understanding of the underlying pathology of traumatic and sudden, unexpected deaths encountered. The course deals with medico-legal investigation of death and injury due to natural causes, accidents, and violence. It covers analysis/investigation of transportation injuries, of homicides, suicides due to various causes. Students are also exposed to presentation of sexual crimes and methods for identification and guidelines for quality control assurance.

**M610 General Surgery II (9 Credits hours, 8 weeks)**
An eight-week general surgery rotation is a clinical experience that introduces students to basic principles of surgery and related problems. Its curriculum is defined by learning objectives and encompasses inpatient-hospital and outpatient-office experiences. During the clerkship, students evaluate and follow patients. The 8 week rotation is divided into six weeks of general surgery and two-week blocks of surgical subspecialties (Urology and Neurosurgery). Functioning as members of the patient-care team, the students share pre- and post-operative evaluation and management, and visiting the operating theaters to observe surgical procedures. Daily rounds and faculty/preceptor interactions give students the opportunity to discuss patient problems in detail. Faculty members provide students with regular feedback, advice, and direction during this rotation. Throughout the course, students will be involved in the daily morning report, clinical rounds, outpatient clinics and interactive seminars.

**M620 General Medicine II (9 Credits hours’ 8 weeks)**
This is a general internal medicine for final year medical students during which they advance their clinical skills in the field of internal medicine. Students are expected to cover core medical problems through daily bed side teaching rounds and attending specialty outpatient clinics. Throughout the course students will have interactive seminars that cover a wide variety of common and emergency medical problems. Throughout the course, students will be involved in the daily morning report, clinical rounds, outpatient clinics and interactive seminars and department teaching activities.
M630 Pediatrics II (9 Credit Hours, 8 weeks)
This is an eight weeks rotation for 5th year medical students. During these 8 weeks rotation, students are exposed to different settings through rotating with different sub specialist in different hospitals. This includes both in patients and out patients encounters. This rotation is to emphasize active student's involvement of students in patient care and allow them to follow their own patients with continuity. Students are also encouraged to act at the level of interns in preparation for graduation requirement. Throughout the course, students will be involved in the daily morning report, clinical rounds, outpatient clinics and interactive seminars.

M640 Obstetrics and Gynecology II (9 Credits hours, 8 weeks)
This course is intended to expand on the knowledge acquired in the fifth year, with emphasis on the practical aspects of obstetrics and gynecology. During this course, students are expected to learn more about management of common obstetric and gynecology diseases and to deal with common emergency situation in this field. Throughout the course, students will be involved in the daily morning report, clinical rounds, outpatient clinics and interactive seminars.