Ministry of Higher Education
Directorate of Private Higher Educations and Universities
Ghalib University
Faculty of Medicine

Curriculum and Course Content for Curative Medical Faculty (MD)

First revision: 2017

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Preface

This core-curriculum introduces a andragogical foundation and specific learning design to assure achievement of high-level learning outcomes and to help students mature as individuals and professionals ready to assume personal responsibility for their actions and decisions, learning throughout their lives, advocating for all patients, and providing the highest-quality medical care with the highest ethical standards.

Ghalib University Curriculum Revision Committee (Ghalib University/CRC), Assigned in 1395 (2016)

1. Dr. Abdul Rahman Hameed, MD- Vice Chancellor of GHALIB UNIVERSITY in Academic affairs -Chairperson

2. *Dr. Noor Aqa Akramzada, MD-Dean of Medical Faculty -Member*
3. *Dr. Zabihullah Adib, MD- Head, Department of Clinic -Member*
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Goals for First Curriculum Revision

The curriculum committee developed eight goals that were designed to guide the curriculum development process:

1. Assure all graduates demonstrate goals and learning objectives at the end of all courses;
2. Provide standard graduate core curriculum outlines to prevent curriculum shortage, overload and duplication;
3. Provide standard course contents for MD degree (for all subjects);
4. Provide enough highlights to goals, objectives, and learning methodologies for faculties and tutors;
5. Provide a student-centered curriculum;
6. Provide frequent and developmental opportunities for professional attitude development throughout the curriculum;
7. Introduce new essential subjects adapting to the objective requirements of our community and omit unnecessary, overlap or duplicate ones;
8. Provide laboratory and clinical clerkship objectives and teaching methodologies for medical faculty and tutors to assure the expected skills at the end of each courses.

It is expected that this curriculum will serve as present-day guideline for the students and faculty members. In order to further improve, update and make it effective; this curriculum needs constant review and revision with time-to-time updating.

Lastly, we would like to extend our deep and sincere gratitude to all faculty members and head of departments who shared their expertise and insights and worked hard to produce this valuable document.

Curriculum committee Ghalib University-May 2017

Preamble

Ghalib University is working in two provinces (Kabul and Herat). In Kabul it is located in the Shaheed Square Airport Avenue, which embraces the Faculty of medicine, Faculty of Dentistry, Faculty of Law and Political Science, Faculty of Economics, and hosts approximately over 3000 students in above mentioned fields. We have 7-years MD program including three semesters (72 credits-each semester counting 24 credits) house-job in faculty of medicine.

Ghalib University founded in 2010. Throughout the history of this faculty, we have maintained a strong commitment to teach and practice of medicine in the context of a mission of service to the society. In addition, Ghalib University hospital is established for medical students and hope to be the home of the most rapidly growing residents in many clinical fields in future.

The curriculum leading to the degree of Professional doctorate of Medicine is designed to provide a medical education that prepares graduates comprehensively for residency training, provides them the experience on which to base their career selection, and prepares them for professional lives of continuous learning.

Over the last one and half years, the Ghalib University/Curriculum Committee, worked diligently to revise and improve the identified weaknesses of the curriculum various courses and clerkships, and modified the curriculum on the basis of new teaching/learning methodologies, includes basic biomedical sciences and clinical subjects. Ghalib University /Faculty of medicine curriculum, has been continuously modified to prepare professional graduates that will have the ability to adapt to the over-changing practices of medicine. We are keeping the best of what is proven to work a system-based approach foundation, small group learning, in-depth clinical training, and expanding these elements across all seven years of the program. Our education system according to the newly revised curriculum, encourages interaction and bridging between traditional and modem methodologies, such as simulations and virtual reality which are being used in medical faculties worldwide, to ensure a balanced acquisition of knowledge and skills' by the medical students. Hopefully, we continuously and strategically review, update and enhance the new and proved teaching/learning methodologies. We expect that this curriculum will be ensuring the required learning skills, and enable students to master the knowledge and skills of the core curriculum contents.

Let me to congratulate the academic staff and medical students, for the first revision and redesigning of curriculum, and thanks a lot from all who were involved in this phenomenal work, especially Ghalib University- Curriculum Committee (GHU-CC) with great appreciation.

Contents

Introduction

Faculty of medicine in Ghalib University is providing a discipline-based curriculum that is 7 years (including 18-month internship) in length and culminating in a MD degree (Professional Doctorate of Medicine). This curriculum is based on the public health sector status, facilities of Ghalib University, and socioeconomic condition of the country.

One should realize that there are "formal" and "informal" components in the curriculum. There are the formal activities that are allocated in the timetable of the students and the informal activities that are usually voluntary and outside the working hours like Internet Club, Library, and Gym etc. In addition, one can notice that the distribution of the clinical courses is not based on the actual requirements of the society-the knowledge domain is stressed at the expense of vocational skills, and formal courses on communication skills and attitudes are lacking in some of the curriculum.

Ignoring recent developments in new educational tools are not rational; therefore, decision has to be made on the use of certain educational strategies to achieve educational learning objectives. Each medical institution can look at these strategies and decide which would be appropriate to adopt.

The assigned curriculum committee agreed that problems exist within the current curriculum; these include overcrowding, over-representation, duplications, lack of clear-cut knowledge and skills objectives, teaching and learning methodologies and the ignorance of some necessary subjects. Immunology, Research methodology & Biostatistics, First Aids, Clinical toxicology, Substance related disorders, Nutrition & Health, Behavioral Science, Essential drugs and rational. use of drugs are formally introduced in the new revision of the curriculum. In integrated curriculum; integration is made between subjects at different phases of the curriculum, such as the integration between anatomy, pathology and surgery. The integration could be both vertical and horizontal as in the system based approach. The advantages of the integrated approach are reduction of the fragmentation of knowledge, increased student, motivation, and promotion of staff collaboration.

Discipline-based curriculum; has the advantages of preserving the identity, contents, and fundamentals of each discipline. It also helps encouraging students to choose the basic or applied sciences as their profession. Furthermore, teachers feel more comfortable and perform better in a discipline-based system, and it is less costly and less demanding. Therefore, according to the recommendations of curriculum committee and the university trend and economic challenges, at the moment discipline-based curriculum for 5.5 years and 1.5-year (72 credits) internship is a better choice for our institution. At the future we will work to pave the ground for organ based curriculum.

The major anticipated challenge is to maintain a viable, enthusiastic team of faculties who periodically update and revise this curriculum continuously for maintenance and enhancement.

Kelly in 1982 described that:
"The curriculum is all aspects and diminutions of the educational experiences; which pupils have during any period of education"

MD Curriculum

Medical education is a life-long process and MD curriculum is a part of the continuum of medical education, proceeding to internship, post-graduation training, continuous medical education and Continuous Professional Development (CME/CPD).

Curriculum development is a dynamic process and works best in an environment conducive to learning, and thrives on monitoring, quality assurance and continuous quality improvement. It consists of not only the formal curriculum but also the informal learning that takes place through day-to-day interactions of students with peers, teachers, tutors, colleagues, other health care providers, the patients and their families.
With the information explosion of the last century and scientific discoveries expanding the boundaries and restructuring the concepts of current knowledge, it is essential to work toward identifying a core curriculum. The curricular model should be grounded in educational knowledge and adult learning principles, which will promote learning of Basic Biomedical sciences in the clinical context. Faculty of Medicine should ensure building of analytical and critical thinking, clinical and lifelong learning skills and desired professional behaviors in medical graduates by appropriate multi-modal teaching, learning, and assessment and feedback strategies.

Doctorate of Medicine (MD) Program (Professional Doctorate of Medicine)

Ghalib University takes an approach to medical education, requiring all students to participate in the Practice of Medicine (POM) courses. These courses span all 5.5 years with 1.5-year internship, allowing students to immediately begin clinical training during the first block of first year and providing the means for students to develop outstanding clinical thinking, interpersonal and technical skills and professionalism while also studying the Basic Biomedical sciences. Every intern is obliged to conduct a clinical research during the 1.5 years of internship program on an assigned issue by the research committee of the Ghalib University and present it at the end of internship program. Only after completion of this seven years' program, and presenting the scientific research papers; he/she is granted the MD degree, which has the privileges of a master degree.

Practice of Medicine (POM)

The three main components to the POM course are; Doctor- Patient - Society (DPS). Clinical Apprenticeship Program (CAP), Problem-Based Learning (PBL) and Case Based Learning (CBL) are learning methodologies that challenges students with daily and weekly clinical cases that integrate biomedicine, psychosocial issues, the art and science of clinical problem solving, and critical appraisal of the medical literature in small groups, facilitated by faculty tutors. The Practice of Medicine is a course that spans all 5.5 years; provide early patient exposure and the means to develop outstanding clinical thinking, technical skills, and a sense of professionalism. In the first two years, the Practice of Medicine offers a clinical apprenticeship in which students are placed with a practicing primary care

clinician; while students meet in small groups with faculty mentors to learn clinical assessment skills and to consider ethical, social, and professional issues. In addition, problem-based learning is conducted through small-group and case-based tutorials.

Vision

We are a Faculty of Medicine respected nationally for our values-centered excellence in teaching, research, clinical care, and leadership. We are distinguished for preparing graduates who promote justice and achieve excellence in their chosen fields while demonstrating an extraordinary compassion and commitment to the service of others, and the Faculty of Medicine is to be the golden benchmark for academic excellence in the country.

Mission

The mission of Ghalib University- Faculty of Medicine is:

- To prepare students for meeting and responding to the changing healthcare needs and expectations of the community. This will be achieved in full partnership with other healthcare providers and relevant sectors in the community;
- Providing innovating educational opportunities for medical students, preparing them to successfully pursue postgraduate training and continuous professional development;
- Advancing scientific knowledge with important research discoveries;
- Improving healthcare in Ghalib university Teaching Hospital and clinics;
- Emphasizing the colleague social responsibility in providing and promoting effective health care for different sectors of the community.

Values

The faculties and staff of the Ghalib University-Faculty of medicine, commits to the Islamic doctrinal and cultural values as guides for our all decisions and behaviors.

Years I-II

The balance of the curriculum in Year I and II is devoted to Basic Biomedical science. In year I, instruction is concentrated on the study of normal human biology and function, with specific courses in review of Organic and nonorganic chemistry, Medical physics, Medical Biophysics, Gross and Microscopic Anatomy, Genetics, Molecular Cell Biology, first aids, English language and Information communication technology.

In year two; instructions are focused on the study of Gross and Microscopic Anatomy, Physiology, Embryology, Biochemistry, Microbiology and Immunology.

Years III-IV-V& VI

During the 3 and half years, the MD program consists of Pathology, Medicine, Surgery Pharmacology, Obstetrics & Gynecology, ENT, Pediatrics, Ophthalmology, Radiology and Imaging, Anesthesia Dermatology, Psychiatry, Neurology, Substance related disorders, Forensic Medicine, Clinical & Forensic Toxicology, Orthopedics fundamentals of Researches and Biostatistics, Nutrition, Social and behavioral science and a series of required clerkships designed to prepare students for graduate training, while at the same

time providing them with extensive exposure to a variety of fields sufficient to enable them to make appropriate career decisions.

Statement of learning objectives

The all-embracing objective of the M.D program is the graduation of physicians who are competent to the satisfaction of the- faculties and the standards of the profession, in the following areas:

- Medical knowledge
- Patient care
- Interpersonal and communication skills
- Practice-based learning and improvement
- Discipline-Based Practice
- Professionalism

The Program Learning objectives are informed by well-established standards of medical education and designed to reflect the unique strengths and goals of Ghalib University, Faculty of Medicine.

Ghalib University seeks to educate students of medicine who understand domestic and global health issues and who are prepared to participate in health care decision-making. The educational program will build upon the attributes of each student by promoting the acquisition of knowledge and skills in health care policy, community health, medical education, global health and research. By adopting skills for life-long learning, graduate physicians of Ghalib University will be able to continue to grow as professionals throughout the rest of their medical careers. Also through the institution's strong dedication to instruction in clinical skills, our students will be equipped with scientific knowledge and specific skills required to perform successfully during postgraduate training in their chosen specialties.

Outline of overall learning objectives

For being as Standard Medical Doctor, the graduate must be:

- ***Knowledgeable***
- ***Skillful***
- ***Community Health Promoter***
- ***Critical thinker (Problem Solver)***
- ***Professional***
- ***Researcher***
- ***Leader & Role Model***

1- Medical Knowledge

Each graduate student will demonstrate knowledge of established and evolving biomedical, clinical, epidemiological, and social-behavioral sciences as well as the application of this knowledge to serve as a physician in health care decisions.

By the time of graduation, students are expected to:

- Apply the scientific basis of the normal structure, development, function, and relationships among the major organ systems of the body, to concepts of health and disease;
- Link biochemical, physiological, neurological, and immunological mechanisms, to their role in maintaining body homeostasis;
- Apply principles of Pathophysiology to diseases and disorders;
- Evaluate the role of immunology and microbiology in health and disease;
- Compare and contrast the genetic processes and environmental influences on health and on disease and its treatment;
- Interpret the role of normal human biological, cognitive, psychological, and behavioral development across the life span as determinants of health and illness;
- Interpret the clinical, laboratory, pathologic, and radiologic manifestations of common diseases in patient care;
- Apply pharmacological principles to medical therapeutics;
- Apply principles of nutrition for maintaining optimal health and managing diseases;
- Apply the principles of epidemiology to the practice of medicine for the individuals in local and global communities;
- Discuss the scientific methods, clinical, and epidemiological researches as they relate to patient care.

2- Patient Care (Skills)

Each graduate will function in an inter-professional health care team to deliver effective and Compassionate patient -centered care.

By the time of graduation, students are expected to:

- Elicit a complete and accurate patient history including believes, spiritual and cultural issues and incorporate these into the comprehensive care of a patient;
- Perform an accurate and relevant screening and focused physical and mental status examinations;
- Perform common clinical procedures;
- Select appropriate physical examination techniques, laboratory tests, radiologic, and other clinical studies and interpret the results;
- Formulate a plan for the diagnosis and treatment of common medical conditions;
- Recognize life-threatening conditions and institute appropriate initial care;
- Identify opportunities for early intervention, prevention, and health education.

3- Interpersonal and communication Skills

Each graduate will communicate and interact effectively with patients, their families, and members of the inter-professional health care team.

By the time of graduation, students are expected to:

- Demonstrate empathic patient-centered communication;

- Inform the patient and his/her representatives about the status of the patient's health and condition;
- Synthesize and present a coherent description of the patient's clinical condition based upon the information obtained from the patient and other resources;
- Demonstrate shared decision-making with patients including discussing the risks and benefits of medical interventions and obtaining informed consent;
- Demonstrate skills and strategies for engaging patients and their families in difficult situation (e.g. end-of-life, medical errors, serious diagnosis, etc.);
- Collaborate effectively with other health care professionals in caring for patients;
- Negotiate conflicts within health care teams;
- Consider the patient's culture, believes and level of health literacy for communicating Effectively.

4- Practice– Based learning & System- Based practice

A. Practice– Based learning

Each graduate will demonstrate the ability to continuously evaluate patient care practices, appraise and assimilate scientific evidence, in order to improve the practice of medicine and ensure the safety and quality of patient care.

By the time of graduation, students are expected to:

- Evaluate study design, methods, and results as they apply to evidence-based medicine;
- Apply reflection and feedback to incorporate lessons learned into future practice;
- Utilize electronic and other resources in the practice of life-long learning;
- Apply medical standards, clinical practice guidelines, and practice algorithms appropriately for individual patients or populations;
- Use student-centered principles to teach colleagues, patients, and the community-at-large about health and medical issues;
- Critically appraise the effectiveness of diagnostic and therapeutic interventions.

B. Systems- Based Practice

Each graduate will recognize and respond to issues in the broader health care system and will effectively utilize system resources to provide optimal health care to the individual patient, and to the local and global communities.

By the time of graduation, students are expected to:

- Discuss the role of advocacy and health care policy in improving patient care;
- Use system resources available to patients and communities for health education, treatment and rehabilitation;
- Define the elements in the health care system that lead to disparities in health and access to health care;
- Interpret information about the health of patient populations and communities to identify needs and plan appropriate interventions in support of population health;
- Explain how diverse cultures and belief systems impact perception of health and illness and response to symptoms, diseases, and diagnostic and therapeutic interventions;

- Apply the principles of cost-effective health care in patient care;
- Analyze the organization, financing, and delivery of health care;
- Discuss the role of medical laws and conflicts of interest in the health care system.

5- Medical Ethics & Professionalism

Each graduate will demonstrate a commitment to the- highest standards of professional responsibilities, adherence and believe to ethical principles.

By the time of graduation, students are expected to:

- Apply the theories and principles that govern ethical decision making;
- Demonstrate ethical behavior and professionalism including;
- Compassionate treatment of patients;
- Respect for privacy and dignity;
- Honesty and integrity;
- Truthfulness;
- Patient advocacy;
- Confidentiality;
- Accountability;
- Demonstrate reliability, punctuality, dependability, and integrity in all professional activities;
- Promote ethical and professional behavior of peers;
- Recognize personal and professional conflicts of interest.

6- Leader and Role Model

Medical graduates are expected to demonstrate exemplary conduct and leadership potential in:

- Advancing patient and health care;
- Enhancing continuous medical education;
- Initiating, participating in and adapting to change, using scientific evidence and approaches;
- Enhancing the trust of public in the medical profession by being exceptional role models at work and also when away from work accept leadership if required;
- Provide leadership in issues concerning society.

7- Researcher

Faculty of medicine graduates are expected to demonstrate constructive criticism, a spirit of enquiry, creativity and a research oriented attitude.

The graduates should be able to:

- Identify a researchable problem and critically review literature;
- Phrase succinct research questions and formulate hypotheses;
- Identify the appropriate research design in epidemiology and analytical tests in biostatistics to answer the research questions;
- Collect, analyze and evaluate data, and present results where possible;
- Demonstrate ethics in conducting research.

Teaching and learning strategies:

Active learning is the strategic approach in faculty of Medicine, that is, learners interact more with the subject matter to construct and "own" knowledge. They are not empty vessels into whom faculty pour knowledge. Active learning activities promote thoughtful engagement, encourage analytical thinking and reasoning, foster the integration and application of knowledge, and are designed around well-defined learning objectives. Students engage in solving problems, sharing ideas, giving feedback, and teaching one another. Active learning requires faculty who facilitate and emphasize the development of students' skills. Active learning requires collaboration in both teaching (e.g., working teams of instructors, instructional designers, educational technology professionals, etc.) and learning (e.g., small groups). Active learning incorporates assessment as part of curriculum and instruction to ensure coherence and consistency. Active learning can enhance academic achievement, promote retention and application of knowledge, enhance understanding and mastery of course content, improve critical thinking and problem solving, improve clinical competencies, enhance interpersonal skills, promote teamwork, increase student engagement, promote positive student attitudes, increase course satisfaction, and encourage self-directed lifelong learning.

The following learning methods, taken in part from Prince's (2004) review of active learning research, provides the generally accepted definitions and uses of common active learning terms:

Active learning is defined as any instructional method that engages students in the learning process. Active learning requires students to do meaningful activities and think about what they are doing. While this definition could include traditional activities such as homework, in practice it refers to activities introduced into the classroom. The core elements of active learning are student activity and engagement in the learning process. Active learning is often contrasted to the traditional lecture where students passively receive information.

Collaborative learning can refer to any instructional method in which students work together in small groups toward a common goal. As such, collaborative learning can be viewed as encompassing all group-based instructional methods, including cooperative learning. In contrast, some authors distinguish between collaborative and cooperative learning. In either interpretation, the core element of collaborative learning is to emphasis on student interactions rather than on learning as a solitary activity.

Cooperative learning can be defined as a structured form of group work where students pursue common goals while being assessed individually. A common model of cooperative learning incorporates five specific tenets: individual accountability, mutual interdependence, face-to-face primitive interaction, appropriate practice of interpersonal skills, and regular self-assessment of team functioning. The core element held in common is a focus on cooperative incentives rather than competition to promote learning.

Team-based Learning (TBL) is an instructional method that allows a single instructor to conduct multiple small groups simultaneously in one classroom. TBL stresses the importance of out-of-class learning based. on learning objectives, emphasizes the

importance of holding learners accountable for attending class prepared to participate, and provides guidelines for designing group learning tasks to maximize participation. Class time is shifted away from learning facts toward application and integration of information. The instructor retains control of content acting as both facilitator and content expert. TBL consists of repeating sequences of three phases: pre-class preparation, readiness assurance, and application of concepts. Case-Based Learning (CBL) is a learner-centered instructional approach where factually based, complex problems are used to stimulate. discussion and collaborative analysis. CBL involves the interactive exploration of realistic and specific situations for which there is often no single correct solution.

Problem- based learning (PBL) is a type of CBL where problems are introduced at the beginning of the instruction cycle to provide the context and motivation for learning. It is always active and usually collaborative or cooperative. PBL typically involves significant amounts of self-directed learning. Some evidence shows that PBL develops enhanced problem-solving skills in medical students and that these skills can be improved further by coupling PBL with explicit instruction in problem solving.

E-learning as the letter "e" in e-learning stands for the word "electronic", e-learning would incorporate all educational activities that are carried out by individuals or groups working online or offline, and synchronously or asynchronously via networked or stand-alone computers and other electronic devices.

In brief, our teaching – learning methodology fulfill by the following approaches:

- Lecture with Audio-Visual Aids;
- Laboratory practice;
- Small Group Tutorials (Problem Based Learning-PBL, Case Based Learning-CBL etc.);
- Bedside Learning (Clerkship and Rotations);
- Role play (Simulated or Standard patient in the future);
- Practice on Manikin and Moulage in Skill-lab;
- Self- learning (Learning to Learn)
- E- leaning;
- Conferences.

Credit Hours' Guidelines

Introduction:

Credit hour is the unit by which an institution measures its course work. The number of credit hours assigned to a course quantitatively reflects the outcomes expected, the mode of instruction, the amount of time spent in class, and the amount of outside preparatory work expected for the class.

A semester credit hour is the most commonly used system of measuring course work and is usually based on 16 weeks' calendar. Further, a Lecture class hour is 50 minutes, while a laboratory skill class hour is 100 minutes. Many of the definitions refer to weekly student class hours (WSCH).

Credit guidelines:

One semester credit hour is assigned in the following ratio of component hours per week devoted to the course of study:

A- Lectures:

Normally, one theory credit hour is associated with a class meeting for 50 minutes per week for an entire semester (16 weeks) or the equivalent 800 semester-minutes, excluding final examinations.

B- Laboratory Skills

One credit hour for laboratory works requires 100 minutes per week and 1600 minutes for entire semester.

C- Clerkship (Bedside practice in university hospital and clines)

One credit hour for clerkship minimally requires 150 minutes per week and 2400 minutes over the semester.

Evaluations of the curriculum

Ongoing evaluation of all elements of the curriculum is essential to maintain continuous improvement of the curriculum. Evaluation of the curriculum is performed by students, faculty and staff;

The process is coordinated by the staff of the Office of Medical Education and is performed by the Evaluation Committee. The Evaluation Committee (Medical faculty lecturers and two students) is responsible for the assessment of all required courses and clerkships. The Evaluation Committee reports to the Educational Policy Committee- EPC, which has overall responsibility for management of the curriculum. The Evaluation Committee conducts continuous assessment of preclinical courses, Clinical courses and clerkships;

For each course and clerkship students complete an evaluation- of the course/clerkship in addition to faculty evaluations for lecturers, small group facilitators, and site preceptors for clinical experiences. These data are provided to course faculty, course/clerkship directors, and department chairs.

The Evaluation Committee meets monthly. The committee determines which courses or clerkships to evaluate and what data are needed, including but not limited to:

- Course or clerkship syllabus;
- Student evaluations of a course or clerkship;
- Evaluation and grading methods;
- Student performance in a course or clerkship;
- Interviews with faculty and staff involved with the course/clerkship;
- Annual course/clerkship report (The course/clerkship director must submit a response to a series of course assessment questions within 2 months of the end of the course).

The final report is distributed to the course director and to the Educational Policy Committee- EPC at its regular monthly meeting. The Committee accepts the findings and recommendations of the Evaluation Committee or asks for a response from the course/clerkship director. After resolution of all outstanding issues, the amended report is approved by the EPC and send to the course director for implementation of the recommendations.

The Educational Policy Committee monitors the curriculum by examining course, clerkship and component assessments provided by the Evaluation Committee. Clinical skills are measured throughout the yearly components. Clinical skill measurement culminates in a comprehensive assessment at the end of clinical courses.

Assessment of Students

Assessment is a critical component of instruction; properly used, it can aid in accomplishing key curricular goals. The impact of decisions regarding how and when to evaluate the knowledge and performance of your students cannot be overestimated.

A primary purpose of testing is to communicate what you view as important. Tests are a powerful motivator, and students will learn what they believe you value. Assessment also helps to fill instructional gaps by encouraging students to read broadly on their own and to participate broadly as educational opportunities are available. This outcome of testing is especially important in the clerkships, where the curriculum may vary from student to student, depending on factors such as the clinical setting and the random flow of patients. This outcome may also be important in some basic biomedical science settings (e.g., problem based learning), where the educational experiences may vary from student to student.

Because tests have such a powerful influence on student learning, it is important to develop tests that will further your educational goals and objectives.

Examination Regulations

1- Attendance:

Seventy-five percent attendances in a subject for appearing in the examination is compulsory provided he/she has 80% attendance in non-lecture teaching, i.e. seminars, group discussions, tutorials, demonstrations, practical in health facilities (Primary, Secondary and Tertiary).

2- Internal Assessment:

- It shall be based on day-to-day assessment, evaluation of student assignment, preparation for seminar, clinical case presentation etc.;
- Regular periodical examinations shall be conducted throughout the course;
- Day-to-day records should be given importance during internal assessment;
- Weightage for the internal assessment shall be 20% of the total marks in each subject.

Some examples of internal assessment are as follows:

- Preparation of subject for student's seminars;
- Preparation of a clinical case for discussion;
- Clinical case study/problem solving exercise;
- Proficiency in carrying out a practical or a skill in small research project;
- Multiple choice questions (MCQ) test after completion of a system course;
- Each item-tested shall be objectively assessed and recorded;
- Some of the items can be assigned as Home work/Vacation work.

3- University Examinations:

A-Theory papers; will be prepared by the examiners as prescribed. Nature of questions will be short answer type/objective type and marks for each part indicated separately.
B-Practical/ Clinical; will be conducted in the laboratories or hospital wards. Objective will be to assess proficiency in skills, conduct of experiment, interpretation of data and logical conclusion. Clinical cases should preferably include common diseases not esoteric syndromes or rare disorders. Emphasis should be on candidate's capability in eliciting physical signs and their interpretation.
C-Viva/Oral; includes evaluation of management approach and handling of emergencies. Students skills in interpretation of common investigative data, x-rays, identification of specimens, ECG, etc.
The examinations are to be designed with a view to ascertain whether the candidate has acquired the necessary for knowledge, minimum skills along with clear concepts of the fundamentals which are competently. Evaluation will be carried out on an objective basis. Question papers should preferably be of short structure/objective type.
D-Clinical Cases/Practical; will take into account common diseases which the students are likely to come in contact in practice.
E-Rare Cases/Obscure Syndromes and long cases, shall not be put for final examination.

Techniques of Assessment and Evaluation:

- Multiple choice questions (MCQs)
- Extended Matching Questions (EMQ)
- Short Answer Questions (SAQ)
- Mini-cases (MC)
- PBL or Tutorial Performance Assessment (PBL-TPA)
- Objectives Structured Clinical Examinations (OSCE)
- Traditional clinical examinations
- Clinical Skills Learning Assessment (CSLA)
- Bedside Session Assessment (Logbook)
- Visits/ Case Report Assessment

Distribution of Marks

A- Subjects with practical course

1-Midterm Exam: viva & Practical:	40 Marks includes:
▪ Practical	20 Marks
▪ Viva	20 Marks
2- Semester Final Exam (written Paper)	60 Marks
Total End- semester examination Score:	**100 Marks**

B- Subjects without practical course

1- Midterm Exam:	20 Marks
▪ Viva	20 Marks
2- Semester Final Exam (written paper):	80 Marks
Total End- semester final exam	**100 marks**

Dr. William Osier says: *"Medicine is learned by the bedside and not in the classroom... See and then Research, Compare and Control"*.

Ghalib University Hospital

Patients has priority to Ghalib Hospital. This means that anything that is created, built and organized within the framework of the project always puts the patient first, and is based on the patient's perspective. The goal is to provide the right care for the right patient at the right time. Patient safety, privacy and comfort are essential. In order to contribute to the development of the health services, it is important to strengthen collaboration between health care, clinical research, basic research and education.

Spencer says: "Teaching in the clinical environment is defined as teaching and learning focused on and usually directly involving, patients and their problems". The clinical environment consists of hospital inpatients, outpatients and community settings, each with their own distinct challenges. It is in this environment that students learn what it means to be a real doctor. Skills such as history taking, physical examination, patient communication and professionalism are best learned in the clinical setting, medical knowledge is directly applied to patient care. Students begin to be motivated by relevance and self-directed learning takes on a new meaning. Clinical teachers take their role as teachers of future generations of doctors seriously and with enthusiasm.

Ghalib Hospital in Kabul City:

Beds: 20
Departments: 5
Doctors: 13
Midwife: 8
Laboratory Technicians: 2
Pharmacists: 2
Administrative: 4
Workers: 4
Address: Karte-Parwan Road, Kabul

Ghalib Hospital in Herat Province:

Beds: 30
Departments: 7
Doctors: 17
Midwife: 10
Laboratory Technicians: 2
Pharmacists: 3
Administrative: 6
Workers: 5
Electric: 1
Guard: 3
Address: Bagh Azadi Road, Herat

Course Title, Code, Credit & Disciplines

Number	Course Titles	Semester	Credits			Kind of Course	Course Code
			Knowledge Credits	Clerkship, lab or small course training	Total Credits		
1	Molecular Cell biology	1	2	1	6	Basic Biomedical science	MED1 001
		2	2	1			MED2 001
2	Information-Communication Technology-ICT	1	0	2	4	Medical Universities Inclusive	MED2 002
		2	0	2			MED2 002
3	Medical genetics	2	1	1	2	Basic Biomedical science	MED3 003
4	Inorganic and Organic Chemistry	1	2	1	3		MED2 004
5	Islamic students	1	1	0	8	Universities Inclusive	MED1 005
		2	1				MED2 005
		3	1				MED3 005
		4	1				MED4 005
		5	1				MED5 005
		6	1				MED6 005
		7	1				MED7 005
		8	1				MED8 005
6	English Language	1	4	0	8	Medical Universities Inclusive	MED1006
		2	4	0			MED2006
7	Medical Physics	1	2	1	3	Basic	MED1 007
8	Biophysics	1	2	1	3	Biomedical science	MED 1008
9	Gross Anatomy	2	3	1	12	Basic biomedical Science	MED2 009
		3	3	1			MED3 009
		4	3	1			MED4 009
10	Microscopic anatomy (Histology)	2	2	1	6		MED2 010

			3	2	1			MED3 010
11	Medical Embryology		3	2	1	3		MED3 011
12	Medical Physiology		3	2	1	11		MED3 012
			4	3	1			MED4 012
			5	3	1			MED5 012
13	Cellular and Molecular Immunology		4	1	1	2	Basic Biomedical science	MED4 013
14	Medical Ethics and Professionalism		6	1	0	1	Behavioral and Social Science	MED6 014
15	Medical Biochemistry		3	2	1	6	Basic Biomedical Science	MED3 015
			4	2	1			MED4 015
16	Medical Microbiology		4	2	1	6	Basic Biomedical Science	MED4 016
			5	2	1			MED5 016
17	Medical Parasitology		4	1	1	2		MED4 017
18	Pathology		5	2	1	9		MED5 018
			6	2	1			MED6 018
			7	2	1			MED7 018
19	Clinical Pharmacology		6	2	1	7		MED6 019
			7	2	1			MED7 019
			8	1	0			MED8 019
20	Public Health	Basic of Public Health	5	1	0	9	Behavioral and social science	MED5 020
		Public Health Nutrition	6	1	0			MED6 020
		Environmental and Occupational Health	7	1	0			MED7 020
		Epidemiology	8	2	0			MED8 020
		Research & Biostatistics	11	2	0			MED11 020
		Health Management	10	1	0			MED10020
		Health Policy and Economics	11	1	0			MED11 020
21	Behavioral Science and health education		6	1	0	1		MED6 021
22	Forensic Medicine		11	1	1	2		MED11 022
23	Medicine	Physical Diagnosis	5	2	2	24	Clinical Science and Skills	MED5 023
		RHD &Pulmonary Diseases	6	2	2			MED6 023
		Cardiovascular Diseases	7	2	2			MED7 023

		GIS diseases, Liver diseases and Nephrology	8	2	2			MED8 023
		Endocrine disorders and Rheumatic diseases	9	2	2			MED9 023
		Hematology	10	2	2			MED10 023
24	SURGRY	First aids	1	1	1	26	Clinical Science and Skills	MED1 024
		Surgry1 (basics of surgery)	5	2	2			MED5 024
		Surgery2 (Emergency surgery)	6	2	2			MED6 024
		Surgery3 (Abdominal surgery)	7	2	2			MED7 024
		Surgery4 (Abdominal surgery)	8	2	2			MED8 024
		Surgery5 (Thoracic surgery)	9	2	2			MED9 024
		Neurosurgery	10	1	1			MED10 024
		Urology	11	1	1			MED11 024
25	Orthopedics		11	2	2	4	Clinical Science and Skills	MED11 025
26	Infectious diseases		8	2	2	4		MED8 026
27	Radiology diseases		7	1	1	4		MED7 027
			8	1	1			MED8 027
28	Obstetrics		7	2	1	6		MED7 028
29	Gynecology		8	2	1			MED8 029
30	Anesthesia		9	1	1	2		MED9 030
31	Dermatology and Venereal diseases		9	2	1	3		MED9 31
32	Essentials of pediatrics, Gastrointestinal and Endocrine disorders in children.		9	1	1	6	Clinical Science and Skills	MED9 032
	Respiratory, Cardiac, Hematologic and Renal disorders in children.		10	1	1			MED10 032
	Infectious Diseases in Children		10	1	1			MED10 042
33	Neonatology		9	1	1	2	Clinical Science and Skills	MED9 033
34	Pediatric Surgery		10	1	1	2		MED10 034
35	Otorhinolaryngology (ENT)		10	2	1	3		MED10 035

36	**Neurology**	**10**	**1**	**1**	**2**		**MED10 036**
37	**Ophthalmology**	**11**	**2**	**1**	**3**		**MED11 037**
38	**Psychiatry**	**11**	**1**	**1**	**2**		**MED11 038**
39	**Clinical and Forensic Toxicology**	**11**	**1**	**1**	**2**		**MED11 039**
40	**Tuberculosis**	**9**	**1**	**1**	**2**		**MED9 040**
41	**Substance use disorders**	**11**	**1**	**1**	**2**		**MED11 041**

Eleven semesters total credits	**Theory**	**135**	**Practical**		**213**
			78		
			Laboratory	**31**	
			Clerkship	**47**	
Research thesis credits			**4**		
Internship (House- job)			**72**		

TOTAL MD DEGREE CREDITS	**Theory**	**Practical**
289	**135**	**154**
	46.7%	**53.3%**

Academic Year: 1								First Semester
No	Course Title	Course Code	Credits	Course Hours				
				Knowledge	Clerkship	Lab	Small Course Training	Total
1	Medical Physics	MED1007	3	32	0	16	0	48
2	Biophysics	MED1008	3	32	0	16	0	48
3	Molecular cell Biology1	MED1001	3	32	0	16	0	48
4	English Language1	MED1006	4	64	0	0	0	64
5	Information Communication Technology1 (ICT)	MED1002	2	0	0	32	0	32
6	Inorganic & Organic chemistry	MED1004	3	32	0	16	0	48
7	Islamic studies1	MED1005	1	16	0	0	0	16
Total Semester Credits And Hours			19	208	0	96	0	304

Academic Year: 1								Second Semester
No	Course Title	Course Code	Credits	Course Hours				
				Knowledge	Clerkship	Lab	Small Course Training	Total
1	Gross Anuromy1	MED2009	4	48	0	16	0	64
2	Molecular cell Biology2	MED2001	3	32	0	16	0	48
3	Microscopic anatomy (Histology1)	MED2010	3	32	0	16	0	48
4	English Language2	MED2006	4	64	0	0	0	64
5	Information Communication Technology2	MED2002	2	0	0	32	0	32
6	Islamic Studies2	MED2005	1	16	0	0	0	16
7	First aids	MED2026	2	16	16	0	0	32
Total Semester Credits & Hours			19	208	16	80	0	304

Academic Year: 2				First Semester				
				Course Hours				
No	Course Title	Course Code	Credits	Knowledge	Clerkship	Lab	Small Course Training	Total
1	Gross Anatomy2	MED3009	4	48	0	16	0	64
2	Microscopic Anatomy (Histology2)	MED3010	3	32	0	16	0	48
3	Medical Physiology1	MED3012	4	48	0	16	0	64
4	Medical Embryology	MED3011	3	32	0	16	0	48
5	Medical Biochemistiry1	MED3015	3	48	0	16	0	64
6	Medical Genetics	MED3003	2	16	0	16	0	32
7	Islamic studies3	MED3005	1	16	0	0	0	16
Total Semester Credits And Hours			20	240	0	96	0	320

Academic Year: 2				Second Semester				
				Course Hours				
No	Course Title	Course Code	Credits	Knowledge	Clerkship	Lab	Small Course Training	Total
1	Gross Anatomy3	MED4009	4	48	0	16	0	64
2	Medical Physiology2	MED4012	4	48	0	16	0	64
3	Medical Biochemistry2	MED4015	3	32	0	16	0	48
4	Medical Microbiology1	MED4016	3	32	0	16	0	48
5	Medical Parasitology	MED4017	2	16	0	16	0	32
6	Islamic Study4	MED4005	1	16	0	0	0	16
7	Cellular and Molecular Immunology	MED4013	2	16	0	16	0	32
Total Semester Credits Number			19	208	0	96	0	304

Academic Year: 3				First Semester				
				Course Hours				
No	Course Title	Course Code	Credits	Knowledge	Clerkship	Lab	Small Course Training	Total
1	Medical Microbiology2	MED5016	3	32	0	16	0	48
2	General Pathology1	MED5018	3	32	0	16	0	48
3	Medical Physiology3	MED5012	4	48	0	16	0	64
4	Surgery 1 (Basic of Surgery)	MED5024	4	32	32	0	0	64
5	Medicine1 (Physical Diagnosis	MED5023	4	32	32	0	0	64
6	Basics of Public Health	MED5020	1	16	0	0	0	16
	Islamic Studies5	MED5005	1	16	0	0	0	16
Total Semester Credits & Hours			20	208	64	48	0	320

Academic Year: 3				Second Semester				
				Course Hours				
No	Course Title	Course Code	Credits	Knowledge	Clerkship	Lab	Small Course Training	Total
1	Systemic Pathology2	MED6018	3	32	0	16	0	48
2	Clinical Pharmacology1	MED6019	3	32	0	16	0	48
3	Surgery 2 (Emergency surgery)	MED6024	4	32	32	0	0	64
4	Medicine 2 (RHD, Pul. Disease)	MED6023	4	32	32	0	0	64
5	Medical Ethics & Professionalism	MED6014	1	16	0	0	0	16
6	Public Health (Nutrition)	MED6028	1	16	0	0	0	16
	Behavioral Science/Health Education	MED6021	1	16	0	0	0	16
7	Islamic Study6	MED6005	1	16	0	0	0	16
Total Semester Credits & Hours			18	192	64	32	0	288

Academic Year: 4				First Semester				
No	Course Title	Course Code	Credits	Course Hours				
				Knowledge	Clerkship	Lab	Small Course Training	Total
1	Clinical Pharmacology2	MED7019	3	32	0	16	0	48
2	Surgery3 (Abdominal Surgery)	MED7024	4	32	32	0	0	64
3	Systemic Pathology3	MED7018	3	32	0	16	0	48
4	Medicine3 (Cardiovascular diseases)	MED7023	4	32	32	0	0	64
5	Obstetrics	MED7028	3	32	16	0	0	48
6	Radiology & Medical Imaging1	MED7027	2	16	16	0	0	32
7	Environmental & Occupational Health	MED7020	1	16	0	0	0	16
	Islamic Study7	MED7005	1	16	0	0	0	16
Total Semester Credits & Hours			21	208	96	32	0	336

Academic Year: 4				Second Semester				
No	Course Title	Course Code	Credits	Course Hours				
				Knowledge	Clerkship	Lab	Small Course Training	Total
1	Infectious Disease	MED8026	4	32	48	0	0	80
2	Gynecology	MED8029	3	32	32	0	0	64
3	Surgery4	MED8024	4	32	48	0	0	80
4	Medicine4	MED8023	4	32	48	0	0	80
5	Clinical Pharocology3	MED8019	1	16	0	0	0	16
6	Epidemiology	MED8020	2	16	0	0	0	32
7	Radiology and Medical Imaging2	MED8027	2	16	32	0	0	48
8	Islamic Studies	MED8005	1	16	0	0	0	16
Total Semester Credits & Hours			21	208	208	0	0	416

Academic Year: 5				First Semester				
				Course Hours				
No	Course Title	Course Code	Credits	Knowledge	Clerkship	Lab	Small course Training	Total
1	Medicine5 (Endocrine/Rheumatic)	MED9023	4	32	32	0	0	64
2	Surgery5 (Thoracic)	MED9024	4	32	32	0	0	64
3	Anesthesia	MED9030	2	16	16	0	0	32
4	Dermatology and Venereal Disease	MED9031	3	32	16	0	0	48
5	Essentials of Pediatrics, Gastrointestinal and Endocrine Disorders in Children	MED9032	2	16	16	0	0	32
6	Neonatology	MED9033	2	16	16	0	0	32
7	Tuberculosis	MED9040	2	16	16	0	0	32
Total Semester Credits & Hours			19	160	144	0	0	304

Academic Year: 5				Second Semester				
				Course Hours				
No	Course Title	Course Code	Credits	Knowledge	Clerkship	Lab	Small Course Training	Total
1	Otorhinolaryngology (ENT)	MED10035	3	32	16	0	0	48
2	Neurology	MED10036	2	16	16	0	0	32
3	Neurosurgery	MED10024	2	16	16	0	0	32
4	Medicine6 (Hematology)	MED10023	4	32	32	0	0	64
5	Pediatric Surgery	MED10034	2	16	16	0	0	32
6	Respiratory, Cardiac, Hematologic & Renal Disorders in Children	MED10032	2	16	16	0	0	32
7	Infectious Disease in Children	MED10042	2	16	16	0	0	32
8	Health Management	MED10020	1	16	0	0	0	16
Total Semester Credits & Hours			18	144	144	0	0	288

Academic Year: 6				Last Semester				
				Course Hours				
No	Course Title	Course Code	Credits	Knowledge	Clerkship	Lab	Small Course Training	Total
1	Ophthalmology	MED11037	3	32	16	0	0	48
2	Urology	MED11024	2	16	16	0	0	32
3	Psyching	MED11038	2	16	16	0	0	32
4	Orthopedic	MED11025	4	32	32	0	0	64
5	Forensic Medicine	MED11022	2	16	0	16	0	32
6	Clinical & Forensic Toxicology	MED11039	2	16	0	16	0	32
7	Research & Biostatistics	MED11020	2	32	0	0	0	32
8	Health policy and Economic	MED11020	1	16	0	0	0	16
9	Substance use disorders	MED11041	2	16	16	0	0	48
Total Semester Credits & Hours			20	192	96	32	0	320

Course Contents (SYLLABUS)
Description

Introduction

The MD program courses divided into four phases Basic Biomedical sciences, Behavioral and Social Science, Clinical Science and Skill, and University Inclusive.

Basic Biomedical Science: Molecular cell biology, genetic, Medical physics, biophysics and chemistry. Gross Anatomy, Microscopic anatomy, Embryology, Biochemistry and physiology, Pubic Health, Forensic Medicine, toxicology, pathology, pharmacology and microbiology.

Behavioral and Social Sciences: Basic of public health, public health nutrition, environmental and occupational health, epidemiology, biostatistics, health management, fundamental of health research, health policy and economics, behavioral science.

Clinical Science and Skill: Internal medicine, surgery, otorhinolaryngology, neonatology, pediatrics, psychiatry, tuberculosis, infectious diseases, clinical and forensic toxicology, Pediatrics surgery, neurosurgery, obstetrics and gynecology, radiology and imaging, urology, anesthesia, dermatology, and substance related disorder.

Medical Universities Inclusive: Islamic studies, English language, and Information-Communication Technology-ICT.

I- Islamic Studies

Learning Objectives:

This course is aimed at:

- To provide basic information about Islamic studies
- To enhance understanding of the students regarding Islamic civilization
- To improve students' skill to perform prayers and other worships
- To enhance the skill of the students for understanding of issues related to faith and religious life.

Courses Contents:

Islamic Studies (Module 1)				
Discipline			**Religious**	
Department			**Islamic Studies**	
Course Title			**Basic concepts of Islamic Knowledge**	
Pre-requisites			**None**	
Course code			**MED1 005**	
Academic year			**1**	
Semester	**1**		**Spring/Fall**	
Number of credits	**1**		**Knowledge**	**1**
			Practical	**0**

Weeks	**Hours**		**Topics and Descriptions**
	Knowledge	**Practical**	
1	**1**	**0**	Basic concept of Islam Knowledge: General Information, Information about the Islamic Culture
2	**1**	**0**	Basic concept of Islam Knowledge: Importance of Knowledge in Islam, Quranic Verses and Hadith regarding Education
3	**1**	**0**	Basic concept of Islam Knowledge: Characteristics of Islamic Law, Quranic Verses and Hadith regarding Inventions and changes in human life
4	**1**	**0**	Memorization and translation of Surah 95-114

5	**1**	**0**	Daily Duaa (prayers) according to Hadith and Sunnah
6	**1**	**0**	Daily Duaa (prayers) according to Hadith and Sunnah
7	**1**	**0**	Daily Duaa (prayers) according to Hadith and Sunnah
8	**1**	**0**	Basic concept of Islamic Knowledge: Characteristics of Islamic Law, Aim and Objective of Islamic Law
9	**1**	**0**	Basic concept of Islamic Knowledge: Aim and Objective of Islamic Law
10	**1**	**0**	Basic concept of Islamic Knowledge: Social main deviations
11	**1**	**0**	Definition, importance and ruling of He jab in Islam: General Information
12	**1**	**0**	Definition, importance and ruling of Hijab in Islam: Value and importance.
13	**1**	**0**	Definition, importance and ruling of Hijab in Islam ."Concept of Virtue
14	**1**	**0**	Definition, importance and ruling of Hejab in Islam: Quran's Verses and Hadith regarding Hijab.
15	**1**	**0**	Definition, importance and ruling of the Hijab in Islam: Islamic Rules regarding Makeup and women outgoing.
16	**1**	**0**	Definition, importance and ruling of the Hijab in Islam: Conditions for Hijab.

Islamic Studies (Module 2)			
Discipline		**Religious**	
Department		**Islamic Studies**	
Course Title		**Faith**	
Pre-requisites		**None**	
Course code		**MED2 005**	
Academic year		**1**	
Semester	**2**	**Fall/Spring**	
Number of credits	**1**	**Knowledge**	**1**
		Practical	**0**

Weeks	**Hours**		**Topics and Descriptions**
	Knowledge	**Practical**	
1	**1**	**0**	Faith : General Information regarding Tawheed
2	**1**	**0**	Faith: Types of Tawheed, Pillars of Tawheed.
3	**1**	**0**	Faith: Conditions of Tawheed, advantages of Tawheed.
4	**1**	**0**	Faith: General information about Sherk

5	**1**	**0**	Faith: Types of Sherk
6	**1**	**0**	Faith: Islamic Rules for Sherk and Mushrek
7	**1**	**0**	Faith: Tawasul (To solicit)
8	**1**	**0**	Faith: belief in Qaza and Qadar, Allah's prophets, books, angels and day of Judgements.
9	**1**	**0**	Tajweed
10	**1**	**0**	Tajweed
11	**1**	**0**	Tajweed
12	**1**	**0**	Memorization and translation of Surah 85 – 94
13	**1**	**0**	Memorization and translation of Surah 85 – 94
14	**1**	**0**	Memorization and translation of Surah 85 – 94
15	**1**	**0**	Special Duaa (prayers) according to Hadith and Sunnah
16	**1**	**0**	Special Duaa (prayers) according to Hadith and Sunnah

Islamic Studies (Module 3)				
Discipline			**Religious**	
Department			**Islamic Studies**	
Course Title			**Worship**	
Pre-requisites			**None**	
Course code			**MED3 005**	
Academic year			**II**	
Semester		**3**	**Spring/Fall**	
Number of credits		**1**	**Knowledge**	**1**
			Practical	**0**

Weeks	**Hours**		**Topics and Descriptions**
	Knowledge	**Practical**	
1	**1**	**0**	Worships: General Information regarding worships (Ebadat)
2	**1**	**0**	Worships: types of worships (Ebadat)
3	**1**	**0**	Worships: Pillars of worships (Ebadat
4	**1**	**0**	Worships : conditions of worships (Ebadat)
5	**1**	**0**	Worships: difference between obedience & worship
6	**1**	**0**	Worships: Target of worship.
7	**1**	**0**	Worships: Worthy of Worship
8	**1**	**0**	Worships: Outcome of Worship
9	**1**	**0**	Worships: The Factors and Lethargy of Worship

10	**1**	**0**	Worships: Ebadat (Innovation) in worships.
11	**1**	**0**	Worships: General Information about Philosophy of Worships and Philosophy of Salah
12	**1**	**0**	Worships: The prayer in summation (Jamat), Eid and Jenaza prayer
13	**1**	**0**	Memorization and translation of Surah 78-84
14	**1**	**0**	Memorization and translation of: Surah 78 – 84
15	**1**	**0**	Special Duaa (prayers):according to Hadith and Sunnah
16	**1**	**0**	Special Duaa (prayers):according to Hadith and Sunnah

Islamic Studies (Module 4)			
Discipline		**Religious**	
Department		**Islamic Studies**	
Course Title		**Political System in Islam**	
Pre-requisites		**None**	
Course code		**MED4 005**	
Academic year		**II**	
Semester	**4**	**Fall/Spring**	
Number of credits	**1**	**Knowledge**	**1**
		Practical	**0**

Weeks	**Hours**		**Topics and Descriptions**
	Knowledge	**Practical**	
1	**1**	**0**	Political System in Islam
2	**1**	**0**	Politics & Religion
3	**1**	**0**	Definition of shariat
4	**1**	**0**	General Information Related Politics
5	**1**	**0**	Individual Political rights, Counsel in Islam
6	**1**	**0**	Characteristics of Political Leaders, Needs for Selection of the Leader
7	**1**	**0**	General information Related politics
8	**1**	**0**	Responsibilities of Islamic State
9	**1**	**0**	Characteristics of Islamic Governments
10	**1**	**0**	Islam and Democracy
11	**1**	**0**	Basics of Internal Diplomacy in Islam
12	**1**	**0**	Basics of Foreign Diplomacy in Islamic
13	**1**	**0**	Memorization and translation of Surah 61-84
14	**1**	**0**	Memorization and translation of Surah 78 – 84

15	**1**	**0**	Special Duaa (prayers) according to Hadith and Sunnah
16	**1**	**0**	Special Duaa (prayers) according to Hadith and Sunnah

Islamic Studies (Module 5)			
Discipline		**Religious**	
Department		**Islamic Studies**	
Course Title		**Islam & Medical Practice**	
Pre-requisites		**None**	
Course code		**MED5 005**	
Academic year		**III**	
Semester	**5**	**Spring /Fall**	
Number of credits	**1**	**Knowledge**	**1**
		Practical	**0**

Weeks	**Hours**		**Topics and Descriptions**
	Knowledge	**Practical**	
1	**1**	**0**	Islam & Medical practice
2	**1**	**0**	General information about Medicines
3	**1**	**0**	Concept of Health and Medicines-in Islamic Studies
4	**1**	**0**	Definition of Health and Sickness
5	**1**	**0**	Importance of Medicines in Islam
6	**1**	**0**	Verses and Hadith related health
7	**1**	**0**	Medicine in previous religions
8	**1**	**0**	Hygiene in Islam
9	**1**	**0**	Rules of prohibited things in Islam
10	**1**	**0**	Verses and Hadiths related protective procedures.
11	**1**	**0**	Individual and social hygiene
12	**1**	**0**	Harms and prohibition of narcotics and Alcoholic beverages
13	**1**	**0**	Verses and Hadith related to alcoholic beverage prohibition
14	**1**	**0**	Narcotic protection
15	**1**	**0**	Orders of scholars related use of narcotics
16	**1**	**0**	Health benefits of fasting

Islamic Studies (Module 6)			
Discipline		**Religious**	
Department		**Islamic Studies**	
Course Title		**Uloomul Quran**	
Pre-requisites		**None**	
Course code		**MED6 005**	
Academic year		**III**	
Semester	**6**	**Fall/Spring**	
Number of credits	**1**	**Knowledge**	**1**
		Practical	**0**

Weeks	Hours		Topics and Descriptions
	Knowledge	Practical	
1	**1**	**0**	Uloom-ul-Quran: Basic Concept of Quran
2	**1**	**0**	Uloom -uI- Quran History of Quran
3	**1**	**0**	Difference between Quran and Qudsi Hadith
4	**1**	**0**	Revelation: General Information
5	**1**	**0**	Quran is Allah word
6	**1**	**0**	Quran is Allah word
7	**1**	**0**	Quran and Science
8	**1**	**0**	Quran and Science
9	**1**	**0**	Quran and Science
10	**1**	**0**	Gradually Revelation of Quran
11	**1**	**0**	Disciplines or Manners for Recitation of the Quran
12	**1**	**0**	Women’s right in Islam
13	**1**	**0**	Allah’s right and human rights in Islam
14	**1**	**0**	Concept of god in other religion
15	**1**	**0**	Islam and Comparative Religion
16	**1**	**0**	Paradise rewards and Hell's punishments

Islamic Studies (Module 7)			
Discipline		**Religious**	
Department		**Islamic Studies**	
Course Title		**Versus and Seeratun Nabi (Puh)**	
Pre-requisites		**None**	
Course code		**MED7 005**	
Academic year		**IV**	
Semester	**7**	**Spring**	
Number of credits	**1**	**Knowledge**	**1**
		Practical	**0**

Weeks	Hours		Topics and Descriptions
	Knowledge	Practical	
1	**1**	**0**	Verses of Surah Al-Baqra Related to faith (Verse No- 2484-286)
2	**1**	**0**	Verses of Surah Al-Hujrat Related to Adab Al-Nabi(Verse No-1-18)
3	**1**	**0**	Verses of Surah Al-Mumenoon Related to Characteristics of faithful(Verse No-l-ll)
4	**1**	**0**	Verses of Surah al-Furqan Related to Social Ethics (Verse NO.63-77)
5	**1**	**0**	Verses of Surah Al-Inam Related to Ahkam(Verse No-152-154)
6	**1**	**0**	Life of Muhammad Bin Abdullah SAW(Before Prophet hood)
7	**1**	**0**	Life of Holy Prophet (S.A.W) in Makkah
8	**1**	**0**	Important lessons derived from the life of Holy Prophet (PBH) in Makkah
9	**1**	**0**	Life of Holy Prophet (S.A.W).in Madina
10	**1**	**0**	Important events of Life of Holy Prophet (PBH) in Madina
11	**1**	**0**	Important lessons Derived from the life of Holy Prophet in Madina
12	**1**	**0**	Basic Concepts of Hadith
13	**1**	**0**	History of Hadith
14	**1**	**0**	Kinds of Hadith
15	**1**	**0**	Uloom-ul Hadith
16	**1**	**0**	Ethical values of Islam

Islamic Studies (Module 8)			
Discipline		**Religious**	
Department		**Islamic Studies**	
Course Title		**Islamic Economic System**	
Pre-requisites		**None**	
Course code		**MED8 005**	
Academic year		**IV**	
Semester	**8**	**Fall/Spring**	
Number of credits	**1**	**Knowledge**	**1**
		Practical	**0**

Weeks	Hours		Topics and Descriptions
	Knowledge	Practical	
1	**1**	**0**	Basic concepts of Islamic economic system
2	**1**	**0**	Means of distribution of wealth in Islamic economics
3	**1**	**0**	Islamic Concept of Riba
4	**1**	**0**	Islamic ways of trade & commerce
5	**1**	**0**	Zakat in Islam: Zakat in Money, Gold and Silver
6	**1**	**0**	Zakat in Islam: Who is in need for Zakat and How to pay Zakat
7	**1**	**0**	Zakat in Islam
8	**1**	**0**	Zakat in Islam
9	**1**	**0**	Zakat in Islam
10	**1**	**0**	Basic concepts of social system of Islam
11	**1**	**0**	Elements of family
12	**1**	**0**	Memorization and translation of Surah Noor
13	**1**	**0**	Memorization and translation of Surah Ahzab
14	**1**	**0**	Memorization and translation of Surah Yasin
15	**1**	**0**	Memorization and translation of Surah Hujerat
16	**1**	**0**	Special Duaa (prayers) according to Hadith and Sumnah

II- Molecular Cell Biology

Goals

The cell biology course provides a basic understanding of the structure and function of cellular organelles and components, and the functional interaction of the cell with its micro environment. The course stresses a novel approach to the study of the cell within its social context and imparts onto students the concept that the cell is no longer perceived as "the smallest unit of function" but it is rather the cell and its microenvironment, including neighboring cells, the extra cellular matrix (ECM) and the soluble mediators. The concept of "dynamic reciprocity" is stressed throughout the course, in brief, imparting on students that the cell regulates the composition of its microenvironment which in turn dictates cell function. Classes are centered on discussion oriented lectures to encourage. critical thinking and emphasize the significance of research as a tool to achieve knowledge.

Learning Objectives:

Upon successful completion of this course, participants will be able to:

- Describe the general principles of gene organization and expression in both prokaryotic and eukaryotic organisms;
- Interpret the outcome of experiments that involve the use of recombinant DNA technology and other common gene analysis techniques;
- Discuss the various macromolecular components of cells and their functions;
- Describe the structure and function of biological membranes including the roles of gradients in energy transduction;
- Explain the basic pathways and mechanisms in biological energy transduction from oxidation of metabolites to synthesis of ATP;
- Explain various levels of gene regulation and protein function including signal transduction and cell cycle control;
- Relate properties of cancerous cells to mutational changes in gene function;
- Students will apply their knowledge of cell… biology to selected examples of changes or losses in cell function. These can include responses to environmental or physiological changes, or alterations of cell function brought about by mutation.

Course contents:

Molecular Cell Biology (Module 1)					
Discipline			**Basic Biomedical Science**		
Department			**Biology**		
Course Title			**Molecular cell biology**		
Pre-requisites			**Basic Biomedical Science**		
Course code			**MED1001**		
Academic year			**I**		
Semester		**1**	**Spring/Fall**		
Number of credits		**3**	**Knowledge**	**2**	
			Practical	**1**	

Weeks	**Hours**		**Topics**	**Descriptions**
	Knowledge	**Laboratory**		
1	**1**	**1**	Background	History and Background, Evolutionary Classification of the cell
	1		Organization of Cell	The Prokaryotic cell, Morphological Organization of the Prokaryotic cell. Prokaryotic cells are structurally simpler than Eukaryotic Structure of the plasma-membrane, Chemical composition of the plasma-membrane Multiplication of the cell, The genetic Material of the Prokaryotic cell
2	**2**	**1**	Eukaryotic Cell Structure	Why the cell is considered the basic unit of life Implication of the cell theory, Eukaryotic cell Structure, Membranes divide the cell into Compartment
3	**2**	**1**	The nucleus	Structure of the Nucleus, The Nuclear Envelope structure and Function, The Chromatin and Chromosome
4	**1**	**1**	Endoplasmic Reticulum	Distinguish between Smooth and Rough Endoplasmic Reticulum, Relationship between Endoplasmic Reticulum and other Internal: membranes, The structure of RER The function of the RER, The Glycosylation in] RER, The structure and function of SER
	1		Ribosome	function of Ribosome (protein synthesis) Structure and subunits of Ribosome Disorders and Ribosomal Diseases Shwachman-Diamond Syndrome Dyskeratosis Congenita, Diamond- Blackfan Anemia, Cartilage Hair Hypoplasia
5	**2**	**1**	The Golgi apparatuses	Structure, Function, Trace the path of proteins synthesized in RER as they Processed, Modified, and

				stored by Golgi complex, Transport of proteins [to specific destinations, Complementary Integral Membrane Protein Vesicle SNAREs, Target SNAREs Disorder and diseases (Mucopolysaccharidosis, Alzimer, Inclusion cell),Inclusion cell Disorders
6	**1**	**1**	Lysosome	Structure and Function of lysosome Enzymes, Primary lysosome, Digestive Vacuole, Residual Body, Autophagy, Membrane and P^H Lysosomal Storage disorder, Glycogen type II, Tay-sachs diseases
	1		Peroxisome	Morphology, Function, Shape and Size Disorders with Peroxisome, Adrenoleukodystrophy
7	**2**	**1**	Mitochondria	Morphology and Function of Mitochondria Shape, Size distribution, Number of Mitochondria Chemical Composition of Mitochondria Outer membrane structure inner membrane structure. Mitochondria and Apoptosis Genome of the mitochondria, Mutation occurs in Mitochondria DNA. Diseases and disorder Neuropathy, Ataxia and Retinitis Pigmentosa The Chloroplast
8	**2**	**1**	Cytoskeleton	Eukaryotic Cells Contain Cytoskeleton Microtubule, Structure, Function, Size & Chemical composition, Microtubule Associated Protein (Kinesin, Dynein & Dynactin)
9	**1**	**1**	Cytoskeleton	Cilia & Flagellum, Function, Size, Chemical Composition, Microfilaments, Intermediate Filament Nuclear Envelope and Nuclear Pore Complex. Inclusions. Glycogen. Lipid droplets. Lipofuscin
	1		Glycocalyx	Chemical Composition, Membrane Receptors for Extra Cellular Matrix (Integral Protein)
10	**2**	**1**	Biological Membrane	Lipid Bilayer with Associated Proteins Fluid Mosaic Model of Membrane Structure The Biological Membranes are Two-Dimensional Fluids, Biological Membranes Fuse and form Closed Vesicles, The Membrane Proteins Membrane Proteins include Integral and Peripheral Proteins, Proteins Oriented-Asymmetrically Across the Bilayer, Protein function in Transport, Information Transfer, and as Enzyme
11	**2**	**2**	Cell Membrane & Selective Permeability	Transport through the cell Membrane Random Motion of Particles Leads to diffusion Osmosis (Diffusion of Water), Dialysis Turgor pressure (Internal Hydrostatic Pressure)
12	**1**	**2**	Carrier Mediated Transport	Active and Passive transports, Facilitated diffusion carrier mediated transport, co transport systems

	1		Exocytosis/ Endocytosis	Large Particles transport through the Cell membrane, Exocytosis, Endocytosis, Phagocytosis and Pinocytosis, Receptor Mediated Endocytosis
13	**2**	**2**	Contacts Between Cells	Cellular Junctions, Anchoring Junction (Epithelial Sheet), Desmosomes, Adhering junction. Tight Junction, Gap Junction, Plasmodesmata
14	**2**	**2**	Chemistry of Life	Organic Component of the cell, Carbon atoms for and Enormous Variety of structures, The Isomers (Structural, Geometric & Enantiomers) Carbohydrates, Monosaccharide, Disaccharides, Polysaccharides
15	**2**	**2**		Proteins the most Versatile Cellular Components Protein synthesis. Chain Initiation, Chain Elongation, Chain Termination, Amino Acids, Structure, Classification, Kinds, Biological Buffers Peptide bonds, Important Classes of proteins and Function, Four Levels of Organization (Proteins) Primary, Secondary, Tertiary and Quaternary Structure of Protein
16	**2**	**2**		Lipids, Triacylglycerol, Phospholipid, Carotenoids Steroids

Molecular cell biology (Module 2)					
Discipline			**Basic Biomedical Science**		
Department			**Biology**		
Course Title			**Molecular cell biology**		
Pre-requisites			**Molecular cell biology (Module 1)**		
Course code			**MED2001**		
Academic year			**1st**		
Semester		**2**	**Fall/Spring**		
Number of credits		**3**	**Knowledge**	**2**	
			Practical	**1**	

Weeks	**Hours**		**Topics**	**Descriptions**
	Knowledge	**Laboratory**		
1	**1**	**2**	Chemistry of life	Organic Component of the cell, The Water, The P^H scales, Other Non -Organic component of the cell.
	1		Nucleic Acids	Structure, Function, Kind, DNA, RNA (mRNA, TRNA, rRNA)
2	**2**	**2**	Nucleotides	Structure, Nitrogen base (Adenine, Thymine, Cytosine, Guanine & Uracil), Energy transferring, Cellular function Cyclic AMP.
3	**2**	**2**	Enzyme	Enzyme and Cell metabolism, Method of study, Localization of Enzymes Function of enzymes, Inhibition of enzyme activity, Reversible Inhibition. Irreversible Inhibition.
4	**1**	**2**	Energy	The Bioenergetics, Free energy, Open systems Steady State. Thermo dynamic Laws.
	1		Non-organic Component of the cell	The Water, The Constant of Equilibrium, The pH scales
5	**2**	**1**	The genetic Material in Eukaryotic and Prokaryotic cells	The DNA Structure (Crick and Watson Model) Replication of DNA, Replication is Semi conservative.
6	**2**	**1**	The genetic Material in Eukaryotic and Eukaryotic cells	Replication in Prokaryotic Cells, Error in replication, How Gene Works, The function of genes, the genetic code.
7	**2**	**1**	The Gene	Gene expression, Transcription, Translation. The role of Ribosomal RNA
8	**2**	**1**		Prokaryotic Regulation, Structural genes, The trp operon The lac operon.

9	**2**	**1**	Eukaryotic Regulation	Transcriptional control, posttranscriptional control Translational control, Post-translational control
10	**2**	**1**	Genetic Engineering	Historical Background, The Recombinant DNA (rDNA) The rDNA Methods Grew out of Research in Microbial Genetics. The Restriction Enzyme (Molecular Scissors) The method of forming rDNA.
11	**2**	**1**	Biotechnology	Classic Biotechnology, Product of Classic Biotech. Molecular Biotechnology, Red Biotech. Green Biotech. Blue Biotech.
12	**2**	**1**	The product of Biotech	The E-coli Bactria in Biotech. DNA Cloning Transgenic Bacteria, The Growth Hormone Protein dissolves blood clots in heart therapy, Organs for Transplant. Xenotransplantation.
13	**2**	**1**	The Stem Cells	Embryonic Stem Cell, Adult Stem cell, Transcription Factors, Antigens
14	**2**	**1**	Differentiation of Stem Cells	Differentiation of Hematopoietic Stem Cell Red Blood cell, B Lymphocytes, T Lymphocytes Natural Killer Cells, Neutrophils, Eosinophils Monocytes, Macrophages.
15	**2**	**1**	Gene, Gene Therapy	Gene Structure & Function: Gene is the basic structural unit of Heredity Genome .The Genetic Code, Genes specify enzymes Genes specify polypeptides, The Sickle Cell Anemia.
16	**2**	**1**	Gene Therapy	The Goal of Gene Therapy, Gene Therapy & Genetic Diseases, identifying defected Gene and Replacing with normal Gene, Switching on/off genes. How Gene Therapy work, Types of gene therapy, Germ line Gene therapy, Somatic Gene therapy, Vectors in gene therapy virus, naked DNA, risk with gene therapy other problems.

Textbooks and reference books recommended (Last Editions)

- Medical Cell Biology, Stevan R, Goodman.
- Molecular Cell Biology, Harvey Lodish, Arnold Berk.
- The Cell, A Molecular approach, Geffrey M. cooper
- Essential Cell Biology, Bruce Albert, Dennis Brey.

III- Medical Genetics

Goals

Medical genetics is a rapidly advancing field of medicine. It is now recognized that genetic mechanisms play a fundamental role in the pathogenesis and treatment of diseases and in the maintenance of health. This course designed to provide an overview of human genetic concepts and clinical disorders that have a genetic component. The course seeks to teach the students to "apply their knowledge of the principles of human genetics to a variety of clinical problems. It surveys many clinical areas including cytogenetic, molecular genetics, biochemical genetics, population genetics and clinical genetics. The course is organized roughly according to genetic etiology and pathophysiology.

Learning objectives

The educational Learning objectives are largely derived from the American College of medical Genetics recommendations about graduate education in medical genetics and the Core Curriculum in Genetics recommended by the Association of Professors of Human and Medical Genetics.

At the end of course Students should be able to:

- Describe the organization of the genome and regulation of gene expression as it relates to medical genetic disorders and diagnosis.
- Describe the types and extent of genetic variation seen in the human genome and explain how these variations affect disease states and diversity of normal variation.
- Obtain a family history and draw and interpret a pedigree.
- Perform pedigree analysis and apply principles of inheritance in calculating genetic risk "for a variety of genetic disorders and patterns of inheritance; and incorporate knowledge of population genetics to calculate genetic risk based on carrier frequency within a population.
- Explain and identify non-Mendelian mechanisms such as: reduced penetrance, variable expressivity, uniparental disomic, epigenetic, mosaicism, genomic imprinting and unstable repeat expansion.
- Identify the clinical presentation and etiology of genetic disorders including: single gene disorders, disorders of chromosome abnormalities, inborn errors of metabolism, multi factorial genetic disorders and cancer genetics. Identify the effects of teratogens and in utero infections and identify patterns of dysmorphology.

Course Contents:

Medical Genetics					
Discipline			**Basic Biomedical Science**		
Department			**Biology**		
Course Title			**Medical Genetics**		
Pre-requisites			**Molecular cell biology**		
Course code			**MED3 003**		
Academic year			**1st**		
Semester		**1**	**Spring/Fall**		
Number of credits		**1**	**Knowledge**	**1**	
			Practical	**0**	

Weeks	**Hours**		**Topics**	**Descriptions**
	Knowledge	**Practical**		
1	**1**		Background	Historical Background and role of Genetics in Medicine
2	**1**		Definition of the relative terms	Homozygous parents, Heterozygous parents Sex determination, the genotypes of parents, gametes and offspring should be shown. Fertilization, Allele. Homozygous and heterozygous, Genotype, Phenotype, Dominance, Recessive, Incomplete dominance.
3	**1**		Origin of the Science of Genetics	Work of Gregor Mendel leading to the Expression of his findings in two laws Law of Segregation, Law of Independent Assortment
4	**1**		Monohybrid Bi-hybrid and poly hybrid Cross	Study of the inheritance to the second filial generation (F2) Of two unlinked traits using the Punnett square technique. Definition of linkage. Heterozygote crossed with a di-hybrid recessive organism.
5	**1**		Drosophila Melanogaster	Attractive and marvelous traits of Drosophila in Genetic Researches.
6	**1**		The Origin of Medical Genetics	Single Gene disorders, Chromosomal Disorders S Multiple Gene disorders
7	**1**		Cellular and Molecular Base of Genetics.	The cell, DNA (the genetic material) Structure, Replication. Structure of Chromosome
8	**1**		The Gene	The Structure of Nucleus genes, Pseudo genes Exteragenic DNA, Junk DNA, Satellite DNA Minisatellite DNA, Hypervariable minisatellite DNA Microsatellite DNA

9	**1**		Mutation	Types of Mutation, Substitution, Insertion, Deletion
10	**1**		Chromosome	Morphology, Types of Chromosome (View point of Location of Centromere/ Length), Sex Chromosomes, Somatic Chromosome
11	**1**		Cell division	The Cell cycle, Check points and P53 role CDC and cyclic proteins Mitosis (Prophase Metaphase Anaphase and Telophase)
12	**1**		Meiosis	Meiosis 1 and Meiosis 2, Prophase, 2 Metaphase 1, 2, Anaphase 1,2, Telophase 1,2
13	**1**		Twins	Types of twins, Fraternal, Identical. IVF (In Vitro Fertilization)
14	**1**		Twins	Conjoined Twins, The result of Multifactorial Traits withtwins
15	**1**		Gene reciprocity	Epistatic Gene, Complementary genes Polymeric gene
16	**1**		Gene reciprocity	Multiple Gene Inheritance, The Blood groups : Rh factor, Lethal gene, Modifier gene

Textbook & Reference Books recommended (Last Editions)

- Medical Genetics, Leyn B, Jorde PhD.
  Medical Genetics,D Young
- Essentials of Medical Genetics for Health professionals, Laura M, Gaunder Mac Clary.
- Thompson & Thompson Genetics in Medicine, RodericK R, McLnnes, PhD.
- Medical Genetics at a Glance, Dorian Pretchard
- Emery's Elements of Medical Genetics, Sian Ellard PhD.

IV- Inorganic and organic Chemistry

Course Objective

Upon completion of inorganic & organic chemistry course, the student should understand:

- The basic structures of atoms, ions, and molecules, and ways to quantitatively describe the properties of atoms and molecules.
- The concept of chemical equilibrium, and the energies that drive chemical reactions: an introduction to the field of thermodynamics.
- To make the students knowledgeable about the fundamentals of carbon chemistry,
- To make the students Knowledgeable about Solution and electrolytes.
- To understand the concepts of Hydrocarbons and Halogen compounds.

Course Contents:

Inorganic and organic chemistry				
Discipline			**Basic Biomedical Science**	
Department			**Chemistry**	
Course Title			**Organic & Inorganic Chemistry**	
Pre-requisites			**None**	
Course code			**MED2 004**	
Academic year			**1st**	
Semester	**1**		**Spring/Fall**	
Number of credits	**3**		**Knowledge**	**2**
			Practical	**1**

Weeks	**Hours**		**Topics**	**Descriptions**
	Knowledge	**Practical**		
1	**2**	**1**	Atom structure	Ideas about Atom structure, Reaction, Quantum number.
2	**2**	**1**	Inorganic compounds	Definition, Classification, Oxides, Hydroxides and Salts.
3	**2**	**1**	Solutions	Types of Solutions, Concentration Unit, The effect of pressure solubility (Henry law), Medical importance of Liquids in Liquids.
4	**2**	**1**		Colligative properties of Solutions (Osmosis and Osmotic pressure). Isotonic, Hypertonic, Hypertonic Solutions and their importance in; medical practice. Roult law.
5	**2**	**1**	Electrolyte	Strong and weak electrolyte, Ionization in of water and pH.
6	**2**	**1**	The first law of thermodynamic	The first law of Thermodynamic processes, isobaric and Isothermic. Heat of neutralization, Heat of solubility.
7	**2**	**1**	Second and Third Laws of Thermodynamics	Potential thermodynamics, Biological system, Thermodynamic and Chemical equilibrium.
8	**2**	**1**	Hydrocarbons	Introduction to hydrocarbons, The Alkenes (Homogenous series, Structure, Isomerism and nomenclature), Preparation of Alkenes, Physical and chemical properties of Alkenes.
9	**2**	**1**		Cycloalkanes (Nomenclature, Movement of Rings, physics, and chemical properties
10	**2**	**1**		Aromatics, Hydrocarbons, Homology, Nomenclature, physical and chemical properties,

				Electrophilic, Nucleophilic reaction, and substitution reaction.
11	**2**	**1**	Halogen Compounds	Halogen Aromatic and Aliphatic compound, Displacement and Elementation, Medical uses.
12	**2**	**1**	Alcohol and Phenol	Physical and chemical properties of alcohol and phenols. Medical uses.
13	**2**	**1**	Ether, Ester arid Thiols	Definition, Nomenclature, Physical and chemical properties.
14	**2**	**1**	Carbonyl compounds	Aldehyde and Ketones, Definition, Nomenclature and Physical and Chemical properties and medical uses.
15	**2**	**1**	Carbocyclic acid	Definition, Preparation, Properties and Medical uses. Amino acids, Amino phenols and other compounds
16	**2**	**1**	Heterocyclic	Definition, Nomenclature, Biological activity and other chemical properties.

Textbooks & Reference books recommended (Last editions)

- Raymond Chang, Jason Qverby, The essential concepts in General Chemistry/, Philadelphia, MC DGraw Hill.co.
- Janice Gorzinsky, Organic chemistry; Philadelphia, MC Graw Hill.Co.
- Alan Johns, Chemistry, an introduction to for medical and health science, New York, Viley.com.
- Atul Sinhal, The Pearson Guide to inorganic chemistry, New York, Pearson, co. Education, co.
- Goplan. R, Textbook of Inorganic chemistry, CRC University press, Amazone.co.UK.

V-GROSS ANATOMY

Goals

The broad goals of teaching of graduate students in anatomy are to providing comprehensive knowledge of the gross structure of human body to provide a basis for understanding the clinical correlation of organs or structures involved and me anatomical basis for the disease presentations

Learning objectives

At the end of the course, the student should be able to:

Comprehend the normal gross structure and position of all body organs

Comprehend the connections and relationship between the all parts of the body.

Course Contents:

Gross Anatomy (Module 1)				
Discipline			**Basic Biomedical Science**	
Department			**Human Anatomy**	
Course Title			**Anatomy (Osteology, muscles and joints)**	
Pre-requisites			**None**	
Course code			**MED2 009**	
Academic year			**1st**	
Semester		**2**	**Fall/Spring**	
Number of credits		**4**	**Knowledge**	**3**
			Practical	**1**

Weeks	**Hours**		**Topics**	**Descriptions**
	Knowledge	**Practical**		
1	**3**	**1**	General Informational	1. Descriptive anatomical terms 2. Basic structures Skin, Fascia, Bone and Muscles, Joints, Ligaments, Bursae, synovial Sheets, Blood Vessels, Lymphatic System, Nervous System, Mucous Membranes, Serous Membranes, Bones & Cartilages
2	**3**	**1**	Bones of the upper & lower limbs	PART ONE- THE HUMAN OSTELOGY Bones of the upper limb: Clavicle, Scapula, Humerus, The Radius, The ulna, The skeleton of the hand BONES OF THE LOWER LIMB: hip bone, The Pelvis as a whole
3	**3**	**1**	the vertebral column	The Femur, Patella, Tibia, and Fibula, The skeleton of the

				Foot, The vertebral column: structure of a typical vertebrae, atypical cervical vertebrae (atlas & axis),The Sacrum & Coccyx
4	**3**	**1**	The Skull	The Sternum & Ribs, The Skull: General Review of the skull, The skull as seen from the front, The skull as seen from above, The skull as seen from behind, The skull as seen from the lateral side
5	**3**	**1**	The Skull	The skull as seen from below. The cranial fossae Foramina of the skull, The nasal cavity and paranasal sinuses, The mandible and hyoid bones
6	**3**	**1**	The back	PART TWO- THE BACK Cutaneous nerves of the back, Joints between vertebrae in the back. Ligaments, Back musculature: Superficial group of back muscles intermediate group of back muscles, Deep group of back muscles Sub-occipital muscles, Nerves of the back
7	**3**	**1**	The upper limb	PART THREE- THE UPPER LIMB Regions of the upper limb: The Pectoral region The Axilla (axillary artery, vein, and lymph nodes). Lymph nodes of the upper limb, The Brachial plexus and its Branches, The Mammary glands
8	**3**	**1**	The Scapular region & The Arm	The Scapular region: muscles & intermuscular spaces Nerves of the scapular region, Arteries of the scapular region, The Free Upper limb: cutaneous nerves and veins The Arm, Compartments of the Arm: Contents of the Anterior Compartment of the Arm
9	**3**	**1**	The Arm	Contents of the Posterior Compartment of the Arm The cubital Fossa, The Forearm & Hand General review of structures in front of the forearm & hand Contents of the anterior compartment of the forearm, Muscles and Fascia of the Wrist & Hand.
10	**3**	**1**	The Wrist & Hand	Small Muscles of the hand, Nerves of the forearm & hand, Arteries of the forearm & hand Back of the forearm & hand: General review of structures. Contents of the lateral compartment, Contents of the posterior compartment, Blood vessels of the posterior compartment.
11	**3**	**1**	Nerves & Joints of the Upper Limb	Nerves of the Free Upper Limb: median, ulnar and radial nerves, Joints, of the Upper Limb: Sternoclavicular joint, Acromioclavicular joint, the Shoulder joint, The Elbow joint, distal radio-ulnar joint, Wrist joint, Carpal Joints, Carpo-metacarpal joints, Metacarpo-phalangeal Joints, and interphalangeal joints

12	**3**	**1**	The lower limbs	PART FOUR- THE LOWER EXTREMITY Introduction to the Lower Limb: Nerves, Main Arteries, veins and Lymph nodes of the lower limb Regions of the lower limb: The Gluteal Region Muscles of the Gluteal region, Arteries of the Gluteal region, The Front & Medial side of the Thigh: General review, Muscles, Femoral triangle, Adductor Canal, Femoral Sheath
13	**3**	**1**	The Thigh	Contents of the anterior compartment of the Thigh: muscles. Femoral artery, Femoral vein Lymph nodes of the anterior compartment Contents of the medial compartment of the Thigh: muscles, profunda femoris artery & vein, Obturator artery & vein, The Back of Thigh: General review Contents of the posterior compartment of thigh
14	**3**	**1**	Popliteal Fossa & Back of the Leg	Popliteal Fossa, The front and lateral side of the leg: General review, Contents of the anterior compartment the leg: Muscles & Blood vessels, Back of the Leg: General review, Contents of the posterior compartment of the leg, Muscles, Retinacula, Synovial Sheaths and Arteries
15	**3**	**1**	The Sole of the Foot	The Sole of the Foot: General review. Muscle Layers of the sole of the foot, Muscles of the sole of the foot Arteries of the sole, Nerves of the lower limb: lumbar nerves and lumbar plexus
16	**3**	**1**	Lumber &. sacral plexus and Joints of the lower limb	Sacral ventral rami & sacral plexus: the superior & inferior Gluteal nerves, nerve to quadratus femoris. Posterior cutaneous nerve of thigh, perforating cutaneous nerve, The sciatic nerve and pudendal nerves. Joints of the lower limb: Joints and ligaments of the pelvis, hip joint, Knee joint, ankle joint, inter tarsal joints, tarso-metatarsal joints, metatarso-phalangeal joints, interphalangeal joints.

GROSS ANATOMY (Module 2)					
Discipline			**Basic Biomedical Science**		
Department			**Gross anatomy**		
Course Title			**Anatomy (thorax, abdomen and pelvis)**		
Pre-requisites			**None**		
Course code			**MED3 009**		
Academic year			**II**		
Semester		**2**	**Spring/Fall**		
Number of Credits		**4**	**Knowledge**	**3**	
			Practical	**1**	
Weeks	**Hours**		**Topics**	**Descriptions**	
	Knowledge	**Laboratory**			
1	**3**	**1**	The thoracic cavity joints of the thorax	Part five-THE THORAX some elementary facts about walls of the thorax: thoracic cage, thoracic apertures, and intercostal spaces the thoracic cavity introduction to the trachea, bronchi, lungs and pleura, introduction to the heart & pericardium other structures in the mediastinum joints of the thorax : intervertebral joints, joints of the sternum joints of ribs with vertebral column joints between ribs, costal cartilages and sternum	
2	**3**	**1**	Walls of the thorax and blood supply	Walls of the thorax: muscles of the thorax, the diaphragm, arteries of the thoracic wall, venous drainage of the thorax, azygos system of veins, lymphatic drainage of the thoracic walls, innervation of the thoracic walls.	
3	**3**	**1**	The mediastinum and lungs	The thoracic cavity: the mediastinum, the pleurae, trachea & principle bronchi, The lungs: the bronchial tree, Broncho-pulmonary segments, pulmonary arteries & veins, bronchial arteries & veins, innervation & lymphatic drainage of the lungs	
4	**3**	**1**	The middle mediastinum and heart	The middle mediastinum: pericardium, the heart: exterior of the heart interior of the heart: cardiac chambers, valves of the heart cardiac skeleton	
5	**3**	**1**	Coronary vasculature cardiac innervation	Coronary vasculature, veins of the heart, coronary lymphatics, cardiac conduction system, cardiac innervation, pulmonary trunk & ascending aorta superior mediastinum contents	

6	**3**	**1**	**Superior mediastinum**	Nerves of the superior mediastinum, thoracic duct posterior mediastinum: esophagus, thoracic aorta Azygos system of veins, thoracic duct in the posterior mediastinum, sympathetic trunks, anterior mediastinum surface anatomy
7	**3**	**1**	**The abdomen**	Part six- the abdomen, general description relationship to the other regions, key features: development of the gut skin & muscles of the abdominal walls, vertebral level major arteries & venous shunt in the abdomen, porto-caval anastomoses, prevertebral plexus & viscera supplied by it.
8	**3**	**1**	**Abdominal wall and groin**	regional anatomy: surface topography, abdominal wall: fascia & muscles: flat muscles, transversalis fascia vertical muscles, extra peritoneal fascia & peritoneum innervation, arterial supply & venous drainage lymphatic drainage, groin: inguinal canal. inguinal hernias
9	**3**	**1**	**Abdominal viscera**	abdominal viscera: peritoneum & the peritoneal cavity, organs: abdominal part of esophagus, stomach small intestine, large intestine, liver, gall bladder pancreas, duct system for bile, spleen, arterial supply: anterior branches of abdominal aorta: celiac trunk
10	**3**	**3**	**Blood supply of the abdomen**	superior mesenteric artery, inferior mesenteric artery Venous drainage, lymphatics innervation: sympathetic trunks, parasympathetic innervation enteric system, posterior abdominal region: posterior abdominal wall: bones, muscles
11	**3**	**1**	**Posterior abdominal region and kidneys**	viscera: kidneys ureters. suprarenal glands vasculature: abdominal aorta, inferior vena cava lymphatic system
12	**3**	**1**	**The pelvis & perineum**	Nervous system in the posterior abdominal region surface anatomy, part seven: the pelvis & perineum general description: functions, component parts relationship to the other regions, key features
13	**3**	**1**	**Pelvic cavity and Joints**	Regional anatomy, pelvis: bones, joints, orientation true pelvis: pelvic inlet, pelvic wall, pelvic outlet pelvic floor, perineal body
14	**3**	**1**	**Pelvic viscera**	Viscera: gastrointestinal system: rectum, anal canal urinary system: ureters, bladder, urethra, reproductive system: in men: testes, epididymis, ductus deferens, seminal vesicle, prostate, bulbo urethral glands, in women: ovaries, broad ligament, uterus, uterine tubes, cervix, vagina, fascia, peritoneum

15	**3**	**1**	**Sacral & coccygeal plexuses**	Nerves: somatic plexuses: sacral & coccygeal plexuses: sacral plexus: Sciatic nerve, pudendal nerve, other branches of the sacral plexus, coccygeal plexus visceral plexuses, blood vessels: arteries, veins, lymphatics.
16	**3**	**1**	**Perineum**	Perineum: borders & ceiling, ischio-anal fossae and their anterior recesses, anal triangle, urogenital triangle: structures in the superficial perineal pouch: erectile tissue: penis, clitoris, greater vestibular glands, muscles, superficial features of the external genitalia: in men, in women, superficial fascia of the urogenital triangle: somatic nerves, visceral nerves, blood vessels, veins, lymphatics.

GROSS ANATOMY (Module 3)					
Discipline				**Basic Biomedical Science**	
Department				**Human Anatomy**	
Course Title				**Anatomy (Head and neck)**	
Pre-requisites				**None**	
Course code				**MED4 009**	
Academic year				**II**	
Semester			**4**	**Fall/Spring**	
Numbers of Credits			**4**	**Knowledge**	**3**
				Practical	**1**
Weeks	**Hours**		**Topics**	**Descriptions**	
	Knowledge	**Laboratory**			
1	**3**	**1**	**Skull & Cranial cavity and brain**	Part eight- the head and neck, general description regional anatomy: skull, cranial cavity, meninges Brain & its blood supply: brain, blood supply of the brain, venous drainage, Dural venous sinuses cranial nerves, and types of fibers in peripheral nerves.	
2	**3**	**1**	**Cranial nerves and Face**	Cranial nerve nuclei, Olfactory nerve, Optic nerve Oculomotor nerve, Trochlear nerve, Trigeminal nerve, Abducent nerve, Facial nerve, Vestibulo-cochlear nerve, Glossopharyngeal nerve, Vagus nerve, Accessory nerve, Hypoglossal nerve, FACE: Muscles of the face: orbital, nasal & oral groups, Other facial muscles, Parotid gland, Innervation of the face, Arteries of the face, Veins of the face, Lymphatic drainage of the face	
3	**3**	**1**	**Scalp and orbital cavity**	SCALP: Arteries, veins & lymphatic drainage of the scalp. THE ORBITS: The eyelids, Lacrimal apparatus, Fissures and foramina in the orbit, Fascial specializations, Muscles of the orbit, Vessels of the orbit, and Nerves of the orbit. THE EYEBALL: Walls of the eyeball, Anterior & posterior chambers, Lens vitreous humor, The EAR: External ear & tympanic membrane.	

4	**3**	**1**	**The ear and infra-temporal fossa**	Middle ear, Intimal ear, Transmission of sound Introduction to the temporal & infratemporal fossae Temporo-mandibular joint. Masseter muscle TEMPORAL FOSSA INFRATEMPORAL FOSSA: Sphenomandibular ligament, Medial & lateral pterygoid, Muscles, Mandibular nerve, Chorda tympani & lesser petrosal nerve, Maxillary artery. Pterygoid plexus of veins PTERYGOPALATINE FOSSA: Gateways & Contents of the pterygopalatine fossa.
5	**3**	**1**	**The neck**	The neck: cervical fascia, fascial compartments, superficial venous drainage, anterior triangle of the neck: muscles, vessels, nerves. posterior triangle of the neck: muscles, vessels, nerves
6	**3**	**1**	**Pharynx**	Root of the neck: blood vessels, nerves, lymphatics. Lymphatics in the neck, pharynx: skeletal framework, pharyngeal walls, nasopharynx, oropharynx, laryngopharynx
7	**3**	**1**	**Larynx and the nasal cavities**	Larynx: laryngeal cartilages. Extrinsic ligaments, intrinsic ligaments. Laryngeal joints, laryngeal cavity, intrinsic muscles, functions of the larynx vessels nerves .the nasal cavities: introduction skeletal framework, external nose, paranasal sinuses walls, roof, & floor of the nasal cavity.
8	**3**	**1**	**The oral cavity**	Anterior & posterior nares, blood vessels of the nasal cavities, innervation & lymphatic drainage, the oral cavity: introduction, skeletal framework, walls of the oral cavity: the floor: the tongue, salivary glands.
9	**3**	**1**	**The oral cavity**	Parotid, Submandibular, & sublingual glands Vessels & nerves, Roof palate: soft palate: muscles Vessels & nerves of the palate, The oral fissure & lips, Oropharyngeal isthmus, Teeth & gingivae Blood supply of the teeth. Blood supply of the gingivae. Innervation of the teeth & gingivae Part nine- endocrine glands of the head & neck, carotid sinus carotid body, Hypophysis cerebri
10	**3**	**1**	**Endocrine glands of the head &. neck and the spinal cord**	The pineal gland, Thyroid & parathyroid glands Carotid body & carotid sinus, part ten- the central nervous system, Introduction, Grey & white matters The spinal cord, Spinal nerves & spinal segments Gross anatomy of the brainstem: medulla oblongata
11	**3**	**1**	**The brain**	Gross anatomy of the pons midbrain, Internal structure of the brainstem, Gross anatomy of the cerebellum, Gross anatomy of the cerebral hemispheres: External view: Supero-lateral surface. Further subdivisions of the supero-lateral surface. Medial surface .Inferior surface

12	**3**	**1**	**The brain**	Some internal structures of a cerebral hemisphere Important functional areas of the cerebral cortex Tracts of the spinal cord & brainstem: Descending tracts, Ascending tracts.
13	**3**	**1**	**The diencephalon**	Connections of the cerebellum, the diencephalon: thalamus, hypothalamus, metathalamus, epithalamus, subthalamic region, basal ganglia, olfactory region & limbic system, white matter of the cerebral hemispheres:
14	**3**	**1**	**Ventricles of the brain & and blood supply of the brain**	internal capsule, commissures of the brain; ventricles of the brain & CSF: the lateral ventricles third ventricle fourth ventricle: cavity and floor lateral walls. Roof the CSF & blood brain barrier blood supply of the brain: arteries supplying the brain & : the circle of Willis
15	**3**	**1**	**Pathways of special senses**	venous drainage of the brain, pathways of special senses: the visual pathway, pathway for smell pathway for hearing, pathway for taste part eleven-the: autonomic nervous system: general description
16	**3**	**1**	**Autonomic nerves**	Sympathetic nervous system, Parasympathetic & enteric nervous systems, Short review of the chapter

Skills

- **Upper limb:** Dissection: Pectoral and scapular, axillary and shoulder region, arm, forearm.
- **Prosected parts:** Joints, Palm and dorsum of hand.
- **Thorax dissection:** Chest wall, mediastinum, pleura, lungs, heart.
- **Abdomen dissection:** Anterior abdominal wall and inguinal region, external genitalia. Viscera and Posterior Abdominal wall and nerve plexus.
- **Pelvis dissection:** Pelvic viscera, blood vessels and nerves.
- **Prosected parts:** Perineum including ischio-rectal fossa.
- **Lower Limb dissection:** Gluteal region, front and back of thigh popliteal fossa, front back and lateral side of leg and dorsum of foot.
- **Prosected parts:** Sole of the foot and joints.
- **Head &Neck dissection:** Superficial and deep dissection of face and neck, orbit and eye ball. Submandibular region temporal and infratemporal fossa, cranial cavity, naso and oropharyngeal regions, Ear, Larynx and pharynx.

a- Neuroanatomy

- Gross specimen of full brain, meninges, spinal cord, prosected specimens to demonstrate visual system, auditory and vestibular pathways and major functional areas.
- Stained sections of brain and spinal cord at various levels to demonstrate cranial nerve nuclei, ascending and descending tracts, thalamic nuclei and important functional areas.

b- Demonstrations

- Bones of skull and vertebral column

- Brain and spinal cord
- Cross-sectional anatomy
- Radiological anatomy

c- Topographic skills

- Demonstrate surface markings of important organs.
- Localize important pulsation and the structures against which pressure can be applied in case of bleeding from a particular artery.
- Demonstrate muscle testing and movements at joints.
- Locate sites for: Lumbar puncture, sternal puncture, pericardial tapping, and liver biopsy.
- Locate veins for vein puncture.
- Locate the site for emergency tracheostomy.
- Locate the subcutaneous positions of large veins.

Teaching and Learning Methodology

The general pattern of teaching methodology followed by all the faculty members and teaching staff in the department is:

1-Didactic Lectures: discussing the topic in detail in one-hour lecture time.

2-Skills

- **Dissection:** is done by students on the cadavers and is being assisted /supervised by a team of teachers. Some prosected specimen/dissection are shown on ultrascope which is telecasted on TV monitors fitted in dissection Hall.
- **Videos** of some dissections are also shown on TV after the completion of dissection of the part/region to recapitulate the details of the part/region dissected.
- **Self-assessment MCQs** are given at the end of dissection of each region and discuss with teacher in-charge.
- **Handouts** are given at the end of completion of part/region to the students to recapitulate and remember the Gross anatomy and Neuroanatomy.
- **In Neuroanatomy,** the stained sections at various levels of brain and spinal cord are shown on slides and computers to localize the cranial nerve nuclei and trace the origin, course and termination of ascending and descending tracts in order to understand the effects produced as a result of lesions.
- **Demonstrations:** Mainly the bones of the entire body, few dissected specimens are taught in small groups.
- By a combination of the above Teaching-Learning tools and modalities the student is able to understand the development, gross structure of the organ systems and gain an insight into the structure-function correlation. This combined with the knowledge of applied/clinical anatomy provides an understanding of the anatomical basis of health and disease.

Textbooks & Reference Books Recommended (last editions)

- Gray's Anatomy for Students
- Cunningham's Manual of Practical Anatomy
- Clinical Anatomy for Medical Student
- Harper & Row Neuroanatomy
- Atlas of Human Anatomy, Frank H Netter MD

VI-MICRONATOMY (HISTOLOGY)

Course goals

The goals of the course are; to provide a foundation of the fundamental concepts of the microscopic anatomy of the human body; to develop an understanding how organ integrity and function are maintained by the organization of cells and tissues; and; to promote critical thinking of the clinical consequences of cellular disorders and tissue-related diseases, intracellular pathogens, cancer and diabetes.

Learning (Outcomes) Objectives:

Upon completion of this course, students will be able to:

- Differentiate between disease and normal cells.
- Describe the pathological processes that create the diseased state at the cellular level.
- Identify the primary cell types of each organ in the human body at the light and electron microscopic levels
- Identify the primary stains used in identifying normal and diseased cells and describe the chemistry of the staining process.
- Identify and describe the function of all major cellular organelles.

Course Contents:

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2	**2**	**1**	**Method of study**	Basic principle on histological techniques, Tissue preparation, section method. Smear method, special methods microscopy
3	**2**	**1**	**Instruments**	Microscopy, Light microscope Resolution, magnification, lens, Type of microscopes, Electron microscope, and phase contrast microscopy, polarizing microscope, Examination of living cells and tissues.
4	**2**	**1**	**Cell components**	Organization of the human body cells, tissues, organs, systems, cytoplasm, organelles, inclusions, nucleus, Cell cycle.
5	**2**	**1**	**Intercellular substance and tissue fluid**	Cell injury. Components and functions, Tissues:-Definition, Histogenesis, Embryo logic origin, regeneration, function and Pathological changes
6	**2**	**1**	**Epithelial tissues**	Definition, histogesis, general characteristics, specialization of the surfaces of epithelia. Classification of epithelia, Simple and stratified, Histophysiologies, pathological changes.
7	**2**	**1**	**Glands**	Definition, histogenesis, classification. Exocrine and endocrine glands, Histophysiology.
8	**2**	**1**	**Connective tissues**	Cells (fibroblasts, macrophages, mast cells, plasma cells, adipose cells, leukocytes). Intercellular substance (ground substance, fibers collagen, reticular, elastic, Matrix), Histogenesis, Histophysiologies
9	**2**	**1**	**Adipose tissue**	Unilocular, multilocular adipose tissue. Histological structure, Histogenesis, Histophysiologies
10	**2**	**1**	**Cartilage**	Histogenesis, perichondrium, Types (hyaline, fibrous, elastic cartilage). Growth, regressive changes, regeneration, Histophysiologies.
11	**2**	**1**	**Bone**	Periosteum and Endosteum, Types of bone tissue (Compact and Spongy), (Primary and Secondary), Bone cells (Osteoblasts, Osteo Progenitors, Osteocytes, Osteoclasts), Bone matrix (Homorganic, Organic matrix). Histogenesis (Intramembranous ossification, endochondral ossification), Growth and remodeling of bone, Fracture repair.
12	**2**	**1**	**Bone & Joints**	Histophysiology of the bone & effects of different factors on the bone, Definition & Kinds of joints (Synarthrosis, amphyarthrosis, Diarthrosis).
13	**2**	**1**	**Nerve tissue**	Neuron (Perikaryon, Dendrites, Axons), Types of Neurons, Histophysiology, Degeneration and Regeneration. Nerve fibers (Schwann cells, Myelin sheath), Neuralgia, Nerve endings (Synapses, Sensory nerve endings, Motor nerve endings)

14	**2**	**1**	**Muscles**	General characteristics, Types: Skeletal muscles (Organization of muscles as an organ, histogenesis, morphology, innervations motor end-plate, Histophysiology. contraction mechanism regeneration), Cardiac muscles (characteristics, intercalated disks, differences between skeletal and cardiac muscles), Smooth muscles
15	**2**	**1**	**Blood**	General consideration, Formed elements of blood: Erythrocytes (Shape, Structure, Histophysiology, Erythron), Leukocytes (Classification, Number, Types, Histophysiology, Neutrophils, Basophiles, Eosinophils, Lymphocytes, Monocytes), Platelets, Plasma
16	**2**	**1**	**Hematopoiesis**	Hematopoietic organs (Intrauterine, Extra uterine), Bone marrow, Monophyletic theory, Maturation of erythrocytes (Normoblastic and Megaloblastic Erythropoietin), Granulocytes. Hematopoiesis: Lymphocytes, Monocytes, Origin of platelets, Regulation of Hematopoiesis (Micro environmental factors, Humeral factors)

HISTOLOGY (Module 2)				
Discipline			**Basic Biomedical Science**	
Department			**Histology**	
Course Title			**Systemic histology**	
Pre-requisites			**General histology**	
Course code			**MED3 010**	
Academic year			**First**	
Semester		**2**	**Fall/Spring**	
Number of Credits		**3**	**Knowledge**	**2**
			Practical	**1**
Weeks	**Hours**		**Topics**	**Description**
	Knowledge	**Laboratory**		
1	**2**	**1**	**Introduction**	Definition, General information about the structure of the organs, Parenchyma, Stroma, Hollow and solid organs, Moist membranes
2	**2**	**1**	**Circulatory system**	Heart Layers of the heart, Endocardium, Myocardium, Pericardium, Cardiac skeleton, Cardiac valves, Impulse conducting system, Histophysiologies, Pathological changes, Clinical considerations.

3	**2**	**1**	**Blood vessels**	Arteries: General structure, Tunics, vasa vasorum, Innervations, Large elastic arteries, Muscular or distributing arteries, Arterioles, Histophysiology, Changes in the arteries with age, Clinical considerations, Veins: Veins of large and medium caliber, Venules, Valves of the veins, Clinical considerations. Capillaries: Continuous Capillaries, Fenestrated capillaries, Sinusoids, Histophysiologies, Vascular specializations, Clinical considerations. Blood vessels connections: Capillary bed, Portal system, Arteriovenous Anatomists Lymphatic Vessels : Lymphatic capillaries, Larger Lymphatic vessels, Lymphatic ducts, Pathological changes, Clinical considerations
4	**2**	**1**	**Respiratory system**	Conducting portion, Nasal cavity, Respiratory epithelium, Vestibule, Olfactory, Respiratory region, Para nasal sinuses, Pharynx, Nasopharynx, Oropharynx, Laryngopharynx, Larynx: General structure, Mucous membranes, Cartilages of the larynx, Epiglottis, Vocal cords, Trachea, Layers, Bronchial tree, Bronchi: Extra pulmonary bronchi, Intra pulmonary bronchi, Bronchiole, Histophysiologies of conducting portion. Respiratory portion: -Respiratory bronchioles, Alveolar ducts, Atrium, Alveoli, Alveolar wall, Epithelial lining cells, Surfactant cells, Blood air barrier, Pathological changes. Pleura, Histophysiology, Pathological changes, Clinical considerations.
5	**2**	**1**	**Digestive system**	Introduction, Histological structure, Oral cavity, Layers, Lips, Histologic structure in different regions. Tongue: Papillae, Taste buds, Teeth and associated structures. General consideration, Enamel, Dentine, Cement, Pulp, Periodontal membrane, Gingiva
6	**2**	**1**	**Digestive tube**	Basic pattern of the structure of the alimentary canal Esophagus: Layers (Mucosa, Submucosa, Muscularis, Serous and Adventitia). Glands: Histophysiology, Stomach: Regions, Layers, Glands, Cell types, Protective mechanism, Histophysiology Small intestine: Segments, Plica circularis, Villi, Microvilli, Layers, Cells, Glands, Histophysiology. Large intestine: Segments, Layers, Glands, Cells, Appendix, Rectum and anal canal, Difference between small and large intestine, Histophysiology, Clinical considerations.

7	**2**	**1**	**Organs associated with a the digestive tract**	Salivary glands: Minor salivary glands, Major salivary glands, Basic structure, Serous cells, Mucous cell, Myoepithelial cells, Duct system, Pancreas, Structure, Exocrine Pancreas, Endocrine Pancreases. Liven General structure, Blood supply, Liver lobules, Cell types, Sinusoid, Portal area, Central vein, Hepatic changes, Histophysiology, Bile ducts, Intrahepatic bile ducts, Extra hepatic bile ducts, Gallbladder, General structure, Histophysiology, Peritoneum and Mesentery; Definition and layers, Clinical considerations.
8	**2**	**1**	**Integumentary system**	Skin: Basic facts about skin, Structure, Epidermis (layers & cells), Keratinization, Melanin production, Dermis, Subcutaneous tissue Histophysiologies. Cutaneous appendages: Hairs, Nail, Sebaceous glands, Sweat glands, Clinical considerations.
9	**2**	**1**	**Defense system**	Introduction, Leukocytes, Mononuclear phagocyte system, Immune system, Thymus gland: Histological organization, Cortex, Medulla, Histophysiology, Effects of different factors on thymus. Bursa: Definition and functions. Lymph nodes: Histological organization, Capsule and trabecula, Lymph sinuses and lymphatic vessels, Cortex, Medulla, Histophysiology. Spleen: General structure, White pulp, Red pulp, Capsule and trabeculae, Blood supply, ; Histophysiology. Tonsil: General structure and histophysiology, Clinical considerations.
10	**2**	**1**	**Endocrine system**	Definition. Hypophysis: Definition, Adenohypophysis, Pars distal, Secretary cells, Pars tuberalis, Pars intermediate, Neuro secretary cells, Histophysiology, Clinical considerations. Thyroid: Follicular cells, Para follicular cells, Histophysiology, Clinical considerations. Parathyroid: Cells, Histophysiology, Clinical considerations. Adrenal: Cortex, Medulla, Histophysiology, Clinical considerations. Pineal body: Structure, Histophysiology, Clinical considerations.
11	**2**	**1**	**Urinary system**	kidney: -Nephrons, Renal corpuscle, Proximal convoluted tubule, Loop of Henley, Distal convoluted tubule Collecting tubules, Renal interstitial, Blood circulation, Juxtaglomerular apparatus, Histophysiology Extra renal passage: Ureter, Urinary bladder, Urethra, Clinical Considerations.

12	**2**	**1**	**Male reproductive system**	Definition and functions of primary sex organs, Secondary sex organs. Testis: Histological structure (Somniferous tubules, Cells representing stages in spermatogenesis, Cells of Sertoli), Spermatozoa, Interstitial cells, Blood testis barrier, Excretory genital ducts, Epididymitis, Ductus deferens. Accessory genital glands: -Bulb urethral glands, Prostate, Seminal vesicle. Penis: Histological structures, Erection mechanisms, Clinical Considerations.
13	**2**	**1**	**Female genital system**	Ovarian follicles, Primordial follicles, Growing follicles, Ovulation follicles, Corpus luteum, Corpus albicans, Histophysiology. Oviduct Gross structure, Histological structure, Histophysiology. Uterus: Gross structure, Histological layers (Myometrium, Endometrium, Perimetrium), Histophysiology. Vagina: Histological structure. External genitalia and pregnancy: -Lips, Clitoris, Vestibular glands, Placenta: Definition, Growth, Histological structure, Placenta barrier, secretions. Breasts: Definition, Histological structure, Breast changes in deferent stage, Clinical Considerations
14	**2**	**1**	**Sense organs**	General information Eye: Layers: External fibrous coat, Sclera, Cornea, Limbos middle vascular coat, Choroids, Ciliary's body, Iris, Internal nervous coat, Retina, Photoreceptors, Histophysiology. Refractive media aqueous humor, Lens, Vitreous body, Optic nerve, Accessory structure, Conjunctive, Eyelid, Lachrymal apparatus, Histological structure in deferent physiologic status and Clinical Considerations.
15	**2**	**1**	**Gustatory organ olfactory organ**	Definition, Taste bude, Olfactory mucosa, Olfactory epithelium, histophysiology and Clinical Considerations. Ear: External ear: -Auricle, External Auditory meatus, histophysiology. Middle Ear: Walls, Histological structures, Histophysiology. Internal Ear: Osseous Labyrinth, Cochlea, Semicircular Canals, Membranous Labyrinth, Organ of equilibrium, Organ of hearing, Histophysiology and Clinical considerations.
16	**2**	**1**	**Nervous system**	peripheral nervous system. nerve ganglia, peripheral nerve, histophysiology. central nervous system, gray matter and white matter brain, cerebrum, brain stem, cerebellum, spinal cord, mining, durra matter, arachnoids, parameter, choroids plexus, cerebrospinal fluid, clinical considerations.

Skills

Routine and special stained slides of all tissues and organs of body.
Slide show to demonstrate filtration barrier of kidney, alveolar septum, tight junctions of capillaries and such relevant areas.

Textbooks and Reference books Recommended (last Edition)

- Human Histology, Alan Steven.
- Krause's Essential Human Histology for Medical Student, Kraus Williams.
- Histology A Text and Atlas, Michael H Ross
- Clinical and Functional Histology for Medical Students, Richard S. Snells

VII-MEDICAL EMBRYOLOGY

Goals

The Medical embryology course covers embryologic development from ovulation through birth and is organized by organ systems. An introductory overview lecture followed by complete syllabus, lecture notes, CDs with animations of embryologic development, and supplementary textbooks on library reserve.

Learning objectives

To understand the basic principles of embryology including genetic inheritance and stages involved in development of the organs and systems from the time of conception till birth.
The student should recognize the critical stages of normal development and the effects of common teratogens, genetic mutations and environmental hazards on it.
He/ She should be able to explain the developmental basis of the occurrence of major variations, abnormalities and congenital anomalies.

Course Content:

EMBRYLOGY					
Discipline				**Basic Biomedical Science**	
Department				**Histology**	
Course Title				**Medical Embryology (General Embryology)**	
Pre-requisites				**Biology, Anatomy and Histology.**	
Course code				**MED3 011**	
Academic year				**First**	
Semester		**2**		**Fall**	
Numbers of Credits		**3**		**Knowledge**	**2**
				Practical	**1**
Weeks	**Hours**		**Topics**	**Descriptions**	
	Knowledge	**Laboratory**			
1	**2**	**1**	Introduction	Definition, History, Parts of Embryology, Location of Embryology.	
2	**2**	**1**	Reproductive system	The female Genital system, The male Genital system.	
3	**2**	**1**	Prosenesis	Gametes, Gametogenesis, Ovarian cycle, Clinical correlates.	
4	**2**	**1**	Development	Prenatal live, Postnatal live	
5	**2**	**1**	Preorganogenesis	Fertilization, Period of fertilization, Impotence of fertilization, Clinical correlates.	
6	**2**	**1**	First week of development	Cleavage, Development in days 3rd & 4th, Development in days 6th, Development in days 7th, Clinical correlates	
7	**2**	**1**	Second week of development	Development in days 8th, Development in days 9th, Development in days 11th, Development in days 13th, Clinical correlates.	
8	**2**	**1**	Third week of development	Gastrulation, The primitive cardiovascular system, Notochord formation, Allantoises, Development of germ disc, Clinical correlates. Neurolation Development of somites, Development of intraembryonic coelom. Development of trophoblasts	

9	**2**	**1**	Embryonic period	Organogenesis (Third to Eight weeks), Differentiation of Ectoderm, Differentiation of Mesoderm Differentiation of Endoderm, Differentiation of Somites Clinical correlates, Brief organogenesis, Clinical correlates.
10	**2**	**1**	Fetal period	Differentiation of fetus, Clinical correlates, Monthly, change, Time of birth.
11	**2**	**1**	fetal period	Fourth week development of fetal period), Clinical correlates, Premature & post mature babies.
12	**2**	**1**	Extra embryonic membrane formation	Extra Embryonic membrane: Placenta, Amnion, Chorion, Clinical correlates
13	**2**	**1**	Extraembryonic M. formation	Fetal membrane in twins, Clinical correlates.
14	**2**	**1**	Parturition	Postnatal period, (Feto neonatal circulation).
15	**2**	**1**	Extra normal change in prenatal period	Teratology, Definition, Essential of Teratology, Kinds of Teratogens, Revolution in prenatal, period, Clinical correlates.
16	**2**	**1**	Effect on embryogenesis	Genetics and human Development, Molecular biology of human Development, In vitro fertilization, Prenatal diagnosis.

Skill

Developmental Anatomy

Models to demonstrate various stages of early fetus and different organ development.
Slides of ovary and testis to show follicles and stages of maturation of spermatozoa: early chick embryos to understand the development of tissues and organs from conception till term.

Textbooks & Reference Books recommended (Last Editions)

Longmans Medical Embryology, Thomas W. Sadler
The Developing Human, Keith L. More.
Larsen's Medical Embryology, Bleyl MD, PhD
Embryology for Medical Students, Sant
Basic Concepts in Embryo logy, Lauren Sweeney

VIII-MEDICAL PHYSILOGOY

Goals

The broad goal of the teaching of graduate students in physiology is providing a comprehensive knowledge of the normal functions of the organ systems of the body and

their interactions to facilitate understanding of the physiological basis of health and changes in disease.

Learning objectives

A. Knowledge

At the end, a medical student in physiology should be able to explain:

- Explain the normal functioning of all the organ systems of the body and their interactions;
- Narrate the contribution of each organ system to the maintenance of homeostasis;
- Elucidate the physiological aspects of normal growth and development;
- Describe the physiological response and adaptations to environmental stresses;
- List the physiological principles underlying pathogenesis and treatment of disease.

B. Skills

At the end of the course the student should be able to:

- Conduct experiments designed for study of physiological phenomena;
- Interpret experimental / investigative data;
- Distinguish between normal and abnormal data derived as a result of tests which he/she has performed and observed in the laboratory.

Course Contents

MEDICAL PHYSILOGY (Module 1)				
Discipline			**Basic Biomedical Science**	
Department			**Physiology**	
Course Title			**Cell, Blood & Immunity, Respiration & GI Tract**	
Pre-requisites			**Molecular biology, Gross & Microscopic anatomy**	
Course code			**MED3 012**	
Academic year			**II**	
Semester		**3**	**Spring/Fall**	
Number of Credits		**3**	**Knowledge**	**2**
			Practical	**1**
Weeks	**Hours**		**Topics**	**Description**
	Knowledge	**Laboratory**		
1	**2**	**1**	Neurons & Membrane Potentials	Structure of a neuron, classification, membrane potential and action potential.
2	**2**	**1**	Synapse & Neurotransmitters	Structure and components of a synapse, mechanism of synaptic transmission, neurotransmitters, synaptic response and summation.

3	**2**	**1**	Muscle Contraction	Brief anatomy and physiology, composition, steps of contraction, energetic event of muscle contraction. Smooth muscles.
4	**2**	**1**	Blood Function and Cells	Characteristic of the blood, blood function, blood composition (rbc, wbc & platelets), plasma.
5	**2**	**1**	Hemoglobin	Hemoglobin, iron metabolism, destruction of rbc, anemia, effect of anemia on blood circulation.
6	**2**	**1**	White Blood Cells	Functional characteristics of WBC, pus formation, eosinophils, basophils.
7	**2**	**1**	T & B lymphocytes Antibodies, Immunization and Allergy	Process oft &b lymphocytes. Antibodies, active and passive immunization, allergy.
8	**2**	**1**	Type of T-cel3s, Active and Passive Immunity..	Types of t-cells, lymphokines, aids, immunologic tolerance, active and passive immunity.
9	**2**	**1**	Hemostasis, Coagulation and Anticoagulants	Mechanism of hemostasis, properties of platelets, blood coagulation, anticoagulants, effect of plasmin.
10	**2**	**1**	Agglutinations, Rh factors & Blood Transfusion.	Agglutinogen, agglutinins, agglutination, blood typing, Rh factor, transfusion and transfusion reaction.
11	**2**	**1**	Review of Anatomy of Respiratory Tract Organ	Respiratory system organs, function of the respiratory tract.
12	**2**	**1**	Pulmonary Function Test, Pulmonary	Pulmonary function test, intra plural pressure, intra alveolar pressure. Pulmonary volume and capacities. O2 and CO2 exchanges.
13	**2**	**1**	Volume and Capacities. Respiratory Centers	pulmonary circulation, neural mechanism, respiratory center in the brain stem, unity of respiratory center action, central and peripheral chemoreceptors.
14	**2**	**1**	Anatomophysiology of Gastrointestinal Tract (GI).	GI organs and their functions, control of GI activities, autonomic control of GI, GI reflexes, GI hormones, functional movement of the GI. Blood circulation of the GI.
15	**2**	**1**	Secretion	Secretion in the GIT, salivary secretion, gastric secretion, pancreatic secretion, small intestine secretion, large intestine secretion, digestion of various food by hydrolysis.
16	**2**	**1**	Absorption in Gastrointestinal Tract	Essential principles of GI absorption. Absorption of carbohydrate, proteins & fat. Different mechanism of absorption.

MEDICAL PHYSILOGY (Module 2)					
Discipline				**Basic Biomedical Science**	
Department				**Physiology**	
Course Title				**Endocrine, Cardiovascular, Kidney & Reproductive**	
Pre-requisites				**Molecular biology, Gross & Microscopic anatomy**	
Course code				**MED4 012**	
Academic year				**II**	
Semester			**4**	**Fall/Spring**	
Number of Credits			**4**	**Knowledge**	**3**
				Practical	**1**
	Hours				
Weeks	**Knowledge**	**Laboratory**	**Topics**	**Description**	
1	**3**	**1**	Introduction to endocrinology. The pituitary gland	Synthesis of hormones, Secretion, Control of hormonal secretion, Transport of hormones, anterior and posterior pituitary secretions. Growth hormones and its effect, Mechanism of Action, hyper and hypo secretion of Growth hormones	
2	**3**	**1**	The thyroid Gland. Function of the : thyroid hormones The adrenocortical hormones.	Thyroid hormones synthesis and secretion Transport of thyroid hormones, effect of thyroid hormones, Effect of Thyroid Hormones on the tissues. Adrenocortical Hormones, Effect of Adrenocortical hormones on different organs. control of Adrenocortical Hormones.	
3	**3**	**1**	Glucocorticoids, abnormalities of adrenocortical secretion Insulin Glucagon and diabetes mellitus.	Glucocorticoids, secretion of, effect on the tissue, regulation of secretion and effect of Pituitary gland and hypothalamus on Adrenal cortex. Insulin and its metabolic effect on protein, lipids and carbohydrates, Insulin effect on glucose consumption in the brain. Control of insulin secretion, Glucagon and its effect	
4	**3**	**1**	Parathyroid hormones and calcitonin.	Parathyroid hormones and its effect, Calcitonin and its effect. Regulation of Calcium Level in the blood.	

5	**3**	**1**	Anatomophysiology of male sexual organs. Structure of the Sperm,	Anatomophysiology of male sexual organs, spermatogenesis, function of the seminal vesicle, Function of the prostate gland, Structure of the Sperm, Semen
6	**3**	**1**	The Male Sexual Act. Testosterone. Mechanism of its effect.	Male sexual Act, Male Fertility, Neuronal stimulus for performance of the Male Sexual Act. Testosterone and other male sex hormones. Function of the testosterone. Mechanism of Action of the Testosterone.
7	**3**	**1**	Anatomophysiology of The female sexual organ Follicular Growth Hormonal control of sexual Function	Anatomophysiology of The female sexual organ, Female hormonal system, Monthly ovarian cycle, Follicular Growth, Corpus Luteum. Luteal phase of the ovarian cycle. Hormonal control of sexual function
8	**3**	**1**	Physiology of the pregnancy. Parturition Lactation.	Physiology of the pregnancy. Function of the placenta, Hormonal Factors in Pregnancy. Parturition, Mechanism of parturition, Labor pains, Lactation, Development of the breast, Milk Composition.
9	**3**	**1**	Anatomophysiology of the heart and vessel, Function of different parts of the hear	Brief anatomophysiology of the heart and vessel, Physiology of cardiac muscle, Cardiac contraction and Relaxation Mechanism, Action potential in cardiac muscle. Function of different parts of the heart, Nodal Tissue, pericardium, papillary muscles and chorda tendinea.
10	**3**	**1**	Homodynamic of the heart. Heart Sounds. Cardiac Automatism	Homodynamic events of the heart during the cardiac cycle, pressure in the atrium, ventricular pressure during the cardiac cycle, ventricular volume, and regulation of the heart pump. Heart Sounds. Cardiac Automatism
11	**3**	**1**	Methods of recording and interpretation of ECG. Physiologic changes of the ECG	Electrocardiogram, Normal waves and normal intervals, leads of the ECG, Methods of recording and interpretation of ECG, Cardiac axis determination. Physiologic changes of the ECG.
12	**3**	**1**	Overview of the circulation Blood pressure, Local Circulations Lymphatic system	Overview of the circulation, Blood volume in different part of circulation, Arterial pressure Blood pressure and vessels motilities, Capillary Circulation, Vein circulation, Pulmonary and coronary circulations. Lymphatic system

13	**3**	**1**	physiology of the urinary system, Function of the Kidney	Physiology of the urinary system, Nephron, function of the Kidney Glomerular Filtration Rate, Glomerular filtrate and its difference with plasma. Factors affect glomerular filtration.
14	**3**	**1**	Reabsorption in the tubules, Tubular Load, Tm and Threshold for Tm. Plasma Clearance.	Reabsorption in the tubules, Ability of Reabsorption of different parts of the tubules. Mechanism of Reabsorption of different materials in the tubules, Tubular Load, Tubular Transport maximum (Tm) and Threshold for Tm. Plasma Clearance.
15	**3**	**1**	Body fluid and osmolality, Role of the kidneys in control of Body Fluids. Excretion by the kidney Control of Hydrogen Level.	Body fluids, Role of the kidneys in control of Body Fluids and osmolarity. Excretion by the kidney, excretion of potassium, control of phosphate level, control of magnesium level. Control of Hydrogen Level.
16	**3**	**1**	Control of acid-base by the: Kidney. Physiology of the other part of the urinary tract Micturition	Excretion of Hydrogen, Buffer system of the tubular fluid, Control of acid-base by the Kidney. Physiology of the other part of the urinary tract, Micturition

PHYSILOGY (Module 3)				
Discipline			**Basic Biomedical Science**	
Department			**Physiology**	
Course Title			**Cell, Blood & Immunity, Respiration & GI Tract**	
Pre-requisites			**Molecular biology, Gross & Microscopic anatomy**	
Course code			**MED5 012**	
Academic year			**III**	
Semester		**5**	**Spring/Fall**	
Number of Credits		**4**	**Knowledge**	**3**
			Practical	**1**
Weeks	**Hours**		**Topics**	**Description**
	Knowledge	**Laboratory**		

1	**3**	**1**	Physiology of the eye. Optic of the eye. error of refraction, a ophthalmoscope.	Brief anatomic/Histological structure of the eye, and brief function of different structure of the eye. Physical principle of optics and optic of the eye, Diopter, convex and convex lenses, effect of closing the objects on the picture. Characteristic of the picture in the retina.
2	**3**	**1**	Receptor and neural function of retina.	Error, of refraction, Myopia, hypermetropia, Astigmatism, cataract, negative and positive lenses, ophthalmoscope. Receptor and neural function of the retina, Layers of the retina, Rods and Cone, Mechanism of stimulation of the Rods and Cones, Color vision.
3	**3**	**1**	Visual pathways and visual cortex. Perimetery, Eye movement and their control.	Visual pathways, Optic nerve, chiasma optic, Optic tract, Optic Radiation, and visual cortex. Perimetery, Visual field, Normal blind spot, Eye movement and their control, pursuit movements, strabismus, nystagmus.
4	**3**	**1**	Physiology of the Ear. External, Middle and Internal Ear.	physiology of the Ear, Tympanic membrane, Auricle and Auditory canal, Middle Ear, Middle ear ossicular system, Austechian tube and its function. Internal Ear, Cochlea, Auditory pathway and Auditory Cortex.
5	**3**	**1**	Vestibular System Physiology	Utricle, Saccule, semicircular canals-; Receptor of the vestibular system, vestibular pathway and centers in CNS.
6	**3**	**1**	Physiology of the Taste and smell Sense	Physiology of the Taste and Smell organs. Receptors, pathways and cortex.
7	**3**	**1**	Cells of the nervous system, Glial cells, the synapse& and neurotransmitters.	Cells of the nervous system, Characteristic, glial cell, type glia, astrocytes, ligoderndroscytes, Schwan cells, Ependymal cells, the synapse, Mechanism of transmission of signals, neurotransmitters, Myelin.
8	**3**	**1**	Nervous system classification, meninges	Nervous system classification, CNS (brain, spinal cord) PNS (somatic nerve system, autonomic nervous system, gray matter, white matter, meninges, dura matter, arachnoid mater, pia mater. CNS parts Procencephalon (diencephalon &Telencephalon), Metencephalon (Pons, cerebellum), Myelencephalon (medulla oblongata, mesencephalon (midbrain).

9	**3**	**1**	Cerebrum lobes cortex & corpus callusum, hippocampus, Amygdala & basal ganglia, thalamus, hypothalamus, Reticular formation, midbrain, pons & medulla	Function of diencephalon (thalamus & hypothalamus), function of the reticular formation of the brain stem, function of the mid brain, function of the pons & medulla
10	**3**	**1**	Function of the cranial nerves, cerebellum & spinal cord	Function of the cranial nerves, function of the cerebellum, the spinal cord, internal structures of spinal cord, function of the spinal cord.
11	**3**	**1**	Cerebrospinal fluid, ventricles of the brain & brain metabolism	Function of CSF, quantity, pressure, formation of CSF, flow & absorption of CSF, mechanism of secretion of CSF, ventricles of the brain & their connection, regulation of CSF pressure by the arachnoidal villi Lymphatic function of perivascular space, management of CSF pressure high CSF pressure causes edema of the optic disc(papilledema) brain metabolism
12	**3**	**1**	The autonomic nervous system (ANS)	Neurons in the ANS, sympathetic, parasympathetic & enteric nervous system. Innervation & function, autonomic effects on various organ of the body adrenergic & cholinergic receptors. Enteric nervous system (ENS)
13	**3**	**1**	Somatic senses	Somatic senses, mechanoreceptive, touch, pressure, vibration, position & awareness of movement, visceral sensation, deep sensations, sensory receptors, detection of sensory information, modalities, label line principle, adaptation of the receptors, classification of the nerve fibers, strengthen of stimulation, receptive field, type of recognition, transmission & processing of information, mechanoreceptive fibers. Somatosensory pathways, Dorsal Column-Medial Lamniscal Pathway, Somatosensory cortex, Primary somatosensory area I, Somatosensory association area (Somatosensory II), Brodmann Classifications of the Brain, Layers of the Somatosensory Cortex and Their Function, Effect of Removing the somatosensory Association - Area, Two-Point Discrimination, Position Senses (Proprioceptive Senses), Receptors, Processing of Position Senses Information in the Dorsal, Colum- Medial Lemniscal pathway, Anterolateral Pathway.

				Pain & Headache, Types of pain and their qualities, Pain receptors and their stimulation, Dual Pathway for Pain Transmission, Neospinothalamic tract, Paleospinothalamic tract, Adaptation of Pain Receptors: Pain Suppression ("Analgesia") System, in the Brain and Spinal Cord,, Inhibition of Pain by Tactile Sensory Signals, Referred Pain, Headache, Thermal Sensation.
14	**3**	**1**	Motor & Integrative Physiology	Motor function of the spinal Cord, The Cord Reflexes, Cortical and Brain Stem control of Motor Function, Motor cortex and corticospinal, tract.
15	**3**	**1**	Cerebellum and Basal Ganglia to overall Motor control. Intellectual Function of the brain, Learning and Memory.	Cerebellum and its motor function, Basal Ganglia their motor function, integration of the many parts of the total Motor control system. Intellectual Function of the brain, Learning and Memory. Function of the specific cortical area, thoughts, consciousness and Memory
16	**3**	**1**	The Limbic System and Hypothalamus, States of Brain Activities, Sleep, Brain.	Functional Anatomy of the Limbic System, Activating Driving system of the brain, Hypothalamus a major control headquarters for the Limbic system, States of Brain Activities, Sleep, Brain, Brain waves.

Skills

a- Human physiology

- Use and care of microscope and microscopic examination of blood
- PCV, ESR, osmotic fragility
- Hemoglobin estimation and blood indices
- RBC count
- WBC count
- Examination of peripheral blood smear
- Differential WBC count - normal, abnormal, anemias
- ABO grouping, Rh typing
- Bleeding time, clotting time
- Recording of BP - effects of posture and exercise
- Recording of arterial pulse only
- Respiratory movements demonstration
- General examination
- Examination of Respiratory system
- Examination of CVS
- Examination sensory system
- Examination of Motor system

- Examination reflexes
- Examination of cranial nerves

b- Experimental physiology

- Muscle nerve preparation, effects of different types of stimuli
- Simple muscle twitch
- Two successive stimuli, repetitive stimuli and fatigue
- Genesis of tetanus and Starling's law of muscle (demonstration)
- Effect of load and after load on muscle contraction
- Effects of variations of temperature on muscle contraction
- Velocity of nerve impulse (demonstration)
- Normal cardiogram of frog's heart and effects of heat and cold.
- Effect of temperature on frog's heart
- Refractory period of frog's heart
- Properties of cardiac muscle - all or none law, summation of
- subminimal stimuli (demonstration)
- Effect of vagal stimulation on frog's heart
- Perfusion of frog's heart - action of ions, action of drugs

C- Demonstrate simple mussels twitch and normal cardiogram

Others can be demonstrated with e- modules / recorded graph

- Demonstrations (with E- modules / recorded graph/ clinical-posting
- Heart perfusion (Videos)
- Intestinal movements (Videos)
- Electroencephalogram (EEG)
- Electromyogram (EMG)
- Electrocardiogram (ECG)
- Audiometer
- Spirometer

Textbooks & Reference Books Recommended (Last edition)

- Text book medical physiology - Arthur C. Guyton: W.B. Saunders
- Review of Medical Physiology – W.F Ganong – Lange Medical Booked. 22nd.
- Best and Taylor's physiologic basis of medical practice J B
- Guyton & Hall Textbook of Medical Physiology, John E. Hall.
- Medical Physiology, Walter F. Boron

IX- PATHOLOGY

Goals

The broad goals of teaching pathology are to impart the knowledge, skills and attitudes in the student to understand the etiopathogenesis, morphology and pathological concepts related to various common diseases.

Learning objective

At the end of course the student would be able to:

- Understand the concepts of cell injury and changes produced thereby in different tissues and organs and the body's capacity, for healing;
- Understand the normal homeostatic mechanisms, the derangements of these mechanisms and the effects on human systems;
- Understand the etiopathogenesis, the pathological effects and the clinico-pathological correlation of common infectious and non-infectious diseases;
- Understand the concept of neoplasia with reference to the etiology, gross and microscopic features, diagnosis and prognosis in different tissues and organs of the body; Correlate normal and altered morphology (gross and microscopic) of different organ systems in different diseases to the extent needed for understanding of disease processes and their clinical significance;
- Have knowledge of common immunological disorders and then resultant effects on the human body;
- Have an understanding of the common hematological disorders and the investigations necessary to diagnose them and determine their prognosis;
- Perform and interpret in a proper manner the basic clinico-pathological procedures; Know the principles of collection, handling and dispatch of clinical samples from patients in a proper manner.

Course contents

Pathology (Module 1)				
Discipline			**Basic Biomedical Science**	
Department			**Pathology**	
Course Title			**General Pathology**	
Pre-requisites			**Molecular biology, Gross & Microscopic Anatomy and Physiology**	
Course code			**MED5 018**	
Academic year			**III**	
Semester		**5**	**Spring/Fall**	
Number of credits		**4**	**Knowledge**	**3**
			Practical	**1**

Week	**Hours**		**Topics**	**Descriptions**
	Knowledge	**Laboratory**		
1	**3**	**1**	cell injury, cell death, and adaptation	Overview of Cellular Responses to Stress and Noxious Stimuli.-Cellular Adaptation to Stress: Hypertrophy, Hyperplasia, Atrophy, and Metaplasia

			Overview of Cell Injury and Cell Death	Causes of Cell Injury and Morphology of Cell and Tissue Injury
			Mechanisms of cell Injury	Depletion of ATP, Mitochondria damage, Influx of Calcium, Accumulation of Oxygen-Derived Free Radicals, Defects in Membrane Permeability, Damage to DNA and Proteins, Ischemia-Reperfusion Injury, and Chemical (Toxic) injury
2	**3**	**1**	Apoptosis	Causes of apoptosis, Mechanisms of apoptosis, Example of apoptosis
			Autophagy and Intracellular accumulation	Fatty change (Steatosis). Cholesterol, protein, Glycogen, Pigments
			Pathologic calcification and Cellular aging	Dystrophic and metastatic calcification -Cellular aging
3	**3**	**1**	Inflammation and repair acute inflammation	Overview of Inflammation and Tissue repair, -Stimuli for acute inflammation, -Recognition of microbes, necrotic cells and foreign substances, and-Vascular change
			Acute inflammation	Cellular events: Leukocytes recruitment and activation -Leukocyte-Induced tissue injury -Defect in leukocyte function, Outcomes of acute inflammation.
			Morphologic Patterns of Acute Inflammation	Serous inflammation. -Fibrinous inflammation, -Supportive (purulent) inflammation and abscess formation, and -Ulcerative inflammation
4	**3**	**1**	Chemical Mediators of Inflammation	Cell-Derived mediators,-Plasma Protein-Derived mediators,-Anti-Inflammatory mechanisms
			Chronic inflammation	Chronic inflammatory cells and mediators granulomatous inflammation
			systemic effects of inflammation	Fever, Elevated of Plasma Level of Acute-Phase Proteins, Leukocytosis, Other manifestation of the acute phase response and sepsis
5	**3**	**1**	overview of tissue repair	Cell and tissue regeneration,-Scar formation -Factors that influence tissue repair
			Selected clinical example of tissue repair and fibrosis	Healing of skin wound,-Healing by first intention -Healing by second intention.-Wound strength
			Homodynamic disorders	Hyperemia and congestion- Edema- Hemorrhage
6	**3**	**1**	Hemostasis and thrombosis	Normal Hemostasis, Thrombosis, Disseminated intravascular coagulation (DIC)

			Embolism and infarction	Pulmonary thrombo embolism, systemic thrombo embolism, infarction
			Shock	Pathogenesis of septic shock, stage of shock
7	**3**	**1**	diseases of the immune system	Innate and adaptive immunity, Cells and tissues of the immune system, Overview of normal immune responses
			hypersensitivity reactions	Causes of hypersensitivity reactions Types of hypersensitivity reactions -Immediate (Type 1) hypersensitivity and Antibody mediated diseases (Type II hypersensitivity)
			hypersensitivity reactions	hypersensitivity), -T cell-mediated (Type IV) hypersensitivity
8	**3**	**1**	Autoimmune diseases	Immune tolerance, Mechanism of autoimmunity
			systemic immune diseases and rejection of transplants	Systemic lupus erythematosus, Rheumatoid arthritis, Sjogren syndrome, Systemic sclerosis, and Inflammatory myopathies
			Immune deficiency diseases	Primary (congenital) immune deficiencies
9	**3**	**1**	Immune deficiency diseases	Secondary (Acquired) immune deficiencies acquired immunodeficiency syndrome (AIDS)
			Amyloidosis	Pathogenesis, Classification, Morphology, and Clinical courses of amyloidosis
			Neoplasia	Nomenclature Characteristics of benign and malignant neoplasms, Epidemiology
10	**3**	**1**	Carcinogenesis: the molecular basis of cancer	Genetic lesions in cancer, carcinogenesis: A multi-Step process, Hall Marks of cancer
			Etiology of cancer: Carcinogenic agents	Chemical carcinogens, Radiation carcinogenesis, Viral, and Microbial Oncogenesis
			Host defense against tumors: Tumor immunity	Tumor antigens. Anti tumor effectors mechanisms Tumor surveillance and immune evasion by tumors
12	**3**	**1**	Clinical aspects of neoplasia	Effects of tumor on host, Grading and Staging of 1 cancer Laboratory diagnosis of cancer
			Genetic diseases	Nature of genetic abnormalities contributing to human disease
			Mendelian disorders:	Transmission patterns of single-gene disorders Diseases caused by mutations in genes encoding

			Diseases caused by single gene defects	structural, Receptor, and Enzyme proteins, and that regulate growth.
12	**3**	**1**	Complex multigenic disorders, Cytogenetic disorders	Numerical abnormalities, Structure abnormalities Cytogenetic disorders involving autosomes
			Cytogenetic disorders	Cytogenetic disorders involving sex chromosomes
			Single-gene disorders with atypical patterns of inheritance	Diseases caused by triplet repeat mutations Diseases caused by mutations in mitochondrial genes. Diseases associated with alteration of imprinted regions of the genome
13	**3**	**1**	Molecular diagnosis of mendelian and complex disorders	Molecular diagnosis of copy abnormalities Direct detection of DNA mutation by polymerase chain reaction (PCR) analysis, Linkage and genome-wide association studies, Indications for genetic-analysis
			environmental and nutritional diseases	Health effects of climate change, Toxicity of chemical and physical agents, Environmental pollution
			Environmental and nutritional diseases	Effects of tobacco, Effects of alcohol
14	**3**	**1**	Injury by therapeutic drugs and drugs of abuse	Injury by therapeutic drugs: Adverse drug reactions Injury by nontherapeutic toxic agents (Drug abuse)
			Injury by physical agents	Mechanical trauma, Thermal injury, Electrical injury produced by ionizing radiation
			Nutritional diseases	Malnutrition, Protein- Energy malnutrition Anorexia Nervosa and Bulimia
15	**3**	**1**	Obesity Diet and systemic diseases, Diet and Cancer	Leptin, Adipose tissue, Clinical consequences of obesity
			general pathology of infectious diseases	General principle of microbial pathogenesis Categories of infectious agents
			General pathology of infectious diseases	Special techniques for identifying infectious agents New and emerging infectious diseases, Agents of bioterrorism

16	**3**	**1**	Transmission and dissemination of microbes	Routes of entry of microbes, Spread and dissemination of microbes within the body, Release from the body and transmission of microbes
			How microorganisms cause disease	Mechanisms of viral injury, mechanism of bacterial injury, Immune evasion by microbes
			Spectrum of inflammatory responses to infection	Suppurative, Mononuclear granulomatous, Cytopathic- cytoproliferative, Necrosis, and Chronic inflammation/scarring

Pathology (Module 2)				
Discipline			**Basic Biomedical Science**	
Department			**Pathology**	
Course Title			**Systemic pathology Module 1)**	
Pre-requisites			**General Pathology**	
Course code			**MED6 018**	
Academic year			**III**	
Semester		**6**	**Fall/Spring**	
Number of credits		**3**	**Knowledge**	**2**
			Practical	**1**
Week	**Hours**		**Topics**	**Descriptions**
	Knowledge	**Laboratory**		
1	**2**	**1**	blood vessels, Structure and function of blood vessels, Congenital anomalies, Blood pressure regulation, and Hypertensive vascular disease	Vascular organization, Endothelial cells Vascular smooth muscle cells, Epidemiology of hypertension, Pathogenesis, Morphology
			Vascular wall response to injury Arteriosclerosis	Atherosclerosis, Monckeberg medial sclerosis Arteriolosclerosis
2	**2**	**1**	Aneurysms and Dissections	Abdominal Aortic Aneurysm, Thoracic Aortic Aneurysm, Aortic Dissection

			Vacuities and disorders of blood vessel hyperactivity	Noninfectious vacuities factious vacuities Raynaud phenomenon, Myocardial vessel vasospasm
3	**2**	**1**	Veins and lymphatic disorders tumors of blood vessel	Varicose veins, thrombophlebitis and Phlebothrombosis, superior and Inferior vena cava syndromes, and Lymphangitis and Lymphedema. Benign and Malignant tumors
			Heart, overview of heart disease, heart failure	Left- side heart failure, Right- side heart failure
4	**2**	**1**	Congenital heart disease	Left-to-Right Shunts, Right-to-Left Shunts Obstruction lesions
			Ischemic heart disease	Angina pectoris, Myocardial infarction, Chronic ischemic heart disease, and sudden cardiac death
5	**2**	**1**	Hypertensive heart disease Valvular heart disease	Systemic (left-side) hypertensive heart disease Pulmonary hypertensive heart disease (Cor Pulmonale). Degenerative valve disease Rheumatic valvular disease infective endocarditic
			Cardiomyopathy Myocarditis Pericardial disease, Cardiac tumors	Dilated cardiomyopathy. Hypertrophic cardiomyopathy, Restrictive cardiomyopathy Pericarditis, Pericardial effusions, Metastatic neoplasms, Primary neoplasms
6	**2**	**1**	hematopoietic and lymphoid systems, red cells disorders	Anemia of blood loss, Hemolytic anemia
			Red Cells Disorders	Anemia of diminished erythropoiesis
7	**2**	**1**	White cell disorders	Non- neoplastic disorders of white cells Neoplastic proliferations of white cells
			Bleeding disorders	Disseminated Intravascular Coagulation Thrombocytopenia, Coagulation disorders
8	**2**	**1**	Disorders that affect the spleen and thymus	Splenomegaly, Disorders of the thymus
			Lung	Atelectasis, acute respiratory distress syndrome, obstructive versus restrictive pulmonary diseases
9	**2**	**1**	Obstructive lung (airway) diseases	Emphysema, Chronic bronchitis, Asthma, and Bronchiectasis
			Chronic interstitial (restrictive,	Fibrosing diseases, Glaucomatous diseases I Pulmonary eosinophilia, Smoking-related interstitial diseases.

			infiltrative) lung diseases	
10	**2**	**1**	Pulmonary diseases of vascular origin	Pulmonary embolism, hemorrhage, and infarction Pulmonary hypertension, Diffuse alveolar hemorrhage syndrome
			Pulmonary infections	Community acquired acute pneumonias Community acquired atypical pneumonias Hospital acquired pneumonias, Aspiration pneumonia and lung abscess, Chronic pneumonia, Fungal \ infections
11	**2**	**1**	Lung tumors Pleural lesions	Carcinomas and Carcinoid tumors, Pleural effusion and Pleuritis, Pneumothorax, .Hemothorax, and Chylothorax
			Lesions of the upper respiratory: tract	Acute infections, Nasopharyngeal carcinoma Laryngeal tumors
12	**2**	**1**	oral cavity and gastrointestinal tract	Oral inflammatory lesions, Proliferative and : Neoplastic lesions, Diseases of Salivary glands
			Esophagus	Obstructive and Vascular diseases ; Esophagitis, Esophageal tumors
13	**2**	**1**	Stomach	Inflammatory disease of the stomach, Neoplastic disease of the stomach
			Small and large intestines Appendix	Intestinal obstruction, Vascular disorders of bowel Diarrheal disease inflammatory intestinal disease Colonic polyps and Neoplastic disease Acute appendicitis, Tumors of the appendix
14	**2**	**1**	liver, gallbladder, and biliary tract	Clinical syndromes, Jaundice and Cholestasis Hepatic encephalopathy
			Cirrhosis	Portal hypertension, Ascites, Portosystemic shunt, Splenomegaly, Hepatorenal syndrome, and Hepatopulmonary syndrome
15	**2**	**1**	Acute and chronic hepatitis	Viral hepatitis, Autoimmune hepatitis Drug/toxin-mediated injury mimicking hepatitis
			Tumors and hepatic nodules	Benign tumors, Hepatocellular carcinomas
16	**2**	**1**	Gallbladder and Extrahepatic biliary tract disorders	Gallbladder diseases, Disorders of the extrahepatic bile ducts
			Pancreas	Congenital anomalies, Pancreatitis, Pancreatic neoplasms.

Pathology (Module 3)					
Discipline			**Basic Biomedical Science**		
Department			**Pathology**		
Course Title			**Systemic pathology**		
Pre-requisites			**Pathology Module 1 & 2)**		
Course code			**MED7 018**		
Academic year			**III**		
Semester		**7**	**Spring/Fall**		
Number of credits		**3**	**Knowledge**	**2**	
			Practical	**1**	

Week	**Hours**		**Topics**	**Descriptions**
	Knowledge	**Laboratory**		
1	**2**	**1**	kidney and its collecting system glomerular disease	Clinical manifestations of renal diseases Mechanisms of glomerular injury and disease The nephritic syndrome
			Glomerular diseases	The nephritic syndrome
2	**2**	**1**	Diseases affecting tubules and interstitium	Tubulointerstitial nephritis, Acute tubular injury
			Diseases involving blood vessels Chronic kidney disease Cystic diseases of the kidney	Arterionephrosclerosis, Malignant hypertension, and Thrombotic microangiopathies, simple cysts, I Autosomal dominant (adult) polycystic kidney disease, and Autosomal recessive (childhood) polycystic kidney diseases
3	**2**	**1**	Urinary outflow obstruction Tumors of the kidney	Oncocytoma, Renal cell carcinoma, Clear cell carcinomas, Papillary renal cell carcinoma, Chromophobe renal cell carcinomas, and Wilms Tumor
			male genital system and lower urinary tract Penis, Scrotum, Testis, and Epididymis	Malformations, Inflammatory lesions, and neoplasms of the Penis, Cryptorchidism and testicular atrophy, Inflammatory lesions, Vascular disturbances, and Testicular neoplasms
4	**2**	**1**	Prostate	Prostatitis, Benign prostatic hyperplasia, and Carcinoma of the prostate

			Ureter, Bladder, and Urethra	Ureteropelvic junction obstruction and Retroperitoneal fibrosis, Non- neoplastic and Neoplastic conditions of the urinary bladder
5	**2**	**1**	Sexually transmitted diseases	Syphilis, Gonorrhea, Nongonococcal urethritis and cervicitis, Lymphogranuloma venereum, Chancroid (soft chancre), Granuloma inguinal, Trichomoniasis, Genital herpes simplex, and Human papillomavirus infection
			female genital system and breast, vulva & vagina	Vulvitis, Non-neoplastic epithelial disorders, and I Tumors of the Vulva, Vaginitis and Malignant] neoplasms of the Vagina
6	**2**	**1**	Cervix	Cervicitis and Neoplasms of the cervix
			Body of uterus	Endometritis, Adenomyosis, Endometriosis, Abnormal uterine bleeding, and Proliferative lesions of the endometrium and myometrium
7	**2**	**1**	Fallopian tubes Ovaries	Follicle and Luteal cysts, Polycystic ovarian disease Tumors of the ovary
			Diseases of pregnancy	Ectopic pregnancy, Gestational trophoblastic disease Preeclampsia/ Eclampsia
8	**2**	**1**	Breast	Fibrocystic change inflammatory processes
			Tumors of the breast	Fibroadenoma, Phyllodes tumor, Intraductal papilloma, and Carcinoma, Lesions of the male breast
9	**2**	**1**	endocrine system Pituitary	Hyperpituitarism and pituitary adenomas Hypopituitarism Posterior pituitary syndromes
			Thyroid Gland	Hyperthyroidism, Hypothyroidism, Thyroiditis, Graves' disease, Diffuse and Multi nodular goiter, and Neoplasms of the thyroid
10	**2**	**1**	Parathyroid Glands	Hyperparathyroidism, Hypoparathyroidism
			Endocrine pancreas	Diabetes mellitus, Pancreatic neuroendocrine tumors
11	**2**	**1**	Adrenal cortex	Adrenocortical hyperfunction (Hyperadrenalism), Adrenal insufficiency, and Adrenocortical neoplasms
			Adrenal medulla, Multiple endocrine neoplasia syndrome	Tumors of the adrenal medulla, Multiple endocrine neoplasia type 1,Multiple endocrine neoplasia type
12	**2**	**1**	Bones, joints, and soft tissue tumors, bones	Congenital disorders of bone and cartilage Acquired disease of bone, Osteomyelitis, Bone tumors
			Joints	Arthritis joint tumors and Tumor-like lesions
13	**2**	**1**	Soft tissue tumors	Tumors of adipose tissue. Fibrous tumors and Tumor like lesions Fibrohistiocytic tumors, Skeletal muscle tumors, Smooth muscle tumors, Synovial sarcoma

			Peripheral nerves and muscles	Disorders of peripheral nerves, Disorders of neuromuscular junction, Disorders of skeletal muscle
14	**2**	**1**	Peripheral nerve sheath tumors	Schwannomas and Neurofibromatosis type Neurofibroma, Malignant peripheral nerve sheath tumors, Neurofibromatosis type Traumatic neuroma
			Central nervous system	Patterns of injury in the nervous system, Edema, Herniation, and Hydrocephalus Cerebrovascular diseases. Congenital malformations and prenatal brain injury
15	**2**	**1**	Neurodegenerative diseases	Alzheimer disease, Parkinson disease
			Tumors of CNS	Neuronal tumors, Embryonal neoplasms, other parenchymal tumors, Meningiomas, and metastatic tumors
16	**2**	**1**	Skin, acute and chronic inflammatory dermatosis	Urticaria, Acute eczematous dermatitis, Psoriasis, and Infectious dermatosis
			Blistering (bullous) disorders skin tumors	Pemphigus, Bullous pemphigoid, and dermatitis herpitiformis, Benign and Malignant tumors

Skills

- Identify and interpret the gross and/or microscopic features of common disorders as given above.
- Perform with accuracy and reliability basic hematological procedures such as hemoglobin estimation, total and differential WBC count and peripheral blood smear staining, examination and report.
- Calculate the indices and interpret the relevant significance.
- Perform the basic laboratory hematological tests like bleeding time and clotting time
- Perform-a complete examination of the urine and detect any abnormalities
- Grouping. and cross matching of blood
- Collect and dispatch clinical samples from patients in a proper manner
- Interpret abnormal biochemical laboratory values of common diseases.

Teaching and Learning methodology

I- Knowledge

Department stresses on teaching basic fundamentals of the disease process and the applies aspects relevant to the clinical subjects in didactic lectures.

A- General Pathology

Taught with the help of didactic lectures on specific topics followed by skills pertaining to that topic. Besides microscopic examination, fresh specimens obtained at autopsy or surgical operations are shown.

B- Systemic Pathology

The following tools are employed:

- Didactic lectures: discussing a particular topic at length in a one-hour lecture Biomedical Science seminars: are conducted by a combined team of pathologist and a clinician who discuss the pathophysiology and clinical aspects of the particular disease entity;
- Case studies: The significant and common diseases are discussed in the form of a representative clinical case in which the clinical features, the course of the disease in those particular patient and relevant laboratory investigations are discussed by a clinical faculty in an interactive manner in small groups;
- This is followed by demonstration of the gross and microscopic features of the disease in that case by the pathologist. This is followed by clinico-pathologic correlation.

II- Skills

- Deals with demonstration of gross, and/or microscopic features of the disease entities; Clinical case demonstration patients of a particular disease are demonstrated to the students by a clinical faculty in the ward, discussing the clinical. features in the patient which provides them a real-life experience of studying a disease as. it presents in a patient;
- By a combination of above modalities/tools, student learns applied aspects of the disease
  process.

Textbooks & Reference Books Recommended (Last edition)

- Robbins and Cotran pathologic Basis of Diseases, Leonard S. Lilly MD.
- Netter Elastrated Human Pathology, Maximillian L. Buja MD.
- Rapid Review Pathology, Edward F. Goljan
- Robbins Basic Pathology, Vinay Kumar

X- Medical Biochemistry

Goals

The medical biochemistry course introduces the fundamentals of biochemistry as applied to medicine. We explore the basic amino acid building blocks and how differences in structures are manifested into a variety of functional states, explores nucleic acids,

macromolecular machines and their regulation -on a molecular level, intrinsic nature of metabolism, fundamentals of carbohydrate and amino acid metabolism including a variety of disease states arising from genetic and environmental factors, lipid metabolism.

Learning objectives

A- Knowledge:

At the end of the course, the student should be able to demonstrate his knowledge and understanding on the:

- Basic and clinical aspects of enzymology and regulation of enzymatic activity;
- Digestion and assimilation of nutrients and consequences of malnutrition;
- Integration of the various aspects of metabolism, and their regulatory pathways;
- Biochemical basis of inherited disorders and their associated sequel; Mechanisms involved in maintenance of body fluid and pH homeostasis;
- Biochemical basis of environmental health hazards: and biochemical basis of cancer and carcinogenesis, principles of metabolism, and detoxification;
- Principles of various conventional and specialized laboratory investigations and instrumentation, analysis and interpretation of a given data;
- The ability to suggest experiments to support theoretical concepts and clinical diagnosis.

B- Skills

At the end of the course, the student should be able to:

- Make use of conventional techniques/ instruments to perform biochemical analysis
- relevant to clinical screening and diagnosis;
- Demonstrate the skills of solving clinical problems and decision making.

Course content

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<tr><td colspan="3">Department</td><td colspan="3">Biochemistry</td></tr>
<tr><td colspan="3">Course Title</td><td colspan="3">Medical Biochemistry 1</td></tr>
<tr><td colspan="3">Pre-requisites</td><td colspan="3">None</td></tr>
<tr><td colspan="3">Course code</td><td colspan="3">MED3 015</td></tr>
<tr><td colspan="3">Academic year</td><td colspan="3">II</td></tr>
<tr><td colspan="2">Semester</td><td>3</td><td colspan="3">Spring/Fall</td></tr>
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<tr><td rowspan="2">Week</td><td colspan="2">Hours</td><td rowspan="2">Topics</td><td colspan="3" rowspan="2">Descriptions</td></tr>
<tr><td>Knowledge</td><td>Laboratory</td></tr>
</table>

1	**2**	**1**	Biochemistry and Medicine, Carbohydrates Chemical Properties of Monosaccharides	Introduction, Relationship Between Biochemistry and medicine, Introduction, Definition, classification, sugar exhibit various forms of isomerism, (D and L) isomerism, Asymmetric Carbon, Optical activity, Alpha and beta anomers, pyranose and furanose ring structures, Epimer, Aldose- Ketose Isomerism), Reaction with Hydrazine to form Osazones, Oxidation to produce sugar acids, Reduction action of sugar in Alkaline solution, Action of acids. Action of bases, Reduction of Sugar to form sugar alcohols, reaction of aldols with HCN
2	**2**	**1**	Cyclic structures of Carbohydrates Monosaccharide	Cyclic structures, Autorotation, Anomers and Anomeric carbon, Introduction of the most important § ; monosaccharides, Introduction of Disaccharides, Maltose Lactose and Sucrose
3	**2**	**1**	Polysaccharides, Lipids	Introduction, Homo Poly saccharides (Starch, Glycogen, Inulin, Cellulose, Dextrin) Hetero Poly saccharides (Hyaluronic acid, Chondroitin sulfate, Heparin) and (Glycoproteins). Introduction, Classification, Derived Lipids: Fatty acid (Definition, Types, Essential fatty acid, Melting point, Eicosanoids),Glycerol.
4	**2**	**1**	Steroids and Sterols: Sample Lipids Compound lipids Amino Acid and Proteins:	Introduction, Cholesterol, Other Sterols: 7-dehydrocholesterol, Introduction, Neutral fats or Triglycerides, Waxes. Introduction 1-Phospholipides (Diphosphatidyglycerol, lecithin, cephalins, phosphatidylserine, phosphatidylinositol, lyso phosphatides. plasmalogens, sphingomyelin) 2-Glycolipids (cerebrosides, Gangliosides) Introduction, Classification and structure of Amino acids, Essential Amino acids. Physicochemical Properties.
5	**2**	**1**	Properties of Amino acids: Peptide Bond, Proteins Nucleoprotein	Chemical Properties: Due to Carboxylic Group - (Formation of Ester, Formation of Amide, Formation of Amine by Decarboxylation). Due to Amine Group (Salt formation with acids, Acylation, Methylation, 1 Reaction with HN02, Reaction with C02, Oxidative Deamination). [Classification, Structure, Reactions of j; I Proteins (Reaction with water, Denaturation, Reaction with Ions].Base purine, pyrimidine, sugar) Nucleotide, Nucleoside Nucleic acid (DNA, RNA

6	**2**	**1**	Vitamins: Vitamin A Vit. B and Vit E, Vit K	Introduction, Classification of Fat Soluble Vitamins: (Structure, Forms, Dietary Sources, Daily Requirement, Absorption, Storage and Transport, Functions of vit.A Vit.D and vit.E.).
7	**2**	**1**	Water Soluble, Vitamins: Vit.C, Vit. Bl, Vit. B2	Structure, Forms, Dietary Sources, Daily Requirement, Absorption, Storage and Transport, Functions of Vit.K. Structure, Metabolism, Sources, Metabolic Role, Deficiency of some vitamins, Daily requirement).
8	**2**	**1**	Vit. B5, Vit. B63 Vit.PP Vit. H, Vit. B12	Structure, Metabolism, Sources, Metabolic Role, Deficiency of some vitamins, Daily requirement).
9	**2**	**1**	Enzymes	Introduction, properties, factors affecting Enzymes activity. Mechanism of Enzyme action, Enzymes Inhibition, Regulation of Enzymes activity. E Classification, Role of metals in Enzymes activity, Co Enzymes, Diagnostic value of Enzyme levels.
10	**2**	**1**	The biochemistry of the gastrointestinal tract	Introduction, Digestion and absorption in mouth, Digestion and absorption in stomach, Bile and role of; it in Digestion and absorption of
11	**2**	**1**	Metabolism of Water and Non Organic Substances (Electrolytes, Minerals and Trace Elements	Introduction, Fluid Compartments of the Body, Determination of Body Fluid Compartments, Gain and Loss of Body Water, Regulation of Water Balance, Effects of a Pure Water Deprivation, Water Excess or Water Intoxication. Metabolism of Non Organic Substances: Introduction, The electrolytes of Body Fluids, Sodium, Potassium, Magnesium, Chloride.
12	**2**	**1**	Metabolism of Carbohydrates: Glycolysis, Gluconeogenesis	Metabolism of Minerals and Trace Elements: Introduction, Iron, Manganese, Calcium, Phosphorus, Zinc, Molybdenum, Chromium, Selenium, Iodine, Sulfur, Fluorine, Nickel, Copper, Cobalt. Aluminum (Aluminum) and Silicone.
13	**2**	**1**	Citric Acid Cycle	Enzymes and Coenzymes of glycolysis Reversion of Glycolysis. Formation and Fate of Pyruvic acid. Reactions, Regulation.
14	**2**	**1**	Electron transport system and oxidative phosphorylation	Bioenergetics (Calculation of ATP Moles Witch Produced in Glycolysis and Citric Acid Cycle from Glucose), Efficiency. Mechanisms of the control of Glucose combustion.
15	**2**	**1**	Hexose Mono Phosphate (BMP) Shunt (Pentose	Introduction, Regulation, Metabolic Significance. Introduction, Reactions, Regulation.

			Phosphate Pathway): Metabolism of Glycogen Glycogenesis, Glycogenosis.	
16	**2**	**1**	Metabolism of Galactose: Metabolism of Fructose:	Regulation of Glycogen Metabolism, Inherited Disorders (Glycogen Storage Diseases or GSDs). Introduction, Metabolic Pathway, Biosynthesis of Lactose. Introduction, Metabolic Pathway.

Biochemistry (Module 2)				
Discipline			**Basic Biomedical Science**	
Department			**Biochemistry**	
Course Title			**Medical Biochemistry 2**	
Pre-requisites			**None**	
Course code			**MED4 014**	
Academic year			**II**	
Semester		**4**	**Fall/Spring**	
Number of credits		**3**	**Knowledge**	**2**
			Practical	**1**
Week	**Hours**		**Topics**	**Descriptions**
	Knowledge	**Laboratory**		
1	**2**	**1**	Biochemistry and Medicine Carbohydrates Chemical properties of Monosaccharide	Introduction, Relationship Between Biochemistry and medicine Introduction, Definition, Classification, Sugar Exhibit Various forms of Isomerism. (D and L Isomerism, Asymmetric carbon, Optical activity, Alpha and beta anomers, pyranose and furanose ring structures, Epimer, Aldose -Ketose Isomerisme), Reaction with Hydrazines to form Osazones, Oxidation to produce sugar acids, Reduction action of sugar in Alkaline I solution, Action of acids. Action of bases, Reduction of Sugar to form sugar alcohols, reaction of aldoles with HCN
2	**2**	**1**	Cyclic structures of Carbohydrates	Cyclic structures, Mutarotation, Anomers and Anomeric carbon, Introduction of the most

			Monosaccharide Disaccharides	important monosaccharide, Introduction of Disaccharides, Maltose, Lactose, and Sucrose
3	**2**	**1**	Polysaccharides, Lipids	Introduction, Homo Poly saccharides (Starch, Glycogen Inulin, Cellulose, Dextrin) Hetero Poly saccharides (Hyaluronic acid, Chondroitin sulfate, Heparin) and Glycoproteins).Introduction, Classification, Derived Lipids: Fatty acid (Definition, Types Essential fatty acid, Melting point, Eicosanoids) Glycerol
4	**2**	**1**	Steroids and Sterols: Simple Lipids, Compound lipids, Amino Acid and Proteins	Introduction, Cholesterol, Other Sterols: 7-dehydrocholesterol Introduction, Neutral fats or Triglycerides, Waxes Introduction,1-Phospholipides (Diphosphatidylglycerol, lecithin, cephalins, phosphatidylserine, phosphatidyl Inositol, lyso phosphatides, plasmalogens, sphingomyelin) 2- Glycolipids (cerebrosides, Gangliosides) Introduction, Classification and structure of Amino acids, Essential Amino acids, Physicochemical Properties.
5	**2**	**1**	Properties of Amino acids: Peptide Bond Proteins, Nucleoprotein	Chemical Properties: Due to Carboxylic Group (Formation of Ester, Formation of Amide, Formation of Amine by Decarboxylation). Due to Amine Group (Salt formation with acids, Acylation, Methylation, Reaction with HN02, Reaction with C02, Oxidative Deamination). Classification, Structure, Reactions of Proteins (Reaction with water, Denaturation, Reaction with Ions. Base purine pyrimidine sugar, Nucleotide Nucleic acid (DNA, RNA)
6	**2**	**1**	Vitamins: Vitamin A Vit.D and vit.E	Introduction, Classification, Fat Soluble Vitamins: (Structure, Forms, Dietary Sources, Daily Requirement, Absorption, Storage and I Transport, Functions of vit. A Vit.D and Vit. E).
7	**2**	**1**	Vit. K, Water Soluble Vitamins: Vit.C, Vit. Bl, Vit B2	Structure, Forms, Dietary Sources, Daily Requirement, Absorption, Storage and Transport, Functions of Vit. K Structure, Metabolism, Sources, Metabolic Role, Deficiency of some vitamins, Daily requirement
8	**2**	**1**	Vit. B5, Vit. B6, Vit.PP Vit. H, Vit. B12, Vit. Bc	Structure, Metabolism, Sources, Metabolic Role, Deficiency of some vitamins, Daily requirement).
9	**2**	**1**	Enzymes	Introduction, properties, factors affecting Enzymes activity. Mechanism of Enzyme action, Enzymes Inhibition, Regulation of Enzymes activity.

				Classification, Role of metals in Enzymes activity, Co Enzymes, Diagnostic value of Enzyme levels
10	**2**	**1**	The biochemistry of the gastrointestinal tract	Introduction, Digestion and absorption in mouth, Digestion and absorption in stomach, Bile and role of it in Digestion .Digestion and absorption of Carbohydrates, Digestion and absorption of Fats and cholesterol, Digestion and absorption of Protein.
11	**2**	**1**	Metabolism of Water and Non Organic Substances (Electrolytes, Minerals and Trace Elements	Introduction Fluid Compartments of the Body, Determination of Body Fluid Compartments, Gain and Loss of Body Water, Regulation of Water Balance, Effects of a Pure Water Deprivation, Water Excess or Water Intoxication. Metabolism of Non Organic Substances: Introduction, The electrolytes of Body Fluids, Sodium, Potassium, Magnesium, Chloride
12	**2**	**1**	Metabolism of' Carbohydrates: Glycolysis, Gluconeogenesis	Metabolism of Minerals and Trace Elements: Introduction, Iron. Manganese, Calcium, Phosphorus, Zinc, Molybdenum, Chromium, Selenium, Iodine, Sulfur, Fluorine, Nickel, Copper, Cobalt. Aluminum (Aluminum) and Silicone. Introduction, Reactions, Regulation.
13	**2**	**1**	Citric Acid Cycle	Enzymes and Coenzymes of glycolysis Reversion of Glycolysis. Formation and Fate of Pyruvic acid. Reactions, Regulation.
14	**2**	**1**	Electron trans port system and oxidative phosphorylation	Bioenergetics (Calculation of ATP Moles which Produced in Glycolysis and Citric Acid Cycle from Glucose), Efficiency. Mechanisms of the control of Glucose combustion.
15	**2**	**1**	Shunt (Pentose Phosphate Pathway)	Introduction Regulation Metabolic significance. Introduction, Reactions Regulation, Metabolism of Glycogen Glycogenesis, Glycogenolysis
16	**2**	**1**	Metabolism of Galactose: Metabolism of Fructose:	Regulation of Glycogen Metabolism, Inherited Disorders (Glycogen Storage Diseases or GSD. Introduction, Metabolic Pathway, Biosynthesis of Lactose, Introduction, Metabolic Pathway.

Teaching- Learning Methodology

- **Didactic lectures:** Interactive classroom lectures to facilitate learning of terminology, principles and concepts. Books and resource material are suggested to encourage self-directed learning.
- **Tutorials:** Problem based small group discussions, questions-answer sessions, revision and reinforcement of difficult concepts in tutorial hours. The purpose is to inculcate skills of reasoning, meaningful approaches to learning and facilitate understanding of the subject.

- **Laboratory exercises**
  - To substantiate and clarify theoretical concepts with experimental evidence
  - To develop skills of performing basic biochemical tests important in clinical investigations
  - To develop familiarity with biochemical laboratory instrumentations techniques.

Practical

- Laboratory Instrumentation;
- Protein fractionation, denaturation, separation of proteins and amino acids;
- Color reactions of amino acids and proteins;
- Estimation of serum; glucose, total cholesterol and HDL cholesterol, uric acid, electrolytes and Urea;
- Cerebrospinal fluid analyses
- Gastric juice analyses
- Urine analyses
- Amniotic fluid analyses;
- Enzymes: amylase, lactate dehydrogenase and alkaline phosphates;
- Liver function tests
- Renal function tests;
- Immunodiffusion techniques, RIA and ELISA;
- Case- oriented discussions (enzymes, metabolites, function tests).

Textbooks & Reference Books Recommended (Last edition)

- Medical Biochemistry John W. Baynes and Merek H. Dminiczak
- Principles of Biochemistry. Lehinger, Nelson and Cox. CBS Publishers and distributors.
- Harper Biochemistry, R.K. Murray, D.K. Granner, P.A. Mayes and V.W. Rodwell.
- Textbook of Biochemistry with Clinical Correlations. Ed. Thomas M. Devlin, Wiley-Liss Publishers.
- Tietz Textbook of Clinical Chemistry. Ed. Burtis and Ashwood. W.B. Saunders Company.
- Priciples of Medical Biochemistry, Gerhard Mesenberg PhD.
- Marks Basic Medical Biochemistry, Alisa Peed MD, Libeman PhD.

XI- Cellular & Molecular Immunology

Goals & Objectives

The fundamentals of immunology course introduce the components of the immune system, their locations in the human body, and their interactions in different clinical contexts. Students learn how the immune system senses and attempts to eliminate pathogens, and how selected pathogens evade it to cause disease;

D First, the genes and molecules that play key roles in the immune system—including antigens, antigen receptors, antibodies, complement, major histocompatibility complex loci, chemokine, and cytokines—are introduced. The interactions between innate and acquired are then discussed;

Finally, medically relevant forms of immune deregulation and intervention are explored, including vaccines, immunomodulators, hypersensitivities, immunodeficiency, autoimmunity, graft-versus-host disease, transplantation immunology, and tumor immunology.

Course Content

Cellular & Molecular Immunology (Module 1)				
Discipline			**Basic Biomedical Science**	
Department			**Pathology**	
Course Title			**Cellular & Molecular Immunology**	
Pre-requisites			**Molecular cell biology**	
Course code			**MED4 013**	
Academic year			**II**	
Semester		**4**	**Fall/Spring**	
Number of credits		**2**	**Knowledge**	**1**
			Practical	**1**

Week	**Hours**		**Topics**	**Descriptions**
	Knowledge	**Laboratory**		
1	**1**	**1**	Introduction and Overview	Introduction, Innate and Acquired Immunity Active, Passive, and Adoptive Immunity
2	**1**	**1**	Immunogens and Antigens	Primary secondary response .Antigenicity and antigen-binding site, Major classes of antigen
3	**1**	**1**	Antibody structure and function	Structure features and biologic properties of IgG, IgM, IgA, IgD, and IgE
4	**1**	**1**	Antigen-antibody interaction 1 and Immune assay	Primary and secondary interaction between antibody and antigen, Immunoassays and Immunofluorescence

5	**1**	**1**	Biology and Activation of T and B cells	Early phases of B-cell differentiation T-cell differentiation in the thymus, Activation of CD4+ T cells. Function of CD8+ T cells. B-cell activation and function
6	**1**	**1**	Role of Major Histocompatibility in the immune response	Variability of MHC genes and products. Structure and function of MHC molecules, Diversity of MHC 3 molecules
7	**1**	**1**	Control mechanisms in the immune response	Tolerance, Induction of tolerance in mature T and B lymphocyte, Immunologically privileged sites
8	**1**	**1**	Cytokines	General properties of cytokines, Functional categories of cytokine Role of cytokines and cytokines receptors in disease, Therapy uses of cytokines receptors in disease
9	**1**	**1**	Complement	The activation pathway and their proteins Biological activities of complement, Complement and disease
10	**1**	**1**	Hypersensitivity reaction (Type IV)	General characteristics of type I hypersensitivity Sensitization, activation, and effector phases Clinical aspects of type T hypersensitivity The protect role of IgE
11	**1**	**1**	Hypersensitivity reaction (Type II and Type III)	Type II cytotoxic reactions. Type III immune complex reactions
12	**1**	**1**	Hypersensitivity reaction (Type TV)	General characteristics, Treatment of cell-mediated immunity
13	**1**	**1**	Autoimmunity	Autoimmunity and disease, Criteria for autoimmune disease, Etiology of autoimmune disease, Examples of autoimmune disease
14	**1**	**1**	Immunodeficiency	Immunodeficiency syndromes, Primary Immunodeficiency syndromes, Secondary Immunodeficiency syndromes
15	**1**	**1**	Tumor immunology	Tumors antigens, Limitation of the effectiveness of the immune response immunodiagnosis Immunotherapy
16	**1**	**1**	Resistance and immunization to infectious diseases	Host defense against the various classes of microbial pathogens, Mechanisms by which pathogens evade the immune response, Principles and objective of immunization, Active and passive immunization

Teaching Learning Methodology:
Didactic lectures: Interactive classroom lectures to facilitate learning of terminology, principles and concepts. Books and resource material are suggested to encourage self-directed learning.
Tutorials: Problem based small group discussions, questions-answer sessions, revision and reinforcement of difficult concepts in tutorial hours. The purpose is to inculcate skills of reasoning, meaningful approaches to learning and facilitate understanding of the subject.

Textbooks & Reference Recommended (last edition)
Medical Immunology, Tristram G, Parslaw.
Immunology for Medical Students Rodeerick Neirn.
Basic Immunology, Abul K. Abbas

XII- Forensic Medicine

Goals
The broad goal of the teaching of graduate students in forensic medicine is to produce a physician who is well informed about medico-legal responsibilities in practice of medicine. He/she acquire - knowledge of law in relation to medical practice, medical negligence and respect for codes of medical ethics.

Learning objectives
At the end of the course in the forensic medicine, the MD student will be able to:
Understand the basic concept of the subject and its importance;
Aware of inquest, legal and court procedures applicable to medico-legal and medical practice;
Able to perform medico-legal postmortem/autopsy findings and results of other relevant investigations for logical conclusion and framing the opinion on cause, manner and time since death;
Able to reserve and dispatch relevant various articles, trace evidences including viscera in poisoning cases in medico-legal cases/ autopsy examination and handing over the same to appropriate agencies;

Able to identify the medico-legal cases, carryout medical examination in such cases and prepare medico-legal report as per the law of the land;
Aware of code of ethics, duties and rights of medical practitioner, duties towards patients and community, punishment on violation of code of ethics, various forms of medical negligence, duties towards his professional colleagues;
Able to diagnose and manage the cases of acute and chronic poisoning and can carry out medico-legal duties;
Aware of general principle of analytical, environmental, occupational toxicology including toxicovigilance and predictive toxicology;
Aware of latest advances in Forensic Medicine & Toxicology and their medico legal importance.

Course content

Forensic Medicine			
Discipline		**Behavioral and social Science**	
Department		**Forensic Medicine & Medical Ethics**	
Subject		**Forensic Medicine**	
Pre-requisites		**Basic Biomedical science & Pathology**	
Course code		**MED11 022**	
Academic year		**VI**	
Semester	**11**	**Spring/Fall**	
Number of credits	**2**	**Knowledge**	**1**
		Practical	**1**

Week	**Hours**		**Topics**	**Descriptions**
	Knowledg	**Practical**		
1	**1**	**1**	Principles of' Forensic	Definition, Goals, Relations to other Sciences, Principal Terms, Examinations, Types & forms of forensic Examination, Methods of Forensic Medicine, Terminology, Experts of Forensic Medicine, Rights and Responsibility of Expert, report's form
2	**1**	**1**	Thanatology	Death, Early Modifications of the body (Coldness, Dryness, Algor, Liver mortis & Autolysis).
3	**1**	**1**	Thanatology	Late modification of the body, destructive processes of the body(Putrefaction, destructive of the body by animals, insects and plants) preservation processes of the body

				Natural process (Mummification, Saponification & others) Artificial Processes(refrigerator, conservation, embalmment)
4	**1**	**1**	Medico legal Aspects of Death Investigation	Principles, External examination of the body, Autopsy, Expletive examination, Repairing of body, Unknown d bodies' examination, Fragmented bodies examination, Skeleton Bodies examination.
5	**1**	**1**	Medico gal Aspects of the Sudden Death & new born deaths investigation	Definition, Risk factor death, sudden death, Examination of sudden death body, Determination of (infancy, on time delivery, live delivery, vitality, missed delivery, vitality infants' delivery) Examination of infancy deaths
6	**1**	**1**	Personal Identification	Definition, history, identification Examination, dental Investigation, Dactiloscopy, T-NA Investigation.
7	**1**	**1**	Criminal Investigation Site	Definition, Forensic aspect of CIS, Role of Forensic Doctor in CIS
8	**1**	**1**	Forensic Traumatology	Definition, Traumatism, Classification; Excoriation Ecchymosis, Wounds, Fracture, Joint Dislocation, Joint arthrosis. Actions in death causing injuries Causes of Death in Mechanical Injuries
9	**1**	**1**	Forensic Traumatology	Firearm injuries, Definition, Classification, Fire Factors, Mechanism of bullet effects (Entrance hole, external I Canal, shooting distance, forms of death)
10	**1**	**1**	Asphyxia	Definition, classification of Hypoxia, stages of Asphyxia, External and Internal sign of Asphyxia, Hanging, Strangulation, Smothering, Compression of chest and abdomen, Airway obstruction, Oral and Nasal Obstruction, Drowning.
11	**1**	**1**	Medical Trust Evidence	Definition, classification, Blood Investigation, blood dots investigation
12	**1**	**1**	Medical Trust Evidence	Semen fluid investigation, Hair Investigation
13	**1**	**1**	Medico legal Aspects of Vital Case Investigation	Age Determination, Simulation, Dissimulation, Puberty, virginity (Definition, Kinds), Impotence, Fertility, Infertility, Pregnancy, Delivery, Abortion, and Forensic Psychiatry.
14	**1**	**1**	Medico legal Aspects of Vital Case Investigation	Sexual Deviations & harassment (Etiology, Definition: and kinds) Rape, incest, sadism, masochism, sadomasochism, pedophilia,

				sophism, sodomy, bestiality, ; exhibitionism, necrophilia & other kinds)
15	**1**	**1**	Electrical Trauma	Principle of Electrical Trauma, Classification Lightning, Medico legal aspect
16	**1**	**1**	Thermal Trauma	Definition, Classification, Post mortem burnings Medico legal aspect thermal Injures and Autopsy finding

Textbooks & Reference Books recommended (Last edition)

- Textbook of forensic Medicine, Nagesh Kumar Ra.
- Fundamentals of Forensic Science, Max M. Houck.
- Forensic Medicine, Richard Saferstein.
- Forensic Medicine, A textbook for Students and Practitioners, Sidney Smith

XII- Clinical & Forensic Toxicology

Learning Objectives

A- Clinical Toxicology

At the end of course the student should be able to describe the types of Poisons, Clinical signs and Symptoms, Diagnosis, Management and Medico legal aspects of:

- Corrosive poisons — sulphuric acid, phenol, oxalic acid, nitric acid, hydrochloric acid, organic acids and alkalis;
- Irritant nonmetallic poisons- Phosphorus, Halogens, Organ phosphorus, chlorinated hydrocarbons, miscellaneous preparation & mechanical irritations;
- Agricultural poisons- Organ phosphorous, Organ chlorine. Classification and description of common insecticides and pesticides used in Afghanistan;
- Metallic poison - arsenic, lead, iron, copper, zinc, thallium;
- Animal poisons - snake bite, scorpion bite, wasp, bee, cantharides & toxic fishes;
- Somniferous poisons - opium & its derivatives, synthetic preparations, pethidine & codeine; Deliria poisons - Datura, hemlock, cannabis, LSD, mescaline & cocaine;
- Spinal & peripheral nerve poisons - strychnine, curare & domestic poisons - kerosene, cleansing agents, disinfectants, household medicines;
- Barbiturate poisoning, drug abuse & common drug overdoses;
- Vegetable poisons - abrus, ricinus, croton, ergot, capsicum, camphor, argemone, lathyrus & calotropis;
- Describe and examine Alcohol poisoning (ethyl & methyl alcohol) and drunkenness, its medico legal aspects & benzodiazepine poisoning;
- Cardiac poisons - HCN, aconite, tobacco, quinine, digitalis and oleander;
- Asphyxiant poisons — carbon monoxide, carbon dioxide, hydrogen sulphide, phosgene and phosphine;
- Definition of food adulteration. Names of common adulterants and general methods of detection for food adulterants, Common food poisonings- Botulism, Chemical Poisoning, Poisonous Mushrooms and epidemic dropsy.

B- Environmental Toxicology

- Description of toxic pollution of environment, its medico-legal aspects & toxic hazards of occupation and industry;
- Description and medico-legal aspects of poisoning in Workman's Compensation Act.

C- Forensic Toxicology

- Medico legal aspects of poisons;
- Medico legal autopsy in cases of poisoning, preservation and dispatch of viscera for chemical analysis.

Course content

Clinical & Forensic Toxicology				
Discipline			**Clinical Science and Skills**	
Department			**Forensic Medicine**	
Course title			**Clinical and forensic Toxicology**	
Pre-requisites			**Forensic Medicine**	
Course code			**MED11 039**	
Academic year			**VI**	
Semester		**11**	**Spring/Fall**	
Number of credits		**2**	**Knowledge**	**1**
			Practical	**1**

Week	**Hours**		**Topics**	**Descriptions**
	Knowledge	**Laboratory**		
1	**1**	**1**	General toxicology and Type of Poisons	History of toxicology, definition of toxicology, forensic toxicology, clinical toxicology and poisons, medico-legal aspects of poisons, classification of poisons, toxic kinetics and toxic dynamics, diagnosis of poisoning in living and dead, general principles of management of poisoning, antidotes and its types, medico-legal autopsy in cases of poisoning, preservation and dispatch of viscera for chemical analysis
2	**1**	**1**	Corrosive poisons	Non organic, Sulfuric acid, phenol, oxalic acid, nitric acid, hydrochloric acid, organic acids and alkalis, Iodine, Synonyms, Physical appearance, Types of poisoning, Uses, Usual Fatal Dose, mode of action, Clinical signs and Symptoms, diagnosis, management, autopsy significance, and medico-legal aspects.

3	**1**	**1**	Irritant non – metallic Poisons	Phosphorus, halogens, organophosphate, chlorinated hydrocarbons, miscellaneous preparation & mechanical irritants. Types of poisoning, Uses. Usual Fatal Dose, mode of action, Clinical signs and Symptoms, diagnosis, management, autopsy significance, and medico-legal aspects.
4	**1**	**1**	Irritant non – metallic Poisons	Phosphorus, halogens, organophosphate, chlorinated hydrocarbons, miscellaneous preparation & mechanical irritants. Types of poisoning, Uses. Usual Fatal Dose, mode of action, Clinical signs and Symptoms, diagnosis, management, autopsy significance, and medico-legal aspects.
5	**1**	**1**	Agriculture poisons	Classification and description of common insecticides and pesticides used in Afghanistan. Organophosphate, Carbamates, organochlorine, Pyrethrins & Pyrithroids, Strychnine, Naphthalene, Pesticide contamination of food. Types of poisoning, Uses, Usual Fatal Dose, mode of action, Clinical signs and Symptoms, diagnosis, management, autopsy significance, and medico-legal aspects.
6	**1**	**1**	Metallic poisons	Arsenic, Lead, Mercury, Iron, Copper, Zinc, Thallium, Metal fume fever. Types of poisoning, Uses, Usual Fatal Dose, mode of action, Clinical signs and Symptoms, diagnosis, management, autopsy significance, and medico-legal aspects.
7	**1**	**1**	Animal poisons	Bites and Stings, Snake bite, Snake venom, Symptomatology of Non- Venomous Snake Bite; Symptomatology of Venomous Snake Bite, diagnosis Antivenin Therapy, Autopsy Feature, Forensic significance. Scorpion Sting, wasp & bee. Clinical feature, treatment.
8	**1**	**1**	Somniferous, Deliriant and Psychotropic, Barbiturate poisoning	Somniferous poisons- opium & its derivatives, Synthetic preparations, pethidine & codeine. Deliriant poisons-Datura, cannabis, LSD, Mescaline & cocaine. Psychotropic poisons- Amphetamine Types of poisoning, Uses, Usual Fatal Dose, mode of action, Clinical signs and Symptoms, diagnosis, Management, autopsy significance, and medico-legal aspects. Barbiturate poisoning- drug abuse & common drug Overdoses.
9	**1**	**1**	Spinal & peripheral nerve poisons	strychnine, curare & domestic poisons - kerosene, cleansing agents, disinfectants, household medicines. Types of poisoning, Uses, Usual Fatal

				Dose, mode of action, Clinical signs and Symptoms, diagnosis, management, autopsy significance, and medico-legal aspects.
10	**1**	**1**	Vegetable poisons	Ergot, camphor, Types of poisoning, Uses, Usual Fatal Dose, mode of action, Clinical signs and Symptoms, diagnosis, management, autopsy Significance, and medico-legal aspects.
11	**1**	**1**	Inebriant Poisons	Alcohol poisoning (ethyl & methyl alcohol) and drunkenness, its medico-legal aspects & benzodiazepine poisoning, Ethylene Glycol. Physical appearance, Uses, Type of poisoning, Usual Fatal Dose, Mode of Action, Clinical Feature, Diagnosis, Treatment, Autopsy Feature, Forensic Significance.
12	**1**	**1**	Cardio toxic poisons	Nerium, Thevetia, Aconite, Nicotine, quinine, Digitalis. Family name, Appearance Mode of Action, Clinical Feature, Diagnosis, Treatment, Autopsy Feature, Forensic Significance.
13	**1**	**1**	Asphyxiant poisons	Ammonia. Methyl Isocyanate, Cyanide, carbon monoxides, carbon dioxide, hydrogen sulphide, phosgene and phosphine. Types of poisoning, Uses, Usual Fatal Dose, mode of action, Clinical signs and Symptoms, diagnosis, management, autopsy Feature, Forensic significance.
14	**1**	**1**	Common food poisonings	Botulism, chemical poisoning, poisonous mushrooms. Types of poisoning, Uses, Usual Fatal Dose, mode of action, Clinical signs and Symptoms, diagnosis, management, autopsy Feature, Forensic significance.
15	**1**	**1**	Environmental toxicology	Description of toxic pollution of environment, its medico-legal aspects & toxic hazards of occupations in industries. Description and medico-legal aspects of poisoning in workman's compensation act.
16	**1**	**1**	Analytical toxicology	General principles of analytical toxicology and its application in management, prevention and control of poisoning. Basic principles of functioning of gas/liquid chromatography, thin layer chromatography, spectrophotometer, mass spectrometry, Micro diffusion.

Skills in forensic medicine & toxicology

- Preparation of a medico-legal report of an injured person due to mechanical violence;
- Preservation and dispatch of the exhibits in a suspected case of poisoning;
- Estimation age of a person for medico-legal and other purposes;
- Conduct & prepare postmortem examination report in a case of suspected poisoning and to preserve & dispatch viscera for chemical analysis;

- Conduct & prepare postmortem report in a case of death due to violence of any nature - road accident, fall from height, assault, factory accident, electrocution, bums & accident due to any other causes, fire arm injury, asphyxia, natural death & medical negligence;
- At least 5 postmortem reports should have been written by the student (if cadaver is not available, practice by scenarios);
- Demonstration, interpretation and medico-legal aspects from examination of hair (human &animal) fiber, semen & other biological fluids;
- Demonstration & identification of a particular stain is a blood and identification of its species origin;
- Identification ABO & RH blood groups of a person;
- Examination & drawing opinion from examination of skeletal remains;
- Identification & drawing medico-legal inference from various specimen of injuries e.g. contusion, abrasion, laceration, firearm wounds, bums, head injury and fracture of bone;
- Identification & description of weapons of medico-legal importance commonly used e.g. knife, axe, tire lever, razor, stick and etc;
- Description of the contents and structure of bullet & cartridges used & medico-legal interpretation drawn;
- Estimation of age of fetus by postmortem examination;
- Examination & preparation of report of art alleged accused in a rape/unnatural sexual offence;
- Examination and preparation of medico-legal report of a drunk person;
- Demonstration of the common instrument used in analysis of poisons& DNA profile Identification & drawing of medico-legal inference from common poisons e.g. datura, castor, cannabis, opium, copper sulphate, pesticides compounds, snakes, lead compounds & tobacco;
- Examination & preparation of a medico-legal report of a person brought for medical examination in cases pertaining to police, judicial custody or referred by court of law and violation of human rights;
- Identification & drawing of medico-legal inference from histopathological slides of Myocardial infarction pneumonitis, tuberculosis, brain infarct, liver cirrhosis, brain hemorrhage, bone fracture, pulmonary edema, brain edema, soot particles & wound healing.

Methodology of teaching

- Lectures
- Demonstration
- Tutorials

Textbooks & Reference Books recommended (last edition)

- Textbook of Forensic Medicine & Toxicology, N, G. Rao
- Principles of Forensic Medicine & Toxicology, Rajesh Bardale.
- Textbook of Forensic Medicine & Toxicology, PC Dekshit.
- Casarett & Doulls, the Basic Biomedical science of Poisons, Curtis Claassen.
- Clarks Analytic Forensic Medicine," Adan Negrusz & Gail Cooper.

XIV- Medical Ethics & Professionalism

Goals

Medical ethics is a systematic effort to work within the ethos of medicine, which has traditionally been service to a patient. There is now a shift from the traditional individual patient-doctor relationship and medical care. With the advances in science and technology and the needs of patient, their families and the community, there is an increased concern with the health of society. There is shift to greater accountability to the society. Doctors and health professionals are confronted with many ethical problems. It is, therefore necessary to be prepared to deal with these problems according to glorious Quran and Prophet's (PUH) tradition. Special attention is given to the role of the physician and the opportunities and challenges to the ethical practice of medicine in today's society.

In keeping with its" goals, to improve quality of education, Ghalib University recommends introduction of medical ethics and professionalism in the regular teaching of course.

Learning objectives

The learning objectives of teaching medical ethics should be to enable to students develops the ability to:

- Identify underlying ethical issues and problems in medical practice;
- Consider the alternatives under the given circumstances;
- Make decisions based on Islamic moral concepts.

Course Contents

Medical Ethic & Professionalism				
Discipline			**Behavioral and social science and medical ethics**	
Department			**Forensic medicine**	
Course title			**Medical ethic & Professionalism**	
Pre-requisites			**Behavior science**	
Course code			**MED11 039**	
Academic year			**III**	
Semester		**6**	**Fall/Spring**	
Number of credits		**1**	**Knowledge**	**1**
			Practical	

Week	Hours		Topics	Descriptions
	Knowledge	Laboratory		
1	**1**		Introduction to medical ethics, A brief history of medicine and its ethics	Fundamentals of medical ethics History of medicine in ancient of world and ethics value History of medicine in 5lh ethical cod History of medicine after AC ethics History of medicine in Islamic Period History of medicine in Afghanistan
2	**1**		Principles of Medical Ethics	Definition of Ethics, Values of Ethics Definition of Medical Ethics Goal of Medical Ethics Whose Medical Doctor Medical Doctor and law Medical Doctor as Forensic Doctor Medical Doctor as eye wetness Medical Doctor as culprit Professionalism
3	**1**		Physician ethics	Introduction Supporting Islamic Evidence in the prophet's tradition Criteria of Medical Doctor in Islam Islamic rules in medical ethics Treatments in Islam Introduction of great Islamic doctors
4	**1**		The physicians duties toward the patient and Medical	Principles Supporting Islamic evidence In the prophet's tradition Fundamental of medical confidentiality Details for medical confidentiality

				Details for medical confidentiality Islamic support: in the Glorious of Quran, in the prophets of tradition
5	**1**		Physician duties toward society	Fundamental of physician duties toward society The codes of physicians' duties toward Society Islamic support: In the glorious of Quran In the prophets of tradition Utilization of health resources a Supporting Islamic legal evidence: In the rules of the Islamic jurisprudence include the recourse
6	**1**		Patient with AIDS or any other communicable disease	The duties of the medical expert toward such patient The duties of a sick medical expert during professional job Supporting Islamic legal evidence The purpose of Islamic law include
7	**1**		Euthanasia and physician assisted death and Abortion	Introduction Supporting Islamic legal evidence: The purpose Islamic law include Introduction to classification of aberrant: Purpose of legal abortions. Retraction of abortion Ethical challenge of abortion Supporting Islamic legal evidence The purpose Islamic law include
8	**1**		Organ transplant	Introduction Medical aspect of organ transplantation Ethical dialog in organ transplant The purpose of organ transplant in Islamic law include Case of violence
9	**1**		Physicians rights	Introduction The code of physician right Medico legal and ethical aspects Supporting Islamic legal evidence In the glorious Quran In the prophets tradition
10	**1**		Physician duties toward his/her profession	Fundamentals Medico legal and ethical aspect Supporting Islamic legal evidence In the glorious Quran In the prophet's tradition

				In the prophets of law
11	**1**		Advertisement and the media	Introduction The legal aspect and ethical code for media advertisement Supporting Islamic legal evidence
12	**1**		Physician duties toward establishment	Introduction Ethical aspect Restriction Supporting Islamic legal evidence: o In the glorious Quran In the prophets tradition
13	**1**		Medical mistakes and it's incidence in medical profession	Medical mistakes Responsibility of physicians confess on their mistakes Difficulties in conception of mistakes Profession's incidents
			Deontology	Deontology in Internal medicine Deontology in pediatrics Deontology in forensic medicine Deontology in Dentistry
16	**1**		Malpractice and Negligence	Definition of Malpractices Inattentive Improvidence Unprofessionalism Patient refusal from medical services Abusive behavior Patients abusive behavior Illegal documentation Over investigating the patient Prescription of drugs Charging of fees Gifts Receiving

Textbooks & Reference books Recommended (Last editions)

- The Islamic Charter of Medical and Health Ethics
- Ethics in Clinical Practice, Judith C Ahron Heim.
- Ethics and Basic Law for Medical Imaging, Bettey G. Wilson.
- Informed Cosent; Legal Theory and Clinical Practice, Jessica W. Berg.
- Public Health Law and Ethics, Lawrence O. Gostin.
- Adverse Events, Stress and Litigation, A physician Guide. Sara C Charles.
- Understanding Medical Professionalism, Shiphra Ginsburg.
- Professionalism in Medical assisting, Kristiana D. Routh

XV- Clinical Microbiology

Goals

The broad goals of the teaching of graduate students in microbiology are to provide an understanding of the natural history of infectious diseases in order to deal with the etiology, pathogenesis, laboratory diagnosis, treatment and control of infections in the community.

Learning Objectives

a- Knowledge

At the end of the course, the student should be able to:

- State the infective micro-organisms of the human body and describe the host-parasite relationship;
- List pathogenic micro-organisms and describe the pathogenesis of the diseases produced by them;
- Indicate the modes of- transmission of pathogenic and opportunistic organisms and their sources, including insect vectors responsible for transmission of infection
- Describe the mechanisms of immunity to infection;
- Acquire knowledge on antimicrobial sensitivity tests to select suitable antimicrobial agents for treatment of infection and scope of immunotherapy and different vaccine
- Available for prevention of communicable diseases;
- Apply methods of disinfection and sterilization to control and prevent hospital and community acquired infections;
- Recommend laboratory investigations regarding bacteriological examination of food, water, milk and air.

b- skills

At the end of the course, the student should be able to:

- Plan and interpret laboratory investigations for the diagnosis of infectious diseases and to correlate the clinical manifestations with the etiological agents;
- Identify the common infectious agents with the help of laboratory procedures and use antimicrobial sensitivity tests to select suitable antimicrobial agents;
- Use the correct method of collection, storage and transport of clinical material for microbiological investigations.

Course contents

Microbiology (Module 1)			
Discipline		**Basic Biomedical Science**	
Department		**Microbiology**	
Course title		**Microbiology**	
Pre-requisites		**Molecular Microbiology**	
Course code		**MED4 016**	
Academic year		**II**	
Semester	**4**	**Fall/Spring**	
Number of credits	**3**	**Knowledge**	**1**
		Practical	

Week	Hours		Topics	Descriptions
	Knowledge	Laboratory		
1	2	1	1. Introduction to Microbiology Morphology of Micro Organisms:	Natural history of microbial diseases. Definition, Basic types of Microbes. Differences between eukaryotes and prokaryotes, Optic methods.
2	2	1	Morphology of Micro Organisms	Structure of Eukaryotic Cells, Structure of Prokaryotic cells. Simple stain and other stains Spheroblast and protoplast, L-form bacteria,
3	2	1	Bacterial Staining and Cultivation Morphology of Micro Organisms:	Microscopy: types and principles Staining: principles Media for growth / bacterial colony Endospore. Classification of Bacteria and five Kingdome classifications.
4	2	1	Introduction to Virology and Mycology Physiology of Micro Organisms	Biochemical structure of microbial cell. Media and its preparation, Growth of micro-Organism.
5	2	1	Physiology of Micro Organisms	Culture, Characters of Bacteria, Respiration of Microbes.
6	2	1	Physiology of Micro Organism: Sterilization and disinfection	Isolation of Micro Organism in pure Culture, Microbes Enzymes, Antibiogram Principles Various methods Demonstration of equipment and agents used in sterilization.
7	2	1	Microbial Flora	Role of Resident flora. Normal Flora of the skin, Mouth and Upper respiratory tract flora. Intestinal, Urethra, Vaginal and Eye flora.
8	2	1	Infections	Microbes, Toxins, Exotoxin and Endo toxins. Period of an infectious disease. Clinical form of infections. Distribution, severity of infectious disease. Gastrointestinal infections (Bacteria, parasites, viruses and fungi).
9	2	1	Immunology: specific and nonspecific host	Specific and Non Specific host defense mechanism

			defense mechanism.	
10	**2**	**1**	Immunology: - Genetic in immunity Immunodiagnosis	Genetic in immunity. Vaccination. Antigens, Antigen-antibody reactions in infectious diseases and diagnostic tests based on these
11	**2**	**1**	Immunology: Antibodies	Antibodies, Cellular and Humoral immunity
12	**2**	**1**	Immunology: Immune Reduction and their significance roles.	Immune Reduction and their significance roles. Immune Reduction and their significance roles
13	**2**	**1**	Allergy: Allergy, Anaphylaxis. Genetics: Hyperergia, DNA ; and RNA Structures	Allergy, Anaphylaxis, Anaphylaxis. Genetics: Hyperergia, DNA and RNA Structures
14	**2**	**1**	Genetics: Plasmids and Episome, Phenotype and Genotypic changes. Phenotype and Genotype changes	Genetics: - Plasmids and Episome, Phenotype and Genotypic changes, Phenotype and Genotype changes
15	**2**	**1**	Anti- microbial therapy: Laboratory usage of Antibiotics Antibiotic Susceptibility test.	Anti-microbial therapy; Laboratory usage of Antibiotics, Antibiotic Susceptibility test.
16	**2**	**1**	(Pathogen infections of bodies) :- Determination of antibiotic measure in body fluid. Infections of different organs.	Anti-Microbial therapy (Pathogen infections of bodies): - Determination of antibiotic measure in body fluid. Pathogen infections of bodies: Central Nervous System infections. Lymph and blood infections, Gastro intestinal infections, Urinary tract infections, Skin and soft tissue infections, Respiratory infections.

Microbiology (Module 2)				
Discipline			**Basic Biomedical Science**	
Department			**Microbiology**	
Course title			**Microbiology**	
Pre-requisites			**Microbiology**	
Course code			**MED5 016**	
Academic year			**II**	
Semester		**5**	**Spring/Fall**	
Number of credits		**3**	**Knowledge**	**2**
			Practical	**1**

Week	Hours		Topics	Descriptions
	Knowledge	Laboratory		
1	**2**	**1**	Gram Positive cocci, Staphylococci	Morphology, Culture, Growth. Characteristics, Antigenic structure, Toxins. Pathogenesis, Clinical Finding, Diagnostic Lab Test, Treatment Prevention and Control.
2	**2**	**1**	Gram Positive Cocci, Streptococci,	Morphology, Culture, Growth. Characteristics, Antigenic structure, Toxins. Pathogenesis, Clinical Finding, Diagnostic Lab test, Treatment, Epidemiology, Prevention and Control.
3	**2**	**1**	Pneumococci, Neisseria	Morphology, Culture, Growth, Characteristics, Antigenic structure, Toxins, Pathogenesis, Clinical Finding, Diagnostic Lab Test, Treatment, Epidemiology, Prevention and Control. Neisseria: - (Neisseria Gonorrhea, Neisseria Meningitides) Morphology, Culture, Growth, Characteristic, Antigenic structure, Toxins, Pathogenesis, Clinical Finding, Diagnostic Lab Test, Treatment, Epidemiology, Prevention and Control.
4	2	1	Gram Negative Enteric bacilli: (Escherichia coli), Gram Negative Enteric bacilli:	Morphology, Culture, Growth, Characteristics, Antigenic structure, Toxins. Gram Negative Enteric bacilli: - (Escherichia coli): Pathogenesis, Clinical Finding, Diagnostic Lab test, Treatment, Epidemiology, Prevention and control.
5	2	1	Gram Negative Enteric bacilli: Salmonella. Shigella	Morphology, Culture, Growth, Characteristics Antigenic structure, Toxins. Gram Negative Enteric bacilli: (Salmonella, Shigella),

				Pathogenesis Clinical Finding Diagnostic Lab test, Treatment, Epidemiology, Prevention and control
6	2	1	Vibreos Compylo bacter (V.Cholera, C. Jejuni)	Morphology, Culture, Growth, Characteristics, Antigenic structure, Toxins, Pathogenesis. Vibreos Compylo bacter: - (V.Cholera, C.Jejuni): Clinical Finding, Diagnostic Lab test, Treatment, Epidemiology, Prevention and control.
7	2	1	Helicobacter (H. Pylori) Bacillus (B. Anthraces)	Helicobacter (H. Pylori), Morphology, Culture, Growth, Characteristics, Antigenic Structure, Toxins. Pathogenesis Bacillus (B. Anthraces): Clinical finding, Diagnostic Lab test, Treatment, Epidemiology, Prevention and control.
8	2	1	Clostridium: CI Tetani, CI Perfringens, CI Gas gangrene	Morphology, Culture, Growth Characteristics, Antigenic structure, Toxins. Clostridium:- (CI Tetani, CI Perfringens, CI Gas gangrene):- Pathogenesis, Clinical finding, Diagnostic Lab test, Treatment, Epidemiology, Prevention and \ Control.
9	2	1	Cornebacterium (C. Diphtheria) Hemophilus influenza) Bordetella (B. Pertussis) Brucella.	Cornebacterium (C. Diphtheria) Morphology, Culture, Growth Characteristics, Antigenic structure, Toxins, Pathogenesis) Hemophiilus influenza) Bordetella (B. Pertussis) Brucella (Brucella):- Clinical finding, Diagnostic Lab test, Treatment, Epidemiology, Prevention and control,
10	2	1	Yersinia (Yersinia Pestis), Francisella, Pasturella (Pasturella Sturella) Mycoplasma (Mycoplasma):-	Yersinia (Yersinia Pestis), Morphology, Culture, Growth, Characteristics, Antigenic structure, Toxins, Pathogenesis. Francisella, Pasturella (Pasturella Sturella) Mycoplasma (Mycoplasma): Clinical finding, Diagnostic Lab test, Treatment, Epidemiology, Prevention and Control.
11	2	1	Mycobacterium, Spirochetes: Rickettsial Disease	Morphology, Culture, Growth, Characteristics Antigenic Structure, Toxins. Mycobacterium, Spirochetes, Rickettsial Disease: - Pathogenesis, Clinical finding, Diagnostic Lab test, Treatment, Epidemiology, Prevention and Control.
12	2	1	Virology: (Adenovirus, Para Influenza and Herpes Virus)	Morphology, Culture, Growth, Characteristics, Antigenic structure, Toxins, Pathogenesis. Virology: (Adenovirus, Para; Influenza and Herpes Virus): - Clinical Finding, Diagnostic Lab test, Treatment, Epidemiology, Prevention and Control.
13	2	1	Virology, (Mumps, Measles,	Morphology, Culture, Growth, Characteristics, Antigenic structure Toxins. Virology: - (Mumps, Measles, Smallpox and Rubella virus):

			Smallpox and Rubella virus, Mumps)	Pathogenesis, Clinical Finding, and Diagnostic Lab test Treatment, Epidemiology, Prevention and Control.
14	2	1	Virology: - {Hepatitis, Polio myelitis, Rabies and Retro virus (AIDS)	Morphology, culture, growth, characteristics, antigenic structure, toxins. virology: {hepatitis, polio myelitis, rabies and retro virus (aids)} pathogenesis clinical finding, diagnostic lab test treatment, epidemiology, prevention and control.
15	2	1	Mycology, (Surface mycosis, Skin mycosis)	Morphology, culture, growth, characteristics, antigenic structure toxins. mycology: surface mycosis, skin mycosis .pathogenesis, clinical finding, diagnostic lab test, treatment, epidemiology, prevention and control
16	2	1	Mycology, Subcutaneous mycosis, Deep mycosis)	Morphology, culture, growth, characteristics, antigenic structure. Toxins. mycology. subcutaneous mycosis, deep mycosis, pathogenesis, clinical finding, diagnostic lab test, treatment, epidemiology, prevention and control

Laboratory Skills

I- Direct demonstration of bacteria by staining

- Gram Staining
- Albert's staining
- Acid fast staining

2. Enterobacteriacea

- Common media and biochemical tests
- Culture characteristics of members of Enterobacteriacee

3. Laboratory diagnosis of E. Coli infection and shigellosis

- Stool examination for pus cells and RBC
- Processing of stool specimen for bacterial culture
- Cultural characteristics, tests for E. coli and its virulence factors
- Cultural characteristics of Shigella and its identification (inch slide agglutination test)

4. Laboratory diagnosis of food poisoning

- Focus on: laboratory diagnosis of salmonellosis
- Demonstration for Clostridium perfringens and others

5. Laboratory diagnosis of upper respiratory infections

- Focus on: laboratory diagnosis of Streptococcus infection
- Albert's stain
- Media, identification and toxin of corynebacterium (demonstration)

6. Laboratory diagnosis of lower respiratory tract infections

- Focus on: Klebsiella and Streptococcus pneumonia
- Viral respiratory infection (demonstration of diagnostic methods)

7. Laboratory diagnosis of UTI

- Collection, storage and transport of urine

- Significant bacteriuria and quantitative/Semi quantitative methods of culture
- Media including CLED
- E. coli/ Klebsiella (revision)
- Focus on: Identification of Proteus and Pseudomonas- cultural characteristics like swarming, pigment production; and tests like OF and oxidase

8. Laboratory diagnosis of wound infections

- Focus on: Staphylococcus (culture/ identification including tests like catalase and coagulase).

9. Laboratory diagnosis of anaerobic infections

- Demonstration of collection of samples for anaerobic culture
- Demonstration of media and culture for Clostridium, smears showing sporing and non-sporing GPB, Nagler's reaction etc. and cultures of GN anaerobes like B. melaninogenicus

10. Laboratory diagnosis of viral infections

- Collection and transport of samples
- Demonstration of egg inoculation techniques, cell culture, cytopathic effect, plaque assay, serological tests (complement • fixation, hem agglutination inhibition, neutralization, ELISA).

11. Sterilization and disinfection

- Visit to media and sterilization room (demonstration of autoclave and hot air oven)

12. Laboratory diagnosis of enteric fever

- Collection and transport of specimen
- Culture media and characteristics
- Identification (incl; motility, oxidase and other tests)
- Biotyping and serotyping.

13. Laboratory Diagnosis of Enteric fever

- Sample collection methods and transport
- Blood culture (in detail)
- Stool and urine culture for Salmonella
- Identification tests and slide agglutination for Salmonella

14. Laboratory Diagnosis of Meningitis

- Collection and transport of CSF
- Other useful specimens
- Direct smear examination
- Culture media, growth characteristics and identification tests (focus: Neisseria, Hemophilus and Streptococcus pneumonia)
- Chronic meningitis: pathogens (demonstration e.g. India ink for Cryptococcus)
- Antigen detection.

15. Laboratory diagnosis of STD

- Collection and transport of specimens
- Direct demonstration

Textbooks & reference Books Recommended (Last edition)

- Basv Raj Nagoba, Parslaw. Clinical Microbiology,

- John Spicer. Clinical Microbiology and infectious diseases
- Javits Milnick Medical Microbiology, MC Graw Hill Lang. co
- Sherris Medical Microbiology
- Richard Harvey, Illustrated review of microbiology
- Lynne S. Garcia. Clinical Microbiology Procedures Handbook,
- Warren livinson, Review of Medical Microbiology, MC Graw Hill Lange. co

XVI- Medical Parasitology

Goals

- To provide students with knowledge concerning biological, epidemiological and ecological aspects of parasites causing diseases in human;
- To enable students to understand the pathogenesis, clinical presentations and complications of parasitic diseases;
- To enable students to reach diagnosis and know the general outline of treatment, prevention and control of parasitic infections and provide students with adequate knowledge about endemic parasites and national parasitic problems as well as re-emerging parasitic infection.

Learning objectives

Knowledge

By the end of the course, students should be able to:

- Describe the world distribution of important parasitic infections and the epidemiologic principles and the effect of social and demographic patterns on parasitic disease and vulnerability;
- Describe the common parasitic diseases and life-threatening; conditions caused by helminthes and protozoa as regards etiology and life cycle of parasites of medical importance;
- Describe the common diseases caused by helminthes and protozoa regards pathogenesis, clinical features differential diagnosis and complications;
- Point out the methods of recovery of parasites and their culture methods as well as immunological and molecular methods used for diagnosis of parasitic infections
- Define the principles of management for common parasitic diseases and life-threatening conditions;"
- Outline methods of disease prevention;
- Describe the common diseases caused by arthropods of medical interest as regards
- Etiology, pathogenesis, clinical features and methods of combat;
- Describe molecular, biochemical and cellular mechanisms that occur in the body of humans infected with parasites.

Laboratory Skills

By the end of the course, student should be able to:

- Perform skills relevant to the future practice, as to identify different parasites in tissue sections and demonstrate their reactions in such tissues by naked eyes:
- Use the microscope to identify diagnostic stages of parasites in blood, urine, stool or tissue samples.

Course contents

Parasitology					
Discipline			**Basic Biomedical Science**		
Department			**Microbiology**		
Course title			**Microbiology**		
Pre-requisites			**Microbiology**		
Course code			**MED4 017**		
Academic year			**II**		
Semester		**4**	**Fall/Spring**		
Number of credits		**2**	**Knowledge**	**1**	
			Practical	**1**	

Week	Hours		Topics	Descriptions
	Knowledge	Laboratory		
1	**1**	**1**	Classification of parasites and hosts	Classification of parasites and hosts, type of immunity and other immunologic reactions. Association between parasite and host Effects of parasites on the host Basic concepts in medical Parasitology
2	**1**	**1**	Nomenclature of parasites and abstract study parasitology, Medical Protozoology	nomenclature of parasites and abstract study of parasitology Introduction Classification of protozoa
3	**1**	**1**	Entamoeba Histolytica	Entamoeba Histolytica: history, geographical distribution, morphology, reproduction, life cycle, pathogenesis, clinical findings, intestinal and extra intestinal ameobiasis, lab diagnosis, differential diagnosis, treatment, prevention. -Other amebae inhabiting the alimentary canal Pathogenic free-living amebae
4	**1**	**1**	Giardia Labmlia, Trichomonas Vaginalis:	History, geographical distribution, morphology, 1 pathogenesis and clinical finding, intestinal, culture of trichomonas, lab diagnosis, treatment, prevention.

5	**1**	**1**	Leishmaniosis	Leishmaniosis: history, morphology, culture, life cycle, pathogenesis and clinical findings, lab diagnosis, treatment, prevention.
6	**1**	**1**	Trypanosomiasis	Trypanosomiasis: history, morphology, life cycle, pathogenesis and clinical findings, lab diagnosis, treatment, prevention.
7	**1**	**1**	Blantidium coli and Isospora	Blantidium coli and isospora: - history, morphology, pathogenesis and clinical findings, lab diagnosis, treatment, prevention.
8	**1**	**1**	Malaria	Malaria: history, geographical distribution, epidemiology, life cycle, pathogenesis, clinical findings, malaria in pregnancy, malaria in children, complication of malaria, lab diagnosis, treatment, prevention.
9	**1**	**1**	Cryptosporidium, Toxoplasma Gandhi	Cryptosporidium, toxoplasmosis: - history, morphology, pathogenesis and clinical findings, lab diagnosis, treatment, prevention.
10	**1**	**1**	Ascaris Lumhricularis	Ascaris lumbricularis: - history, morphology, life cycle, clinical findings, lab diagnosis, treatment, prevention
11	**1**	**1**	Entrobius Vermicularis, Wuchereia Boncrofti	Entrobius vermicularis, wuehereia boncrofti: history, morphology, life cycle, clinical finding, lab diagnosis, treatment, prevention history, morphology, life cycle, clinical finding, lab diagnosis, treatment, prevention
12	**1**	**1**	Ankylostoma Doudenalis, Necator Americans	history, morphology, life cycle, clinical findings, lab diagnosis, treatment, prevention
13	**1**	**1**	Strongloidium Stercorals	Strongloidium stercoralis: - history, morphology, life cycle, clinical findings, lab diagnosis, treatment, prevention.
14	**1**	**1**	Trichnella Spiralis, Trichuris Trichuria	History, morphology, life cycle, clinical findings, lab diagnosis, treatment, prevention. tenia saginata, taenia solium: - history, morphology, life cycle, clinical findings, lab diagnosis, treatment, prevention.
15	**1**	**1**	Hymenolipis Nana, Echinococcus Granulosis, Diphylobotherium Lateum:	Hymenolipsis nana, Echinococcus granulosis, Diphyloboterium lateum: history, morphology, life cycle, clinical findings, lab diagnosis, treatment, prevention.
16	**1**	**1**	Fasciola hepatica, Paragonomus Vestermani, Schistosomiasis	Fasciola hepatica: history, morphology, life cycle, clinical findings, lab diagnosis, treatment, prevention. Paragonomiasis: history, morphology, life cycle, Clinical findings, lab diagnosis, treatment, prevention. schistosomiasis: history, morphology, life cycle, clinical findings, lab diagnosis, treatment, prevention

Skills

1- Laboratory Diagnosis of Malaria & Lieshmania

2- Stool examination for cysts

- Collection and transport of stool sample for parasites
- Direct examination (saline and iodine preparations)
- Concentration of stool for parasites
- Identification of cysts

3- Stool Examination for intestinal nematodes and cestodes

- Collection/transport and concentration of sample
- Identification of ova of intestinal nematodes and cestodes
- Identification of adult worms and larva

Teaching and learning methods:

- Lectures
- Small group discussions
- Tutorials
- Skills classes

Textbooks & Reference books Recommended (Last editions)

- Harold W. Braun. Basic Clinical Parasitology.
- Elizabeth A. Zeibig. Clinical Parasitology.
- CK Jaram Panikar. Textbook of Medical Parasitology.
- Abhay R. Satoskar, Gary L. Simon. Medical Parasitology.

XVII- Clinical Pharmacology

Goals

The broad goals of teaching pharmacology to graduates are; to impart knowledge, skills and attitudes to the students so that they can prescribe drugs safely, effectively and maintain competency in professional life. To instill in them a rational and scientific basis of therapeutics.

Learning objectives

A- Knowledge

At the end of course the student should be able to:

- Understand pharmacokinetics and pharmacokinetics principles involved in the use of drugs;
- Understand and identify the various factors that can affect the action of drugs;
- Know the various routes of drug administration with advantages and disadvantages of these routes;
- Undertake dosage calculations as appropriate for the patient and be able to select the proper drug and dose for the "at risk population" i.e. patients with kidney or liver diseases, elderlies, pregnant and lactating mothers and children;
- Understand the importance of rational prescribing of drugs and the concept of essential
- drugs& rational use of drugs;

- To be able to identify and monitor adverse drug reaction (ADRs) and appreciate the importance of ADR reporting;
- Know the drugs used in systemic illnesses, infections and chemotherapy etc. with main mechanism(s) of action, pharmacokinetics, uses, side-effects and indications;
- Understand the principles and practice of pharmacy;
- Understand the methods in experimental pharmacolog3', principles of bioassay and be able to correlate drug effects with the action of drugs at the receptors;
- Have knowledge of common drugs and doses used for different ailments;
- Have an understanding of basic mechanism by which a drug acts;
- Should be able to select rationally from the available drugs.

B- Clinical skills

At the end of the course, the student be able to:

- Prescribe drugs for common ailments;
- Identify adverse reactions and interactions of commonly used drugs;
- Interpret the data of experiments designed for the study of effects of drugs and bioassays which are observed during the study;
- Scan information on common pharmaceutical preparations and critically evaluate drug formulations;
- Load the required dose of medicines accurately in hypodermic syringes; inject medicines by the intradermal, subcutaneous, intramuscular and intravenous routes using aseptic techniques;
- Set-up an intravenous drip and adjust the drip rate according to required dosage;
- Calculate the drug dosage using appropriate formulas for an individual patient;
- Administer the required dose of different drug formulations using appropriate devices and techniques (e.g., hypodermic syringes, inhalers, trans dermal patches etc.)
- Advice and interpret the therapeutic monitoring reports of important drugs;
- Recognize and report adverse drug reactions to suitable authorities;
- Analyze critically, drug promotional literature for proprietary preparations in terms of:
  - Pharmacological actions of their ingredients
  - Claims of pharmaceutical companies
  - Economics of use
  - Rational or irrational nature of fixed dose drug combinations

C- Attitudes & Communications Skills:

At the end of the course, the student shall be able to:

- Communicate with patients regarding proper use of drag
- Take adequate precaution during prescribing drug(s)
- Understand the legal aspects of prescription.
- Counsel patients for compliance
- Take adequate care to write prescriptions legibly (easy to read)
- Understand rationality of poly pharmacy
- Update themselves regarding recent advances in pharmacology

Course content

Pharmacology (Module 1)				
Discipline			**Basic Biomedical Science**	
Department			**Pharmacology**	
Course title			**Clinical Pharmacology**	
Pre-requisites			**Molecular cell biology, pharmacology, biochemistry**	
Course code			**MED6 019**	
Academic year			**III**	
Semester		**6**	**Fall/Spring**	
Number of credits		**3**	**Knowledge**	**2**
			Practical	**1**

Week	Hours		Topics	Descriptions
	Knowledge	Laboratory		
1	**2**	**1**	Introduction of Pharmacology	Definition of terminologies Role of Clinical Pharmacology in Medicine Pharmacokinetics, Route of drag Administration (Enteral, Parenteral, Topical, Other).
2	**2**	**1**	Introduction of Pharmacology	**Pharmacokinetic** - Drag Absorption (simple diffusion, Filtration, - Active Transport Pinocytosis) - Factors influencing Drug Absorption - Drag Distribution - Protein Binding & Clinical Importance of Protein Binding **Pharmacokinetic** - Drug Absorption (simple diffusion, Filtration, - Active Transport. Pinocytosis) - Factors influencing Drug Absorption - Drug Distribution - Protein Binding & Clinical Importance of Protein Binding.
3	**2**	**1**	Introduction of Pharmacology	**Pharmacokinetic** - Elimination of Drugs from the Body - Dose & Factors Influencing Drug dosage **Pharmacodynamics** - Drugs Mode of action - Drugs Response - Therapeutic Index.

4	**2**	**1**	Introduction of Pharmacology	Pharmacologic Factors influencing Pharmacologic Effects, Drugs Adverse Reaction
5	**2**	**1**	CNS Pharmacology: Sedative-Hypnotics	Summary Introduction of CNS (Anatomy, Physiology & Biochemistry) **Sedative-Hypnotics** Introduction & Classification Benzodiazepine Derivatives: Diazepam Chlordiazepoxide, Oxazepam. Alprazolam Barbiturates Non-Barbiturates: Glutethimide, Meprobamate Other Sedative-Hypnotics Sedative-Hypnotic Addiction.
6	**2**	**1**	CNS Pharmacology: Narcotic Analgesics	**Narcotic Analgesics** Introduction & Classification of Narcotic Drugs Pharmacokinetic - Mode of action Pharmacologic Effects of Opiates
7	**2**	**1**	CNS Pharmacology: Narcotic Analgesics	**Narcotic Analgesics** - Morphine pethidine, Fentanyl, Pentazocine, Heroin, Codeine, Dextropropoxyphene - Opiate antagonist: Naloxone - Opiate Toxicity & Treatment **Content for Presentation included:** Clinical Usage, important Side Effects, Contraindications, Cautions& Drug Interaction, Dose, Strength & Dosage form
8	**2**	**1**	CNS Pharmacology: Drugs Used in Psychological Disorders	**I- Neuroleptic Drugs** (Chlorpromazine, Fluphenazine, Haloperidol, Loxapine) - Classification& Mode of Action - Pharmacological Effects **Content for Presentation included:** Pharmacokinetic, Mode of Action, Clinical Usage, important Side Effects, Contraindications, Cautions & Drug Interaction, and Dosage.
9	**2**	**1**	CNS Pharmacology: Drugs Used in Psychological Disorders	**II-Antidepressants** - Classification - Pharmacokinetic - Amitriptyline, Imipramine, Trimipramine Phenelzine, Isocarboxazide **III-Anti Mania:** Lithium Salt: Pharmacokinetic, Mode of Action, Clinical Usage, important Side Effects, Contraindications, Cautions & Drug Interaction, Dose.
10	**2**	**1**	Autonomic Nervous System(ANS) Pharmacology	**Introduction of ANS** - Anatomophysiology, Receptors & Neurotransmitters **Cholinergic Drugs**

				- Introduction & Classification - Pharmacologic Effects. Acetylcholine, Bethanechol, Carbachol, Pilocarpine, Physostigmine, Neostigmine, Pyridostigmine, Edrophonuim. - Pharmacokinetic, Mode of Action, Clinical Usage, important Side Effects, Contraindications, Cautions& Drug Interaction, Dose, Strength & Dosage form Anti cholinesterase Toxicity and Treatment
11	**2**	**1**	Autonomic system Pharmacology; Anti-Cholinergic Drugs Muscle Relaxant	**Anti-Cholinergic Drugs** - Introduction - Classification - Pharmacologic Effects (Atropine, Hyoscine) **Muscle Relaxants** - Classification - Pharmacological Effects - Tubocurarine, Pancuronium, Vecuronium, Gallamin, Suxamethoniume, Baclofen, Dantrollen Pharmacokinetic, Mode of Action, Clinical Usage, important Side Effects, Contraindications, Cautions, Drag Interaction, Dose
12	**2**	**1**	Autonomic Nervous System: Pharmacology: Adrenergic Drugs	**Adrenergic Drugs** - Introduction - Classification - Pharmacologic Effects Adrenaline, Nor-Adrenaline, Isoprinosine, Dopamine, Phenylephrine, Salbutamol, Ergometrine. Pharmacokinetic, Mode of Action. Clinical Usage, important Side Effects, Contraindications, Cautions& Drug Interaction, Dose.
13	**2**	**1**	Autonomic Nervous System Pharmacology: Anti-Adrenergic Drugs	**Anti-Adrenergic Drugs** - Introduction - Classification - Pharmacological effects - Methyldopa, Trimethaphan, Prazocine. - Propranolol, Atenolol, Metoprolol Pharmacokinetic, Mode of Action, Clinical Usage, important Side Effects, Contraindications, Cautions & Drug Interaction, Dose, Strength & Dosage form
14	**2**	**1**	Drugs used in obstetrics/ Non-steroidal anti-inflammatory	Tocolytics (Salbutamol) Oxytocic (ergometrine, oxytocin) **Non-Steroidal Anti-Inflammatory Drugs (NSAIDs)** Introduction &Classification of (NSAIDs) Mode of action

			Drugs (NSAIDs)	Pharmacokinetic, Mode of Action, Clinical Usage, important Side Effects, Contraindications, Cautions& Drug Interaction, Dose, Strength & Dosage form
15	**2**	**1**	Non- Steroidal anti-inflammatory drugs (NSAIDs) Drugs (NSAIDs)/ Drugs used in Gout and Migraine	Aspirin, Ibuprofen, Indomethacin, Naproxen, Diclofenac, Piroxicam, Phenylbutazone, Analgesic and Antipyretic Drugs: Paracetamol, Other Anti Inflammatory Drugs: Penicillamin, Gold Salt, Drugs Used in Gout: Colchicine, Allopurinol, Drugs Used in Migraine Drugs used in acute attack of migraine: Triptans, Ergotamine, Drugs used in migraine prophylaxis Content for Presentation included: Pharmacokinetic, Mode of Action, Clinical Usage, important Side Effects, Contraindications, Cautions& Drug Interaction, Dose, Strength & Dosage form
16	**2**	**1**	Histamine & Anti Histaminic Drugs	**Histamine Anti Histamine Drags** Introduction Mode of Action of Histamine **Antihistamines:** Chlorphenamm (Chlorpheniramine), Diphenhydramine, Promethazine, Cyproheptadine, Dimenhydranate, Cinnarazine, loratadine, Cetrizin Classification & Pharmacologic Effects Pharmacokinetic, Mode of Action, Clinical Usage, important Side Effects, Contraindications, Drug Interaction & Cautions, Dose, Strength & Dosage form

Clinical Pharmacology (Module 2)					
Discipline			**Basic Biomedical Science**		
Department			**Pharmacology**		
Course title			**Clinical Pharmacology**		
Pre-requisites			**Pharmacology1**		
Course code			**MED7 019**		
Academic year			**IV**		
Semester		**7**	**Spring/Fall**		
Number of credits		**3**	**Knowledge**	**2**	
			Practical	**1**	

Week	**Hours**		**Topics**	**Descriptions**
	Knowledge	**Laboratory**		
1	**2**	**1**	Digestive System Pharmacology	Anti-emetics: Chlorpromazine, Trifluperazine, Domperidone, Metoclopramide **Drugs Used in Peptic Ulcer Disease** **H2 Receptor Blockers** (Cimetidine, Ranitidine, Famotidine, Nizatidine) **Proton Pump Inhibitors** (Omeprazole) Antimuscarinics: Pirenzepine Prostaglandin Analogue (Misoprostol) Pharmacokinetic. Mode of Action, Clinical Usage, Important Side Effects, Contraindications, Drug Interaction& Cautions, Dose, Strength & Dosage form
2	**2**	**1**	Digestive System Pharmacology	**Antacids:** Aluminum Hydroxide, Magnesium Hydroxide, Sodium Bicarbonate. Calcium Carbonate **Stomach Mucous Membrane Protectants** (Sucralfate) **H. Pylori Treatment** **Laxatives:** Classification Ispaghula Husk, Bisacodyl, Senna. Liquid Paraffin, Magnesium Salt Drugs Used in Diarrhea (Symptomatic) Oral Rehydration Salt(ORS), Diphenoxylate, Loperamide Pharmacokinetic, Mode of Action, Clinical Usage, Important Side Effects, Contraindications, Drag Interaction & Cautions, Dose, Strength & Dosage form

3	**2**	**1**	Respiratory System Pharmacology	**Bronchodilators** Adrenergic Xanthine Derivatives Anticholinergics Cromolyn Sodium Steroids **Drugs Used in Cough;** Codeine dextromethorphan, Pholcodein **Mucolytic** (Acetylcystcin, Carbocystein)
				Expectorants Pharmacokinetic, Mode of Action, Clinical Usage, Important Side Effects, Contraindications, Cautions & Drug Interaction, Dose, Strength & Dosage form
4	**2**	**1**	Diuretics	**Introduction** Definition & Classification Acetazolamide Furosemide, Chlorothiazide, Hydrochlorothiazide, Spironolactone, Triamterene Mannitol Pharmacokinetic, Mode of Action, Clinical Usage, Important Side Effects, Contraindications, Cautions & Drug Interaction, Dose, Strength & Dosage form
5	**2**	**1**	Cardiovascular System Pharmacology	**Cardiotonics** Introduction Digoxin, Digitoxine **Ants Arrhythmic Drugs** Introduction & Classification Quinidine Procainamide, Lidocaine, Phenytoin Propranolol, Metoprolol, Atenolol Esmolol Bretylium, Amiodarone, Verapamil, Diltiazem Nifidepine; Digoxin Pharmacokinetic, Mode of Action, Clinical Usage, Important Side Effects, Contraindications, Cautions & Ding Interaction, Dose, Strength & Dosage form
6	**2**	**1**	Cardiovascular System Pharmacology	**Drugs Used in Angina Pectoris** Introduction & Classification Nitrites: Glyceryl Tinitrate, Isosorbid Dinitrate Ca channel blockers: Nifidepin, Diltiazem Beta blockers: Propranolol, metoprolol, Atenolol **Drugs Used in Hypertension** Introduction & Classification Methyldopa, Prazosine, Propranolol, Atenolol, Amlodipine, Nifidepin, Enalapril, Captopril, losartan, Hydralazine, Sodium Nitroprusside Pharmacokinetic, Mode of Action, Clinical Usage, Important Side Effects,

				Contraindications, Cautions & I Drug Interaction, Dose, Strength & Dosage form
7	**2**	**1**	Blood Pharmacology (Drugs Used in Blood Disorder)	**Drugs Used in Anemia** Ferrous Sulphate, Iron Dextran, Iron Toxicity, Hydroxycoblamin Folic Acid **Drugs Used in Coagulation Disorder** Introduction & Classification; Heparin, Warfarin, Aspirin, Pharmacokinetic, Mode of Action, Clinical Usage, Important Side Effects, Contraindications, Cautions& Drug Interaction, Dose, Strength & Dosage form
8	**2**	**1**	Blood Pharmacology (Drugs Used in Blood Disorder)	**Drugs Used in Coagulation Disorder Thrombolytic:** Streptokinase and Others. **Drugs Used in Bleeding disorders:** Protamine Sulfate, Phytomenadion Drugs Used in Dyslipidemia: Statins, Nicotinic Acid, fibrates, Anion - exchange Resins, Pharmacokinetic, Mode of Action, Clinical Usage, Important Side Effects, Contraindications, Cautions & Drug Interaction. Dose. Strength & Dosage form
9	**2**	**1**	Blood Products and Plasma Substitutes Pharmacology	Introduction, Dextran 70, Polygeline, Albumin- Human, ORS, Glucose, Sodium Chloride, Ringer Lactate, Sodium Bicarbonate. Pharmacokinetic, Mode of Action, Clinical Usage, Important Side Effects, Contraindications, Cautions & Drug interaction Dose, Strength & Dosage form
10	**2**	**1**	Hormones Pharmacology	Introduction, Classification, ACTH, Oxytocin, Vasopressin. Levothyroxine, Propylthiouracil, Potassium Iodide. Pharmacokinetic, Mode of Action, Clinical Usage, Important Side Effects, Contraindications, Cautions & Drug Interaction, Dose, Strength & Dosage form
11	**2**	**1**	Hormones Pharmacology	**Insulin & Oral Anti-Diabetic Agents** Introduction, Insulin, Oral Anti Diabetic Drugs: sulfonylureas Glibenclamide), Biguanides (Metfonnine), Thiazolidinedione (Rosiglitazone) Glucosidase inhibitors (Acarbose), Meglitinides (Repaglinide) Content for Presentation included: Pharmacokinetic, Mode of Action, Clinical Usage, Important Side Effects, Contraindications, Cautions & 1 Drug Interaction, Dose, Strength & Dosage form
12	**2**	**1**	Hormones Pharmacology	Corticosteroids & Mineral corticoids: Introduction Corticosteroids, Mode of action Pharmacologic effects, Prednisolone, Dexamethasone, Hydrocortisone, Triamcinolone, Betamethasone

				Content for Presentation included: Pharmacokinetic, Mode of Action, Clinical Usage, Important Side Effects, Contraindications, Cautions & Drug Interaction, Dose, Strength & Dosage form
13	**2**	**1**		Steroid hormones Introduction Estrogens & Anti estrogens Progestines Androgens Steroid Anabolic Pharmacokinetic, Mode of Action, Pharmacological 4 effects, Clinical Usage, Important Side Effects, contraindications.
14	**2**	**1**	General Anesthetics	**General Anesthetics:** Definition, Classification, Mode of Action, Stages of Anesthesia, **Inhaler general Anesthetics** (Pharmacokinetic, Pharmacological Effects), Halothane, Nitrous Oxide, **General Anesthetics** Ketamine. Thiopental, Propofol **Premedication** Pharmacokinetic, Mode of Action, Clinical Usage, important Side Effects, Contraindications, Cautions.
15	**2**	**1**	Local Anesthetics	**Local Anesthetics:** Definition, Classification, Pharmacokinetic, Mode of Action, Pharmacological Effects, Mode of Administration, Lidocaine, Bupivacaine,, Procaine, Tetracaine, Clinical Usage, important Side Effects, Contraindications, Cautions, Drug Interaction, Dose, Strength &Dosage form
16	**2**	**1**	Vitamins & Minerals	Vitamin D, Vitamin A: Introduction & Classification, Pharmacokinetic, Mode of Action, Clinical Usage, important Side Effects, Contraindications, Cautions, Drug Interaction, Dose, Strength & Dosage form

Pharmacology (Module 3)			
Discipline		**Basic Biomedical Science**	
Department		**Medical Pharmacology**	
Course title		**Antibiotics, Rational use of drugs & prescription writing.**	
Pre-requisites		**Pharmacology (module 1 & 2)**	
Course code		**MED8 019**	
Academic year		**IV**	
Semester	**8**	**Fall/Spring**	
Number of credits	**1**	**Knowledge**	**1**
		Practical	

Week	Hours		Topics	Descriptions
	Knowledge	Practical		
1	1		Anti-infective and anti-microbial Drugs	Introduction Classification Factors that influence the successful infectious chemotherapy -Resistance to Antimicrobial Selection of proper Antibiotics
2	1		Anti infective and anti microbial drugs	Dose of the Antimicrobials Combination of Antibiotics Chemoprophylaxis Irrational Use (Misuse) of Antibiotics Sulphonamides.
3	1		Anti infective and anti microbial drugs	Beta Lactam Antibiotics Content for Presentation included: Pharmacokinetic, Mode of Action, Clinical Usage, Side Effects, Important Coma indications Cautious & Drug interaction, Dose, Strength & Dosage form
4	1		Anti infective and anti microbial drugs	Cephalosporines Aminoglycosides Macrolides Pharmacokinetic, Mode of Action, Clinical Usage, Side Effects, important Contraindications, Cautions & Drug Interaction, Dose, and strength & Dosage form.
5	1		Anti infective and anti microbial drugs	Chloramphenicol Tetracycline Quinolones Pharmacokinetic, Mode of Action, Clinical Usage, Side Effects, Contraindications & Cautions, important Drug Interaction, Dose, Strength & Dosage form.
6	1		other Anti-infective drugs used for Anaerobic infections	Lincosamides (clindamycin) Glycopeptide (vancomycin) Polypeptides (polymyxin & Colistin) Bacitracin Sodium Fusidate Fosfomycin
7	1		Anti Fungul Drugs, Anti TB Drugs. Anti leshmanial and anti leprosy Drugs.	**Introduction** Amphotericin B, Ketoconazole, Clotrimazole, Fluconazol, Miconazole, Griseofulvin, Nystatin, Salicylic Acid+Benzoic Acid, Sodium thiosulfate, Pharmacokinetic,

				Mode of Action, Clinical Usage, Important Side Effects, Contraindications, Cautions & Drug Interaction. Summery. **Introduction of Anti TB Drugs** INH, Rifampicin, pyrazinarnide, streptomycin, Ethambutol, Thiacetazone, Ethionamide, Para-Amino Salicylic Acid. Meglumine antimonite & Sodium Stibogluconate: Pentamidine, Dopson, Ethionamide, Clofazimine, Rifampicin. Note: Anti TB. Anti leshmanial & antileprosy drugs are Special National health Programs & presenting in infectious diseases in detail, therefore to prevent duplication in pharmacology there is a brief presentation
8	**1**		Anti-Protozoal Drugs (Anti-Amebic) Anti-Anthelmintic Protozoa Drugs (Anti-Lieshmaneal	Antiamebic: introduction, Metronidazole, Tinidazol Emetine), Diloxanid Furoate, Tetracycline, Paromomycine, Diiodohydroxyquine Anthe. Nenthics introduction Levamisole, Mebendazol, Niclosemide, Piperazine, Pyrantel, Albendazol Content for Presentation included: Pharmacokinetic, Mode of Action, Clinical Usage, Important Side Effects, Contraindications, Cautions & Drug Interaction.
9	**1**		Anti- Protozoal Drugs (Anti-Malarial)	Anti malarial Introduction Chloroquine, Quinin, Primaquin Sulfadoxine + Pyrimethamine, Artemisinin & their derivatives.
10	**1**		Antiseptics & Disinfectants	Antiseptics & Disinfectants Pharmacokinetic Mode of Action, Clinical Usage, Important Side Effects, Contraindications, Cautions & Drug Interactions, Dose, Strength & Dosage form
11	**1**		Rational Use of Dregs	Introduction What is rational use of drag Examples of irrational drag use Concept of essential drags
12	**1**		Adverse Impact of irrational drugs use Underlying Factors of irrational drug use Strategies to improve Drug Use	Adverse-Impact of irrational drugs use Impact on quality of drag therapy & medical care Impact on cost Psychosocial impact factors Underlying on irrational use of drags Health System Prescriber Dispenser Patient & community
13	**1**		The Process of Rational Treatment	Define the Patient's Problem Specify the therapeutic Objective Verify the Suitability of your P-Drag (Introduction of P-drags 1 & Example of Selecting a P-drug for a specific disease e.g. Amoebiasis etc.)

				3A: Are the active substance and Dosage form suitable for this patient? 3B: Is the Standard dosage Schedule suitable for this patient? 3C: Is the Standard duration of treatment suitable for this patient?
14	**1**		The Process of Rational Treatment	Prescription Writing Give information, Instruction and Warnings. Monitor (and Stop?) the Treatment.
15	**1**		Sample of Prescription	Discussion on few assumed Prescription
16	**1**		Keeping up-to-date Essentials of Pharmacology daily Practice	How to keep up-to-date about drugs Make an inventory of available information Choose between source of information Efficient reading (hard copies and web based valid information sources) Essentials of Pharmacology in daily Practice Introduction Pharmacodynamics Pharmacokinetics Drug treatment.

Skills

- Experimental exercise on pharmacy
- General principles of pharmacy
- Prescription writing exercises
- Preparation and dispensing of powders, emulsions ointments, mixtures, liniments, suppositories and syrups
- Spotting exercise - Identify the commonly used items in Pharmacology
- Exercises on drug interactions

Teaching and Learning methodology

It shall be taught by way of lectures. Each lecture session will be planned to deliver maximum relevant information to the student. The clinical aspects as well as rationality of use of a given drug shall be discussed with the students. In addition, seminars on some important topics will be planned in which the use of a given drug shall be discussed by a clinical expert in the field.

The pharmacology teaching shall be done with the goals of making the student understand the concept of rational use of drugs.

Skill

The given skills exercise shall be discussed and demonstrated beforehand to the students. In addition, the students will learn prescription writing and discuss exercise on drug interactions and shall also be shown various spots. The spots shall include various chemicals, drugs and instruments used in pharmacology.

Textbooks & Reference Recommended (Last Edition)

- Basic & Clinical Pharmacology, Bertram G. Katzung.
- Pharmacology, Lippincott.

- Drug Benefit and Risks, International, textbook of Clinical Pharmacology, C.J. van Boxtel.
- Goodman, Gillman pharmacological basis of Therapeutics.
- Principles of Pharmacology, Pathophysiologic Basis of Drug therapy, David E. Goian.
- Clinical Pharmacy and Therapeutics, Roger Walker.
- Rang and Dale's Pharmacology.
- Modern Pharmacology with Clinical Applications, Charles R. Craig.
- Netter's Illustrated Clinical Pharmacology.

XVIII- Clinical Anesthesiology

Goals

The purpose of anesthesia training for medical students is not to make anesthesiologists out of all medical students, but to give students knowledge of basic concepts used in anesthesia and to teach them skills of airway management and vascular access that may be useful to them in other areas of medical practice.

The purpose of anesthesia training for medical students is not to make anesthesiologists out of all medical students, but to give students knowledge of basic concepts used in anesthesia and to teach them skills of airway management and vascular access that may be useful to them in other areas of medical practice.

The physician should have a good knowledge of what the anesthetic will do to the patient even though the physician des not administer it him or herself.

The student, therefore, should observe and study the physiological changes which take place in the anesthetized patient. When these changes are of sufficient magnitude, they become complications or toxic effects. The student should learn what these are, how they are caused, and how they may present and be treated.

Emphasis should be laid on good preoperative preparation. Students should learn basic techniques of maintaining a clear airway and giving assisted or artificial ventilation.

They should also learn how to position the patents head, how to hold the chin and how to insert an airway. Medical students should learn enough about an anesthetic machine.

In addition to these technical accomplishments, the student may have the opportunity to administer either general or spinal anesthesia under the direct and constant supervision of a member of the staff.

Learning Objectives

A- Knowledge

The student, at the end of their posting should be able to:

- Introduce principles of acute medicine as it is practiced in managing the anesthetized patient in the operating room and in managing the patient in the recovery unit;
- Discuss and demonstrate principles of applied physiology and applied pharmacology;
- Simulation on Human-Patient Simulator (HPS) is ideal to teach many aspects of applied physiology and pharmacology;
- Review principles of resuscitation (cardiopulmonary);
- Teach care of the unconscious patient, including airway and ventilation management;
- Teach management of blood, fluid, electrolyte balance, and metabolic disturbances in the surgical patient, with specific emphasis on those derangements which-are encountered in the anesthetized patient;
- Review management of acute and chronic pain problems;
- Introduce concepts of drug interactions, especially as they apply to patients receiving anesthesia;
- Demonstrate the evaluation of patients relative to surgical and anesthetic risk;

- Teach appropriate preoperative preparation of patients subjected to surgery and anesthesia;
- Introduce the various techniques of anesthesiology;
- Pharmacology of muscle relaxant, application and monitoring;
- Pharmacology: Basic / Applied of local anesthetics: Various types of blocks
- advantages Problems with each. Descriptions for same main blocks. Local infiltration, brachial plexus, caudal etc.

B- Skills (logbook)

- Bag Mask Ventilation;
- Starting a venous access;
- Cardiopulmonary Resuscitation-CPR (Basic and advanced);
- Giving a simple infiltration block, Some nerve block;
- Performing a lumbar puncture-LP;
- I/V Commutation
- Oropharyngeal /Nasopharyngeal Airway insertion;
- Bag Mask Ventilation first on Manikin;
- Mask Ventilation in unconscious patient;
- Attaching pulse oximeter, BP cuff and electrocardiography (ECG) electrodes and setting up a monitor;
- Demonstration of epidural/nerve block;
- LMA (Laryngeal Mask Airway) insertion demonstration;
- Intubation demonstration;
- CPR on manikin

Course content

Anesthesiology			
Discipline		**Clinical science and skills**	
Department		**Anesthesiology & Reanimation**	
Course title		**Anesthesia**	
Pre-requisites		**Basic Biomedical Sciences**	
Course code		**MED9 030**	
Academic year		**IV**	
Semester	**9**	**Spring/Fall**	
Number of credits	**2**	**Knowledge**	**1**
		Practical	**1**

Week	**Hours**		**Topics**	**Descriptions**
	Knowledge	**Clerkship**		
1	**1**	**1**	History of Anesthesia	Pain and anesthesia, the early history of anesthesiology

2	**1**	**1**	Preoperative evaluation and preparation of the patient	Evaluation of the patient Classification of the patient physical status Premedication
3	**1**	**1**	Intubation	Laryngoscopy, Indication of Intubation Difficult Intubation, Complication of Intubation
4	**1**	**1**	Techniques of Induction of Anesthesia	General Anesthesia, Loco-regional. anesthesia Acupunctural Anesthesia, Phases and signs of General Anesthesia
5	**1**	**1**	General Anesthesia	Ether, Nitrous Oxide, Halothane, MethoxyfIurane, Enflurane, Isoflurane, Dysflurane, Sevoflorane .Thiopental, Ketamine, Propofol
6	**1**	**1**	Complication of Anesthesia	Peri-operative Complication, Post-operative Complication
7	**1**	**1**	Neuromuscular blockers (Muscle relaxants	Succinylcholine, D-Tubucurarine, Gallamine, Pancuronium, Non-depolarizing Muscle relaxants Antagonists
8	**1**	**1**	Loco-Regional Anesthesia	Local Anesthesia prototype, topical, infiltration, Nerve block, regional or field block, systemic toxicity.
9	**1**	**1**	Spinal and Epidural Anesthesia	Definition, Anatomy of Spinal Cord, Techniques of Spinal and Epidural Anesthesia, Complication of Spinal and Epidural Anesthesia
10	**1**	**1**	Neuroleptic Anesthesia	Definition, relaxogen, Post-narcosis phase
11	**1**	**1**	Intravenous Fluid therapy& Blood transfusion	Descriptions 8 indication of various Solutions (Glycosides, Normal Saline, Ringer lactate, Sodium bicarbonate, Amino acid, MgSO-4, Blood Plasma Substitute Solutions, Fat Emulsions), Evaluation and Decision on Blood Transfusion, Types of transfusion
12	**1**	**1**	ICU monitoring and Post- operative care	Vital signs monitoring, Respiratory Gas Analysis, Affected System, patient discharge criteria from a recovery ward
13	**1**	**1**	Pain management	Negative effects of pain, types of pain, Goals of pain treatment.
14	**1**	**1**	Cardiopulmonary Resuscitation (CPR)	Definition, Etiology, Clinic, Drugs And Defibrillation Treatment.
15	**1**	**1**	Acute Respiratory Failure	Definition, Etiology, Resuscitation of Acute Respiratory Failure
16	**1**	**1**	Tracheostomy	Type of Tracheostomy Techniques of Tracheostomy

Teaching Learning Methodology

Teaching and learning in anesthesiology should be guided through a series of posting in which the emphasis is laid on skills hands -on experience.

Human patient simulator (HPS) is used for better skill development and to reduce the danger to the patients during the learning curve of student. To allow repeat practice according to ability of the student to reach the level of competence needed.

Logbook for skills

- I/V Cannulation- 5 times
- Oropharyngeal /Nasopharyngeal airway insertion -10 times
- Bag Mask Ventilation first on Manikin-5times
- Mask Ventilation in unconscious patient -5 times
- Attaching pulse oximeter, BP cuff and ECG
- Applying electrodes and setting up a monitor-5times
- Lumbar puncture -2times
- Infiltration block -2times
- Demonstration of epidural/ nerve block – 2 times each
- LMA (Laryngeal Mask Airway) insertion demonstration -5times
- Intubation demo -5 times
- CPR (Cardio Pulmonary Resuscitation) 5 times

Textbooks & Reference Books Recommended (last edition)

- Fundamentals of Anesthesia, Hugh C Hemmings MD, PhD.
- Clinical Anesthesiology, G, Edward Morgan, Jr.
- Morgan & Mikhail's, Clinical anesthesiology, John F. Butterworth, David C Mackey.
- Anesthesiology, David E. Longnecker.
- Miller's Anesthesiology.

XIX- Public Health

Basics of Public Health

Learning objectives

At the end of the course, the student would be able to:

- Understand the Basics concept of public health;
- Understand the Medicine progress in different periods of human history;
- Understand Health, Germ theory of disease, level of health care;
- Describe and evaluate health determinants;
- Recognized health indicators which recommended by WHO and National health
- indicators;
- Understand disease, risk factor, causation;
- Understand primary health care and family medicine.

Course Content

Basics of Public Health			
Discipline		**Behavioral and social science and medical ethics**	
Department		**Health management and administration Department**	
Course title		**Basics of public health**	
Pre-requisites			
Course code		**MED5 020**	
Academic year		**III**	
Semester	**5**	**Spring/Fall**	
Number of credits	**2**	**Knowledge**	**1**
		Practical	**1**

Week	Hours		Topics	Descriptions
	Knowledge	Clerkship		
1	**1**	**1**	History of Medicine	Brief Introduction of Medicine History in different periods of human life- from history of Medicine in Antiquity and primitive medicine to Dawn of scientific medicine, Revival of medicine and Modern medicine
2	**1**	**1**	Germ theory of disease	Definition of medicine, birth of preventive medicine, modern medicine, curative medicine, preventive medicine and community medicine
3	**1**	**1**	Health and health determinants	Definition of health, introduction of scope of health, introduction of different determinants of health such as social and economic environment, physical environment, and the person's individual characteristics and behaviors.
4	**1**	**1**	Essentials of public health	Introduction of public health, purpose and scope of public health, components of public health, importance of public health
5	**1**	**1**	Essentials of public health	Monitoring health status, Diagnose and investigate health problems, information, education and people empowerment, Community mobilization, Development of policy and plans, Enforce laws and regulations that protect and ensure public health and safety, Link people; to needed personal health services, Assure a competent public and personal health care workforce, Evaluation Effectiveness, Accessibility, and Quality of health services, and Conducting research for new insights and innovative solutions to health problems.

6	**1**	**1**	Concepts of health and disease	Concepts of health, changing concept of health, Biomedical concept, Ecological concepts, sociological concept, Holistic concept, Definitions and Dimensions of health.
7	**1**	**1**	Concepts of quality of life and standards of life	Introduction of quality of life, Concepts of well-being, Standards of life, level of living, Physical Quality of life index
8	**1**	**1**	Health & development	Concepts of development, health and development, importance of health to development, Human Development indexes; education index, human poverty index.
9	**1**	**1**	Health Indicators	Introduction of health indicators; morbidity rate, mortality rate, dead rate, crude dead rate, life expectancy, National health services coverage indicators and WHO recommended health.
10	**1**	**1**	Health services philosophies	Health care, introduction of health care characteristic Appropriateness, Comprehensiveness, Accessibility, Feasibility, Affordability and Adequacy, level of health care.
11	**1**	**1**	Concepts of disease	Definitions of disease, illness and sickness, theory of - disease and introduction of differences between them, spectrum of disease.
12	**1**	**1**	Concepts of causation	Concepts of causation, theory of disease, Epidemiological triad, Multi-factorial causation, web of causation, natural history of disease.
13	**1**	**1**	Risk factors	What is Risk factor? Risk factors and health problems, high risk group people, risky behavior.
14	**1**	**1**	Primary Health Care (PHC)	Definition, types of primary health care, Alma-Ata declaration principles of PHC
15	**1**	**1**		BPHS Element's: Maternal and newborn care, Child health and immunization, Public nutrition, Communicable Diseases Control, Mental health, Disability and physical rehabilitation, Eye care & Regular supply of Essential drugs.
16	**1**	**1**	Family medicine	Introduction of family medicine, principles of family medicine, general practice or family medicine, Basics and foundation of family medicine.

XX- Behavioral Sciences and Health Education

Learning objective

At the end of the course, the student would be able to:

- Understand the concept of behavioral sciences and health education promotion;

- Understand human behavior and its application in patient care;
- Use principles of ethics in common clinical situations and dilemmas;
- Understand the concept of motivation, its impact on human behavior and illness related behavior;
- Identify different social and anthropological factors operating upon health and disease states;
- Understand different types of emotions and their impact on health of the individual
- Define learning; comprehend different types of learning and conditioning. State methods of effective learning and demonstrate application of learning in treatment;
- Understand different cognitive processes, comprehend memory process, describe short term memory and differentiate with long term memory;
- Use principles of ethics in common clinical settings;
- Deal with the common psychological reactions seen in Doctor- patient relationship; Comprehend concept of thinking and its application to health care;
- Understand health education and contents of health education;
- Discuss the principles and process of communication for health education.

Course Contents

Behavioral science & Health Education			
Discipline		**Behavioral and social science and medical ethics**	
Department		**Behavioral science/ health education**	
Course title		**Behavioral science & health education**	
Course code		**MED6 021**	
Academic year		**III**	
Semester	**6**	**Fall/Spring**	
Number of credits	**1**	**Knowledge**	**1**
		Practical	**1**

Week	**Hours**		**Topics**	**Descriptions**
	Knowledge	**Practical**		
1	**1**		Introduction to Behavioral Sciences	Traditional vs holistic medicine, what are behavioral sciences?, biopsychosocial model of health care, pharmacological interventions (NPIs)in clinical practice
2	**1**		Introduction to Behavioral Sciences	Crisis intervention/ disaster management, conflict resolution, breaking the bad news, empathy amongst medical students
3	**1**		Medical Ethics Professionalism and Doctor- Patient Relationship	Relevance of ethics in the life of doctor, scope of meaning of medical ethics, common medical omissions in medical practice, ethical dilemmas in a doctor's life, rights & responsibilities of patients,

				doctor- patient relationship, professionalism in : health care : how to access attitude?
4	**1**		Use of Principles of Psychology in Medical Practice	Learning, met cognition, memory, perception
5	**1**		Use of Principles of Psychology in Medical Practice	Thinking, emotions, motivation,
6	**1**		Use of Principles of Psychology in Medical Practice	Intelligence, personality development, personality types.
7	**1**		Sociology and Anthropology in Health and Disease	Culture, beliefs, values and norms, social structure, roles, family, child rearing practices, death, and dying, health belief models, social support, role of
8	**1**		Psychosocial aspects of health and disease	Psychosocial aspect of health, psychosocial aspects of disease, reaction of the patient to illness and hospitalization,
9	**1**		Psychosocial aspects of health; and disease	Psychosocial issues in special hospital setting, common psychiatric disorders in general health settings, stress and its management, Psycho trauma
10	**1**		Psychosocial aspects of health and disease	Psychosocial aspects of pain, psychosocial aspects of sleep and awareness, psychosocial aspect of aging, coping with death, psychosocial peculiarities of dentistry.
11	**1**		Health Education/Promotion	Definition of key terms, Health, health education, health literacy, health promotion, life style, population risk continuum, prevention, primary health care, quality of life, and wellness, relationships between health education and health literacy.
12	**1**		Health education and behavior	Changing concept, aims and objective, role of health care providers, approach to health education, model of health education, contents of health education.
13	**1**		Principles of Health education	Credibility, interest, participation, motivation, comprehension, reinforcement, learning by doing, known to unknown, setting on example, good human relation, feedback.
14	**1**		Practice of health education	Individual aids, methods in health communication, individual approach, individual approach, group approach, mass approach- education of the general public.
15	**1**		Communication for health education	The communication process, types of communication.
16	**1**		Communication for health education	Barriers of communication, health communication, functions of health communication.

XXI- Public Health Nutrition

a- Learning objectives

At the end of the course the student should be able to:

- Understand development of nutrition in public health;
- Describe the main food components (carbohydrates, proteins, fats, vitamins and minerals) and their dietary, sources;
- Express human nutritional requirements;
- Understand the development of food based dietary guidelines;
- Describe the deficiency disorders (both macro & micro-nutrimental status);
- Explain healthy diet and nutrition education & promotion;
- Describe the various methods of measuring the nutritional status;
- Assess the nutritional status of the community;
- Describe and prioritize the nutritional problems in Afghanistan;
- Define the importance of food and nutrition policy;
- Describe the nutritional programs in Afghanistan;
- Understand the evaluation of nutrition status; Identify food safety.

Skills

- Nutritional status assessment in community (for exercise)
- Food adulteration

Course Contents

Public health nutrition				
Discipline			**Behavioral and social science and medical ethics**	
Department			**Behavioral science/ health education**	
Course title			**Public health nutrition**	
Course code			**MED6 020**	
Academic year			**III**	
Semester	**6**		**Fall/Spring**	
Number of credits	**1**		**Knowledge**	**1**
			Practical	

Week	**Hours**		**Topics**	**Descriptions**
	Knowledge	**Practical**		
1	**1**		The nutrition science basis to public health nutrition	The origins of modern nutrition science, discovery of nutrition, dietary imbalance and chronic disease.

2	**1**		Main food component:	Macronutrient (protein, fat, carbohydrate) Micronutrient(Minerals, Ca, Fe, Na, cl, Mg, K, I, Cu
3	**1**		Vitamins	Vitamin A, Vitamin D, E, K, PP, Vitamin B-Complex
4	**1**		Nutrition science into twenty- first century	Molecular Nutrition paradigm, New nutrition science paradigm, The public health context to public health nutrition (Socio-ecological approach, Lifestyle approach. Biological approach.
5	**1**		Development of food based dietary guidelines	Food selection guides, Future priorities in relation to public health nutrition, Development of new dietary guidance concepts
6	**1**		Mothers and infants	Mothers (Nutrition requirements in pregnancy, Nutrition and the fetal origins of adult - health hypothesis, Dietary intervention in pregnancy)
7	**1**		Infants	Breast feeding, HIV and breast feeding, Contraceptive effect of breast feeding, Barrier of breast feeding, Complementary feeding practice, Monitoring the growth of infants and child.
8	**1**		Children and adolescents	Basic model of planned promotion of population health, Childhood and adolescent nutrition, and health, Determinants of child and adolescent nutrition.
9	**1**		Classifying the food environment	Evidence for environment determination of Nutrition behaviors in youth (Parent and family influence, School influence, Neighborhood influence, Macro-level environment, Food environments and habitual nutrition Behaviors
10	**1**		Older/adults	Physiological basis of food requirements in later life, Malnutrition, Cardiovascular disease, metabolic syndrome and obesity, Nutrition intervention in later life
11	**1**		Obesity prevention	The obesity problem, Concept in obesity prevention, Influence hosts, vectors, and environment, Obesity I prevention in community, Obesity prevention in " national level
12	**1**		Promotion and communication	What is a healthy, diet? The behavioral basis of eating and drinking (Why nutrition promotion, Nutrition Education or nutrition promotion, Demand or supply side, Change methods: designs and evaluate, three methodological paradigms, setting for nutrition promotion, Communication and the food consumer.
13	**1**		Policy and politics	Why is public health nutrition policy important? Where is public health nutrition policy made? The

				politics of public health nutrition policy, Advocacy, Challenges for professional practice
14	**1**		Food value	Food necessity, Energy necessity, Protein, fat and carbohydrate necessity, Balanced diet
15	**1**		Evaluation of Nutrition status	Clinical examination, Anthropometry Biochemistry and lab examination, Functional evaluation
16	**1**		Food safety	Food safety, food chain, danger zone, summary

XXII- Environmental & Occupational Health

a- Learning objectives

At the end of the course the student should be able to:

- Describe the physical environment inside the home, at the workplace and in the community, and its impact on health and disease;
- Describe the family environment;
- Suggest appropriate methods for improving the internal/external environment;
- Define safe water. Describe the sources of water (tap, hand pump, well);
- State the criteria (national and WHO) for safe water;
- Describe appropriate methods for making water safe at the domiciliary level;
- Describe sources of waste and methods of waste control at individual and community levels.
- Define air pollution, causes of air pollution and describe appropriate measures of control:
- Describe the effects of noise and radiation on health;
- Describe the common vectors of diseases and methods of vector control;
- Describe the various insecticides that are used for vector control;
- Describe insecticide resistance;
- Occupational health in health workers; Medical measures, engineering measures, Legislation;
- Monitoring the workplace, Control of occupational exposures, toxic chemicals, physical factors, biological agents;
- Occupational health in health worker; Organization, diagnosis and prevention of diseases in health workers, Identification of occupational health problem in special group, Identification of occupational health problem in special group.

Course content

Environmental & Occupational Health				
Discipline			**Behavioral and social science and medical ethics**	
Department			**Environmental Health**	
Course title			**Environmental and occupational health**	
Course code			**MED7 020**	
Academic year			**IV**	
Semester		**7**	**Fall/Spring**	
Number of credits		**1**	**Knowledge**	**1**
			Practical	

Week	Hours		Topics	Descriptions
	Knowledge	Practical		
1	**1**		Environmental health	Definitions and General information of Environmental health
2	**1**		Personal environment	Children, young people, elderly
3	**1**		Air	Air pollutant, indoor and outdoor air pollution, general methods for control
4	**1**		Food	Food borne illness and causes, inorganic and organic chemical contaminant and additives, antibiotic and hormone use in farm animal, care in food preservation and handling, food sanitation program
5	**1**		Water	General information, sources of drinking water, human uses of water, ways of human exposure, impact of waterborne diseases, drinking water and chemicals, drinking water standards, water - purification processes
6	**1**		Waste	Liquid waste, solid waste
7	**1**		Noise	General information, type of noise, effects of noise exposure, control of noise
8	**1**		Radiation	General information, types of radiation, sources of radiation exposure, radiation protection
9	**1**		Rodents and insects	Rodent-related zoo noises, insects, control, insecticides
10	**1**		occupational health	Definitions and General information of occupational health

11	**1**		Type and sources of occupational exposures	Physical, chemical, biological, mechanical, psychosocial.
12	**1**		Occupational diseases	Diseases due to physical agents, chemical agents, biological agents, psychological origin, occupational (cancer, occupational dermatosis
13	**1**		Occupational health in health workers	Medical measures, engineering measures, Legislation
14	**1**		Monitoring the workplace	Control of occupational exposures, toxic chemicals, physical factors, biological agents
15	**1**		Occupational health in health worker	Organization, diagnosis and prevention of diseases in health workers.
16	**1**		Identification of occupational health problem in special group	Identification of occupational health problem in special group

XXIII- Epidemiology

a- Learning objectives

At the end of the course, student should be able to:

- Understand the basic concepts and application of Epidemiology;
- Describe epidemiological measures of health and diseases;
- Describe the epidemiological measures of health and diseases: association and impact;
- Differentiate between different types of studies i.e. cross-sectional, ecological, cohort, case-control, and intervention studies;
- Interpret the results of epidemiological studies;
- Understand the prevention strategies;
- Know epidemiological surveillance and routine data;
- Describe screening and diagnostic tests.

Course Content

Epidemiology			
Discipline		**Behavioral and social science and medical ethics**	
Department		**Epidemiology**	
Course title		**Introduction to Epidemiology**	
Course code		**MED8 020**	
Academic year		**IV**	
Semester	**8**	**Fall/Spring**	
Number of credits	**2**	**Knowledge**	**2**
		Practical	

Week	Hours		Topics	Descriptions
	Knowledge	Practical		
1	2		Basic concepts and application of Epidemiology	Studying epidemiology; distribution and determinants of health status or event; the epidemiological approach: what, who, where, when, why; models of causation of diseases.
2	2		Basic concepts and application of Epidemiology	Natural History of diseases; applications of epidemiology in public health: community health assessment and priority setting, evaluating health interventions and programs, preventing diseases and promoting health, improving diagnosis, treatment and prognosis of clinical diseases
3	2		Epidemiological measures of health and diseases Frequency	Definition of a case; and measure of diseases frequency: prevalence, incidence, risk or cumulative incidence, odds and incidence rate
4	2		Epidemiological measures of health and diseases: Frequency	Uses of frequency measures and crude and specific rates: standardized rates, direct standardization and in-direct standardization
5	2		Epidemiological measures of health and diseases: association and impact	Measures of exposure effect and impact: relative measures, risk ratio, rate ratio, odds ratio, absolute measures, attributable (absolute) risk, population attributable (absolute) risk and population attributable fraction
6	2		Epidemiological measures of health and diseases: association and impact	Selection of appropriate measure for different study design; cross-sectional, ecological, cohort study, case-control, and intervention study
7	2		Cross-sectional studies	What is a cross-sectional study? Descriptive and analytical studies, Study design, sampling, data collection
8	2		Cross-sectional studies	Analysis, and strengths and weaknesses

9	**2**		Ecological studies	What is an ecological study? Why study groups? Multi-group and time-trend studies, analysis and interpretation
10	**2**		Cohort studies	What is a cohort? Types of cohort study? Study design: selection of the study population, exposures, follow-up and outcomes, Analysis Strengths and weaknesses
11	**2**		Case-control studies	Study design, hypothesis, selection of cases, selection of controls, and measuring exposures, Analysis and interpretation, bias, confounding, and strengths and weaknesses.
12	**2**		Intervention studies	Types of intervention study, study design, selection of population, allocation of treatment regimens, efficacy and effectiveness, other types of study design
13	**2**		Intervention studies	Measuring outcome, analysis, interpretation, ethical issues, and strengths and weaknesses
14	**2**		Interpretation of the results of epidemiological studies	Biases: selection bias, information bias, differential misclassification, non-differential misclassification and avoiding information bias; and confounding and control of confounding, role of chance Determining a cause-effect relationship: temporal dose-response, strength of association.
15	**2**		Prevention strategies	Preventive medicine, approaches to prevention, primary prevention, secondary prevention, ternary prevention, and high risk strategies versus population strategies, Epidemiological surveillance and routine data, public health surveillance, communicable diseases.
16	**2**		Screening and diagnostic tests	Definition and purpose of screening, mass or targeted screening, reliability and validity of screening test, predictive value, ethics in screening and criteria for screening, Evaluating screening program: relative burden of diseases, feasibility, effectiveness, biases, cost and study design for evaluating screening

XXIV- Biostatics

a- Learning Objectives

At the end of the course the student should be able to:

- Describe the process of measurement;
- Describe the type of studies;
- Calculate and present frequency distribution;
- Familiarize with Summary Statistics: central location and measure of dispersion;
- Describe the probability concepts;
- Familiarize with binomial Probability distribution;

- Describe normal probabilities distribution;
- Introduction to statistical inference;
- Basics of Hypotheses testing;
- Basic of confidence intervals;

Course Contents

Basic Biostatistics			
Discipline		**Behavioral and social science and medical ethics**	
Department		**Biostatistics**	
Course title		**Basic biostatistics**	
Pre-requisite		**Epidemiology**	
Course code		**MED11 020**	
Academic year		**V**	
Semester	**11**	**Spring/Spring**	
Number of credits	**2**	**Knowledge**	**2**
		Practical	

Week	**Hours**		**Topics**	**Descriptions**
	Knowledge	**Practical**		
1	**2**		Measurement	What is Biostatistics? Organizing data, type of measurements, data quality, and exercise
2	**2**		Type of studies: surveys	Simple random samples, table of random digits, other types of probability samples.
3	**2**		Type of studies: comparative studies	The basics, explanatory variables and response variable, confounding, factors and treatments, random assignment of treatment, blinding and ethics.
4	**2**		Frequency Distribution: Stem-plots	Shape, location, spread, additional illustrations of stem-plots, splitting stem values, how many stem values, back to back stem-plots, Frequency count from stem-plots, frequency tables, class-interval frequency table, additional frequency charts
5	**2**		Summary statistics: central location	Mean, mode, median and their comparison; range; quartiles, 5 points summary and inter quartile range; and box plot, Variance and standard deviation (SD), facts about SD. and selecting summary statistics
6	**2**		Probability concepts	What is probability? Types of random variables, discrete random variables, continuous random variable more rules and properties of probability

7	**2**		Binomial Probability distribution	Binomial random variables, calculating binomial probabilities, cumulative probabilities, probability calculators, expected value and variance of binomial random variables, and using the binomial distribution to help make judgment
8	**2**		Normal probabilities distribution	Normal distribution: A Heuristic example, characteristics of normal distributions. 7 rule, and Determining normal probabilities: standardizing values, the standard normal table probabilities for ranges of normal random variables
9	**2**		Normal probabilities distribution	Finding values that correspond to normal probabilities: terminology and notation, and assessing departures from normality.
10	**2**		Introduction to statistical inference	Concept: sampling variability, parameters and statistics; sampling behavior of mean: simulation experiment, the sampling distribution of mean, the effect of increasing the sample size; and sampling behavior of count and proportion: the normal approximation to the binomial
11	**2**		Basics of hypotheses testing	The null and alternative hypotheses, test statistics, p-value, significance level, one sample z-test, and power and sample size
12	**2**		Basic of confidence intervals	Introduction to estimation, confidence level for μ when δ is unknown, sample size requirements, and relationship between hypothesis testing and confidence interval
13	**2**		Inference about mean	Estimated standard error, student's t distribution, one sample test, confidence interval for mean, paired sample, conditions for inference, sample size and power
14	**2**		Comparing independent mean	Paired and independent samples, exploratory and descriptive statistics, inference about mean difference, equal variance procedure, conditions for inference, sample size and power
15	**2**		Comparing Several Means (One-Way Analysis for Variance)	Descriptive statistics, the problem of multiple comparison, Analysis of Variance (ANOVA), Post
16	**2**		Comparing Several Means (One- Way Analysis for Variance)	The equal variance assumption, introduction to nonparametric tests.

XXV- Health Management

Learning objectives

The Management and Leadership module is designed to provide students with the tools to analyze and practice management and leadership as it relates to health and social care.

At the end of the course, the students would be able to:

- Understand the concept of management and leadership;
- Understand the role, skills and qualities of managers and describe three fundamental rules for managing others;
- Describe and evaluate the developments in leadership and management thinking; review and critically analyze management and leadership theories and how they can be applied in practice;
- Identify factors that determine organizational cultures and their impact on effective management and leadership.

Course Content

Health Management			
Discipline		**Behavioral and social science and medical ethics**	
Department		**Health Management and administration Department**	
Course title		**Health Management**	
Course code		**MED10 020**	
Academic year		**IV**	
Semester	**10**	**Fall/Spring**	
Number of credits	**1**	**Knowledge**	**1**
		Practical	

Week	**Hours**		**Topics**	**Descriptions**
	Knowledge	**Clerkship**		
1	**1**		The basics of management	The basics of good management, complicated easy management and simple hard management concepts, fundamental rules of managements, nature of management, need of managers for organizations
2	**1**		Managerial skills and qualities	Conceptual skill, human skill, managerial competencies, technical skill, managers' roles and qualities
3	**1**		Management Functions	Principles of management, functions of management; leading, organizing, coordinating and controlling
4	**1**		Management Functions	Coordinating, controlling, Key differences between leaders and managers
5	**1**		Organization	Definition of organization, types of organizations, functions of an organization, external and internal

				Factors affect organizations, organizational behavior, organizational structure and organizational chart.
6	**1**		Team building	Definition of team, definition of group, differences among team and group, team development steps; forming, storming, Norming, performing, skills required in building a team
7	**1**		Human resource management	Activities of human resource management; human resource planning, Job analysis, human resource cycle, human resource management in health sector, human I resource development in health care.
8	**1**		Recruitment process	key stages in the recruitment and selection process; Job description, person specification, advertisement, further particular, short listing, Interview, References, final decision. Discrimination, Favoritism, Nepotism and corruption
9	**1**		Performance Management	Theoretical roots of performance management, a performance management system, appraisal, appraisal interview, appraisal and career development
10	**1**		Evaluation performance	Needs for measuring and evaluating performance, types of evaluating performance, productivity, capacity, capacity utilization, benchmarking
11	**1**		Quality Management	Concepts of quality, quality features, the importance of quality, quality chain, total quality management, stages of quality management.
12	**1**		Change Management	Needs for implementing change in organization, factors causing change, fundamental changes; change of mission, strategy, culture and leadership, non-fundamental changes, implementing change
13	**1**		Time Management	Concepts of time management, self-management, developing time management skills. Strategies on using time, priority setting
14	**1**		Supervision, Monitoring & Evaluation	Definition of supervision, monitoring and evaluation, differences between supervision, monitoring and; evaluation, skills required for effective supervision monitoring and evaluation, why do monitoring and evaluation
15	**1**		Health Management Information System (HMIS)	Introduction of HMIS, Importance of HMIS, expectations of a country health information system, Sources of information about the country health information system.
16	**1**		Funding Health Care System	key functions involved in funding health care system, community financing, loans, grants, donations, out-of-pocket payments, private health insurance, purchasing, and revenue collection.

XXVI- Health Policy and health Economics

Learning objectives

At the end of the course, the students would be able to:

- Understand concept health policy;
- Understand basics concepts of health economics;
- Describe the political systems, factors influencing policy;
- Understand the steps of policy formulation;
- Understand Afghanistan health policy, BPHS and EPHS;
- Understand different theories about economy, health economy;
- Identify demand and supply on health care financing;
- Describe and evaluate the health insurance and health financing:
- Identify challenges to health financing, different options for health financing, health sector reform and options for financing.

Course Contents

Health Policy & Health Economics				
Discipline			**Behavioral and social science and medical ethics**	
Department			**Health Management and administration Department**	
Course title			**Health Policy & Health Economics**	
Pre-requisite			**All modules of public health**	
Course code			**MED11 020**	
Academic year			**IV**	
Semester	**11**		**Spring/Fall**	
Number of credits	**2**		**Knowledge**	**1**
			Practical	

Week	**Hours**		**Topics**	**Descriptions**
	Knowledg	**Practical**		
1	**1**		Introduction of policy	Definition of policy, importance of policy, Policy from different views, the importance of international health policy analysis
2	**1**		Policy and politics	How dose politics affect participation in health policy, the state's role in health?
3	**1**		Political systems and health policy	Defining the political system, participation in public 1 policy making, forms of participation, Liberal democratic system, Egalitarian-authoritarian system, Traditional- in egalitarian system, Populist regimes, authoritarian-in egalitarian system

4	**1**		Exogenous factors affects policy	Introduction of external factors which affect policy and decision making, Situational factors, environmental factors, Structural factors and culture factors
5	**1**		Introduction of system	Definition of system, level of system, importance of the system, brief of systemic thinking.
6	**1**		Afghanistan health system	Introduction of country health system, Top health priorities of Afghanistan, briefly introduction of Afghanistan health policy and strategy
7	**1**		Basic Package of Health Services (BPHS)	Introduction of Basic Package of Health Services (BPHS), importance of BPHS, components of BPHS, level of services of BPHS; Health Post, Sub Center, Basic Health Center, Comprehensive Health Center
8	**1**		Essential Package of Hospital Services (EPHS)	Introduction of Essential Package of Hospital Services (EPHS), components of EPHS, level of services; District hospital, Provincial hospital, regional hospital.
9	**1**		Introduction of Health economics	Introducing different economic theories, Concept of health economics; utility, resources
10	**1**		introduction of Health Economics	Production, commodity, Market, Welfare, Price, Cost, Fixed cost, Variable cost and Opportunity cost
11	**1**		Health financing	Health financing function, collection of revenue, pooling risk, allocation of resources and purchasing Health services, public private partnership.
12	**1**		Health Insurance	National Health Services System, social health insurance, community based health insurance, private health insurance
13	**1**		Challenges of Health Insurance	Domestic resources mobilization, Introduction user fees, promoting pooling of risk, increment of efficiency and equity in public expenditure
14	**1**		Financing and health sector reform	Introduction of health sector reform, financing strategy, socio-economic development, fiscal capacity, implement ability, political accountability
15	**1**		Judgment on types and options of financing	Introduction of equity in provision of health services, risk pooling, economical affects, financing options, general revenue.
16	**1**		Social Health Insurance	Introduction of social health insurance, equity, risk pooling, economical effects, implement-ability.

Textbooks & Reference books Recommended (last edition)

- Roger Detels, Oxford Textbook of Public Health,
- Philip C, Calder and Agneta Yonge. PHN, -Public Health Nutrition,

- Ann Aschengrau. Essentials of Epidemiology in Public health,
- L Fleming Fallon. Essentials of Public Health Management,
- Marry Jane Scneider, Introduction to Public Health.
- Frank A. Saloan & Chee- Ruey Hsieh. Health Economics,
- Sari Edelstein, Nutrition in Public Health,
- Cherileyn Tillman, Occupational Health and Hygiene,
- David L. Goetsch.Occupational Safety and Health,
- Daniol Wayne: Biostatistics, a foundation for analysis in the health sciences
- James F. Jekel; Epidemiology, Biostatistics and Preventive Medicine.
- BK Mahajan. Methods in Biostatistics.
- Marit B, Stian Lydersen, and Petter Laake.Medical Statistics for Clinical and
- Epidemiological Research, Tom J. Swindennan.
- Mike Saks and Judith Allsop; Researching Health,
- Stephen B. Hulley, Steven R. Comings, Warres S. Browner.
- Designing Clinical Research,
- O.J. Sahler, Jack Carr; The Behavioral Science & Health Care,
- Nel R. Carlson. Harrold Miller, C. Donald Hem; Psychology, the Science of Behavior,
- Barbara Fadem; Behavioral Science.

XXVII- Dermatology & Venereal Diseases

Goal

Skin diseases are quite prevalent in the community and a large number of patients attending to any hospital OPD come with the complaints related to skin diseases. Most skin diseases can be easily diagnosed and managed with adequate amount of training at the MD level. This syllabus is designed as a comprehensive course for graduates in dermatology and venereal diseases. The goal of the course is to teach students to diagnose and manage common skin and venereal diseases.

Learning objectives

a- knowledge

At the end of the training the students should be able to:

- Diagnose and manage common skin diseases, sexually transmitted diseases and leprosy;
- To diagnose and manage common medical emergencies related to skin diseases, leprosy and sexually transmitted diseases;
- To familiarize them with the common laboratory diagnostic skills which help in the confirmation of diagnosis?
- To train them for preventive measures at individual and community levels against communicable skin diseases including sexually transmitted diseases and leprosy;
- To develop a compassionate attitude towards the patients and their attendants.

b- Skills

- History taking in dermatology, sexually Transmitted Diseases (STD) and leprosy;
- Clinical examination and description of cutaneous findings in a systematic way in dermatology, sexually transmitted diseases and leprosy;
- To have a broad idea and approach to manage common skin diseases, sexually transmitted diseases and leprosy;
- Systematic examination in relation to dermatologic diseases;
- To develop skills to do day-to-day common laboratory tests and their interpretation which help in the diagnosis.

Course Content

Dermatology & Venereal Disease			
Discipline		**Clinical science and skills**	
Department		**Health Management and administration Department**	
Course title		**Health Policy & Health Economics**	
Pre-requisite		**All modules of public health**	
Course code		**MED09 31**	
Academic year		**V**	
Semester	**9**	**Spring/Fall**	
Number of credits	**3**	**Knowledge**	**2**
		Practical	**1**

Week	**Hours**		**Topics**	**Descriptions**
	Knowledge	**Practical**		
1	**2**	**1**	Anatomy of the skin, Physiology of the skin, Sign and symptoms of the skin diseases	Structure of epidermis, dermis and hypo dermis. Vessels, nerves and corpuscles. Sweats and sebaceous glands, hairs and nails. Protective function, heat regulation function, secretion and excretion, gaseous exchange through skin, sense organ, metabolic function, storage function and absorption. Subjective symptoms (pruritus), objective signs (primary and secondary lesions).
2	**2**	**1**	Histopathology terms, essentials of local treatment	Histopathology of the skin diseases. Solution, lotion, ointment, cream, paste and powder, (methods of topical application) occlusive bandage, intra lesional injection
3	**2**	**1**	Eczema and Dermatitis	Etiologic classification of eczema, histopathology, clinical study (Atopic dermatitis, Seborrheic Dermatitis
4	**2**	**1**	Photo Dermatitis	Contact dermatitis, photo dermatitis, Diagnosis

			Contact Dermatitis. Diagnosis and Treatment	and differential diagnosis. Treatment general measures, specific treatment.
4	**1**	**1**	Allergy and Urticaria	Antigen and antibody, allergic reactions, shock anaphylactic, non allergic reactions (terms). Definition and Etiology of urticaria, clinical study, diagnosis and treatment
	1		Pyoderma	Etiology, superficial infection (impetigo, intertrigo, perleche and paronychia). Cellulitis, Erysiplas, folliculitis, Sycosis Barbae, Furuncle, Carbuncle, hidradenitis suppurativa
5	**2**	**1**	Scabies and Pediculosis	Scabies, Epidemiology, Immunology, Clinic, Clinical froms, treatment .Pediculosis, Pediculosis Capitis, Corporis and Pubis
6	**2**	**1**	Psoriasis, Lichen planus, Pityriasis rosea	Lichen planus (etiology, histopathology, clinical study, diagnosis, differential diagnosis, clinical forms and treatment). Pityriasis rosea (definition, etiology, clinical study, course, differential diagnosis and treatment). Psoriasis (Etiology, pathology, histopathology, clinical study, clinical forms, diagnosis, differential diagnosis and treatment).
7	**2**	**1**	Dermatophytosis, Tinea ungium, Tinea Versicolor and Candidiasis	Classification, tinea capitis, tinea faciei, tinea barbae, tinea corporis, tinea cruris, tinea axillaries, tinea manum and tinea pedis. Onychomycosis (tinea ungium), pityriasis versicolor, Candidiasis (oral candidiasis, candidia balanitis, flexural candidiasis, napkin candidiasis, paronychia candidiasis), diagnosis of fungus (clinical and laboratory), treatment of fungal infections
8	**2**	**1**	Bullous diseases, Bullous pemphigoid, Erythema multiformis, Burning	Introduction, Pemphigus (pemphigus vulgaris, pemphigus vegetans, pemphigus foliaceous, pemphigus erythematous, differential diagnosis and treatment). Pemphigoid (Etiology, pathogenesis, clinical study and treatment). EM (Etiology, clinical study, clinical forms and treatment). Durhing (Etiology, clinical study, histology, diagnosis and treatment).
9	**1**	**1**	TB of the skin	Classification of TB cutis, Tuberculosis chancre, lupus vulgaris (etiology, clinic, diagnosis, complication and treatment). Scrofuloderma (etiology, clinic, course and treatment), TB cutis verrucosa (clinic, diagnosis and treatment).
	1		Cutaneous Leishmania,	Etiology and epidemiology of leishmania, clinic: and diagnostic criteria, clinical forms, course and treatment
10	**1**	**1**	Anomalies of Pigmentation	Melanoderma (etiology and pathogenesis), chloasma (etiology, clinic and treatment),

				Ephelides (etiology, clinic and treatment), leukoderma (classification), vitiligo (Definition, etiology, pathogenesis, epidemiology, clinical study, clinical forms, differential diagnosis and treatment
	1	**1**	Viral skin infection, Warts and Molluscum contagiosa	Viral infection (definition and classification of skin viral disease), Herpes simplex (etiology, clinic and treatment), Herpes zoster (etiology, clinical forms and treatment). Warts (etiology, pathogenesis Molluscum contagiosum (etiology, pathogenesis, clinical study, clinical forms, diagnosis and treatment.
11	**2**	**1**	Tumors of the skin, Malignant Melanoma	Classification, BCC (Clinic, clinical forms, diagnosis, treatment), SCC (definition, etiology, clinical study, course diagnosis and treatment). MM (etiology, clinical forms, histopathology, diagnosis, course and treatment), paget's disease (mammary pagets and extra mammary pagets).
12	**1**	**1**	Tumors of the skin, Malignant Melanoma	
	1		Leprosy	Classification, clinical forms, tuberculoid, borderline, lepromatous, deformities, reaction, diagnosis, differential diagnosis and treatment
13	**1**	**1**	Rosacea, Discoid Lupus Erythematous	Rosacea (etiology, clinical study, differential diagnosis and treatment). DLE, Etiology and pathogenesis, Clinical features, clinical forms, treatment
	1		Acne vulgaris	Acne vulgaris (etiology, pathogenesis, clinical study, clinical forms, differential diagnosis and treatment).
14	**1**	**1**	Diseases of the hair	Diseases of the hair (classification, alopecia, hypertrichosis
			diseases of the nail	Diseases of the nail (etiology, cutaneous nail disorders, special terms of nail dystrophy
15	**2**	**1**	STB and Syphilis	Classification of STD, Syphilis (history, primary Syphilis, secondary syphilis. Latent and tertiary syphilis (syphilis in HIV disease, differential diagnosis, serology of syphilis and management of syphilis).
16	**2**	**1**	Chancroid and Lymphogranuloma venereum, Gonorrhea	Chancroid (etiology, clinical study, clinical forms, diagnosis and treatment). Lymphogranuloma venereum (etiology, pathogenesis, epidemiology, symptoms, diagnosis and treatment). Gonorrhea: definition, acute gonorrhea (in men and women), chronic gonorrhea (in men and women), complications of gonorrhea, treatment of gonorrhea.

b- skills (by demonstration)

- Skin diseases like acne vulgaris, scabies, pyoderma- pediculosis, fungal infection of skin, Alopecia, sexually transmitted diseases, auto immune diseases, bullous

disorders, papulosquamous diseases etc. are demonstrated and discussed during the practical period.

Textbooks & Reference Books recommended (last edition)

- Fitzpatrick Dermatology in General Medicine, Claus Wolf.
- Clinical Dermatology, Thomas P. Habif.
- Andrews Diseases of the Skin, William D. James.
- Harper's Textbook of Pediatrics Dermatology, Alan Irvine
- Dermatology, Jean L. Bolognia.
- Rook's Textbook of Dermatology Tony Burns, Stephen Breathnach.
- Principles of Dermatology, James J. Marks, Jeffery J. Miller.

XXVIII- Internal Medicine

Goals

The goals of this course are to provide training in the discipline of internal medicine, to provide exposure to path physiology, diagnostic methods, and treatment methods used in this field. It focuses on diagnostic decision-making, case presentation skills, History and Physical skills, Therapeutic decision making, Communication skills, and Professionalism.

Learning Objectives

A- Knowledge

At the end of the Training, each student must be able to:

- Understand the various manifestations of diseases;
- Understand the basic principle of history taking and clinical examinations;
- Elicit a detailed history; perform a thorough physical examination including mental status;
- Examination of an unconscious patient;
- Correlate the clinical symptoms and physical signs to make a provisional anatomical, physiological, etiopathological diagnosis along with the functional disability and suggest relevant investigation;
- Interpret reasonably the relevant investigations;
- Professionally present and discuss the principals involved in the management of the patient, initiate first line management and outline short-term and long term management;
- Manage acute medical emergencies like acute myocardial infarction, acute pulmonary edema, acute anaphylactic and hypovolemic shock, status asthmaticus, tension pneumothorax, hemoptysis, gastro-intestinal bleeding, and diabetic coma.

B- Clinical Skills

- Students should be able to elicit the patient's chief complaint, history of present illness, past medical history, social, family, occupational histories and complete a review of systems;
- Perform a physical examination in a logical, organized and thorough manner;

- Demonstrate the ability to construct an assessment and plan for an individual patient organized by problem, discussing the likely diagnosis and plan of treatment;
- Demonstrate the ability to record the history and physical in a legible and logical manner;
- Demonstrate the ability to write daily progress notes on the ward and appropriate outpatient progress notes;
- Formulate a differential diagnosis based on the findings from the history and physical examination:
- Use the differential diagnosis to help guide diagnostic test ordering and its sequence;
- Participate in selecting the diagnostic studies with the greatest likelihood of useful results;
- Recognize that tests are limited and the impact of false positives/false negatives on information;
- Describe the range of normal variation in the results of a complete blood count, blood smear, electrolyte panel, general chemistry panel, electrocardiogram, chest X-ray,
- Urinalysis, pulmonary function tests, and body fluid cell counts;
- Develop the skills of reading electrocardiograms, and basic X-rays;
- Describe the results of the above tests in terms of the related path physiology;
- Understand test sensitivity, test specificity;
- Understand the importance of personally reviewing X-ray films, blood smears, etc. to assess the accuracy .and importance of the results;
- Describe factors that frequently alter the effects of medications, including drug interactions and compliance problems;
- Formulate an initial therapeutic plan;
- Counsel patients about how to take their medications and what to expect when they take their medications, including beneficial outcomes and potential adverse effects;
- Counsel patients on behavior changes (i.e. wt loss, tobacco, etc...);
- Monitor response to therapy;
- Understand the indications, performance, and associated complications of common internal medicine procedures;
- Acquire the skills to perform minor procedure under supervision like — IV annulations, insertion of nasogastric tube, urinary bladder cauterization, use of peak flow meter, doing an ECG etc.

Course content

Internal Medicine (Module 1)				
Discipline			**Clinical science and skills**	
Department			**Cardiopulmonary Medicine**	
Course title			**Physical Diagnosis**	
Pre-requisite			**Basic biomedical sciences**	
Course code			**ME5 023**	
Academic year			**III**	
Semester		**5**	**Spring/Fall**	
Number of credits		**4**	**Knowledge**	**2**
			Clerkship	**2**

Week	Hours		Topics	Descriptions
	Knowledge	Clerkship		
1	**2**	**2**	Semiology of Respiratory System	**Symptoms** Cough, Sputum. Hemoptysis, Chest pain, Dyspnea, Wheezing, Cyanosis, and Clubbing
2	**2**	**2**	Physical examination of Respiratory disease	Inspection of the chest, Form of the chest, Symmetry of the chest, Expansion of chest, types of respiration, Chest Palpation, Palpation of trachea, lung apices & vocal fremitus Chest Percussion.
3	**2**	**2**	Chest Auscultation	Chest Auscultation: Breath sound, vesicular breathing sound, Bronchial breathing sound, voice sound, Added sound (Rhonchi, Crepitation, Pleural Rub), Physical finding in Pneumonic consolidation, acute attack of bronchial asthma, Pneumothorax, Pulmonary emphysema & Pulmonary cavitation
4	**2**	**2**	Laboratory Exam of the Respiratory system	Sputum examination, blood exam, Urine exam, ECG, Pleural aspiration (Thoracocentesis), Chest-Ray, Bronchography, bronchoscopy, Pleural biopsy, lung biopsy, pulmonary function test
5	**2**	**2**	Semiology of Cardiovascular system	Symptoms: Dyspnea, Orthopnea, PND, Chest pain, Palpitation, Edema, Hemoptysis, Cough, Cyanosis, Hoarseness, Syncope
6	**2**	**2**	Physical examination of Cardiovascular system	**Inspection** (generalized inspection, inspection of neck vessels, point of maximal impulse, pericardial pulsations & chest malformations) Palpation of (PMI, Thrill, Heave, other pericardial pulsation. Percuss slots.

7	**2**	**2**	Auscultation	Cardiac Auscultation First heart sound, Second ; heart sound, Splitting of-heart sounds & Third heart sound, Fourth heart sound, Gallop rhythm, Opening snap, Ejection click, Pericardial Rub.
8	**1**	**1**	Cardiac murmurs & Pulse examination	Cardiac murmurs & Functional murmur. Systolic, diastolic and Continuous murmurs Pulse (rate, volume, rhythm, Corrigan pulse, Alternance, dicrotic pulse, bisference pulse, Paradoxical pulse) & Blood pressure
	1	**1**	Electrocardiogram	Clinical value of ECG. ECG leads, Waves, Intervals, Segments. ECG Interpretation (Rhythm, Rate & Axis).
9	**2**	**2**	Arrhythmias	(Sinus tachycardia, sinus bradycardia, sinus arrhythmia, atrial extra systole, premature ventricular beat .PSVT, Atrial flutter, atrial fibrillation.
10	**2**	**2**	Arrhythmias Ischemia, drug & Electrolyte change in ECG	AV- Block & Bundle Branch block. Atrial & Ventricular hypertrophy (left-right); Ischemia and infarction, ECG changes in drug effect, pulmonary infarction & electrolytes
11	**2**	**2**	Semiology of Gastrointestinal system	Symptoms: Dysphagia, Odynophagia, Aphagia, Indigestion, Abdominal pain, Aerophagia, Flatulence, Gaseousness, Heart burn, (Pyrosis), Anorexia, Nausea & Vomiting, Regurgitation, Weight gain & loss, Constipation, Diarrhea, Hematemesis, Melena, Hematochezia, Halitosis & Cacogeusia
12	**2**	**2**	Physical examination of Gastrointestinal system	inspection, Auscultation &Abdominal palpation: Complaints of patient with liver disease biliary tract disorders, physical examination of patient with liver disease and biliary tract disorders, Palpation of the Spleen, Liver & Gall bladder
13	**1**	**2**	Abdominal Percussion & Jaundice	Percussion, Jaundice, Upper GI endoscopy, Colonoscopy & Barium contrast study
	1		Symptoms in patient with blood disorder	General symptoms: fever, weight loss, weakness, specific symptoms in nervous system, eyes, ears, Mouth, CVS, GI & Genitourinary system
14	**2**	**2**	Sings in patients with blood disorder	**Physical examination of:** skin, eyes, oral cavity, lymph nodes, chest, spleen, liver, nervous system, Routine blood examination of Hb, HCT, WBC & Tests for thrombosis disorders.
15	**2**	**2**	Signs & Symptom of the Urinary tract	Pain of (urethral, bladder, prostatic, testicular & renal), Disuria, Hematuria, Pyuria, Nocturia,

				; Frequency, Ischuria, Lithuria, Pneumaturia, Oliguria, Anuria, Enuresis, Urinary incontinence, Cloudy: urine & Polyuria, Laboratory examination, casts, proteinuria, kidney function tests, Chemical analysis of blood & renal biopsy
16	**2**	**2**	Semiology of Endocrine & Complain of patient with Joint disorders	Delayed growth, Excessive growth, Skin : pigmentations, Hirsutism, Gynecomastia, Precocious puberty, Sexual infantilism, Major symptoms and signs of Addison disease, Hyper & Hypothyroidism, Cushing syndrome & Acromegaly, Symptoms& Signs in patient with joint disorders, Joint (pain, Stiffness & locking) & History taking

Internal Medicine (Module 2)				
Discipline			**Clinical science and skills**	
Department			**Cardiopulmonary Medicine**	
Course title			**Respiratory disease & Rheumatic Valvular Heart disease**	
Pre-requisite			**Internal Medicine (Module 1)**	
Course code			**MED6 023**	
Academic year			**III**	
Semester		**6**	**Spring/Fall**	
Number of credits		**4**	**Knowledge**	**2**
			Clerkship	**2**
Week	**Hours**		**Topics**	**Descriptions**
	Knowledge	**Clerkship**		
1	**2**	**2**	Acute tracheobronchitis & Chronic obstructive : pulmonary diseases (COPD type II)	Definition, Etiology, Pathology, Symptoms & Signs I and Treatment, Chronic bronchitis, Definition, pathology, predisposing factors, causes, clinical I finding, Lab exam, chest X-ray, diagnosis, complications, treatment & prognosis
2	**2**	**2**	Chronic obstructive pulmonary diseases (COPD)	Emphysema, Definition, pathology, predisposing factors, causes, clinical finding, Lab exam, chest X-ray, diagnosis, complications, treatment & prognosis
3	**2**	**2**	Bronchial asthma	Definition, etiology, incidence, asthma triggers, clinical manifestation, Chest X Ray, DDX, diagnosis, I Complications and treatment. Status asthmaticus f treatment.

4	**2**	**2**	Pneumonia	Community acquired Pneumonia, Epidemiology, incidence, clinical manifestation, Dx, Lab examination & Treatment, Pneumococcal Pneumonia, Definition, incidence, pathology, clinical finding, Lab exam, complications, Dx, Treatment & Prevention
5	**1**	**1**	Hospital acquired Pneumonia	Epidemiology, Pathogenesis, etiology, clinical finding, Dx and Treatment
	1	**1**	Bronchiectasis	Definition, etiology, pathogenesis, pathology, clinical finding, Chest X Ray, DDx, Lab exam & Treatment
6	**1**	**1**	Lung Abscess	Etiology & pathology, clinical finding, Lab exam, pathogenesis, complications, Dx, DDx, Treatment, prevention and prognosis
	1	**1**	Atelectasis	Etiology, pathology and path physiology, symptoms & signs, Chest-X-Ray, Dx, prevention and Treatment
7	**1**	**1**	Pleural disease	Pleurisy, Definition, clinical finding, chest-X-Ray and Treatment, Pleural effusion, Etiology, clinical finding, Lab exam, Chest-X-Ray & Treatment.
	1	**1**	Emphysema & Pneumothorax	Emphysema. Etiology, systemic & local manifestation and Treatment. Pneumothorax Definition, primary, secondary, traumatic & tension pneumothorax
8	**1**	**1**	Bronchogenic Carcinoma	Histological types, pathology, clinical finding, Lab 1 exam, Chest-X-Ray, complications, Dx and Treatment
	1	**1**	Pulmonary Thrombo-embolism & Idiopathic pulmonary fibrosis	Pulmonary Thrombo embolism: Predisposing factors, symptoms & signs, Lab exam, ECG, Chest-X-Ray, Dx, DDx and Treatment, inferior vena cava filter, Thrombolysis, Emboleccomy, Pulmonary Thromboendarterectomy. Idiopathic pulmonary fibrosis, Clinical manifestation, histologic finding and treatment.
9	**1**	**1**	Respiratory failure	Definition and classification, epidemiology, etiology, clinical finding and treatment
	1	**1**	Acute respiratory distress syndrome, Asbestosis, Silicosis, Pneumoconiosis & Berylliosis	ARDS: Etiology, path physiology and clinical course, clinical finding, DDx, treatment, and prognosis Asbestosis, Silicosis, Pneumoconiosis & beylliosis Epidemiology, Dx, Lab exam and treatment
10	**2**	**2**	Rheumatic fever	Definition, etiology, pathogenesis, incidence, epidemiology, pathology, clinical manifestation, Lab

				exam, course and prognosis, Dx, DDx, treatment & prophylaxis.
11	**2**	**2**	Mitral Stenosis	Etiology, pathology, clinical manifestation, ECG, Chest-X-Ray, echocardiography, DDx, complication & treatment
12	**2**	**2**	Mitral insufficiency & Mitral valve Prolapse	Mitral insufficiency, Etiology, abnormal physiology, clinical manifestation, ECG, echocardiography, Chest- X-Ray, Heart catheterization, Dx, DDx, complications, treatment, Mitral valve prolapse Definition, etiology, clinical manifestation, complication, ECG, echocardiography and treatment
13	**2**	**2**	Aortic Regurgitation	Etiology, pathology, abnormal physiology, clinical manifestations, echocardiography, Chest-X-Ray, Cardiac catheterization, Dx, DDx, complications and treatment
14	**2**	**2**	Aortic Stenosis	Etiology, pathophysiology, clinical manifestations, Chest-X-Ray, ECG, echocardiography, Cardiac catheterization and Cardio angiography, Dx, Complications and treatment.
15	**1**	**1**	Tricuspid Stenosis & Regurgitation Pulmonary valve disease	Tricuspid Stenosis, Pathophysiology, clinical manifestation, ECG, Chest-X-Ray and, treatment, Tricuspid Regurgitation Etiology, clinical manifestation, Echocardiography, ECG, Chest-X-Ray and treatment, Pulmonary valve disease, Etiology and treatment
	1	**1**	Multi valvular disease	Mitral stenosis & Aortic regurgitation, Mitral stenosis & Aortic stenosis, Aortic stenosis & Mitral regurgitation, Aortic regurgitation & Mitral regurgitation, Valve replacement
16	**2**	**2**	Infective Endocarditic	Definition classification etiology pathogenesis and pathology, clinical finding, Lab exam, Dx, Modified duke criteria, DDx, complications, Prevention and Treatment

Internal Medicine (Module 3)			
Discipline		**Clinical science and skills**	
Department		**Cardiopulmonary Medicine**	
Course title		**Cardiovascular disease**	
Pre-requisite		**Internal Medicine (Module 1)**	
Course code		**MED7 023**	
Academic year		**IV**	
Semester	**7**	**Spring/Fall**	
Number of credits	**4**	**Knowledge**	**2**
		Clerkship	**2**

Week	Hours		Topics	Descriptions
	Knowledge	Clerkship		
1	1	1	Atherosclerosis	Definition, Etiology& Pathophysiology, Coronary atherosclerosis, Effects of ischemia, Asymptomatic versus, symptomatic IHL
	1	1	Ischemic Heart Disease	Stable angina pectoris History, Physical examination, Laboratory, Treatment, Risk factor, Drugs, Revascularization, Prognosis.
2	2	2	Ischemic Heart Disease	Definition pathophysiology. Clinic, Laboratory, Diagnosis & Management of Unstable angina pectoris Prinzmetal's (variant) angina, Silent ischemia, NSTEMI, Acute coronary syndrome
3	2	2	Acute myocardial infraction (AMI)	Definition. Pathophysiology, Pathophysiology of another organs in MI, Clinical presentation, Dx, ECG, Laboratory Finding, Imaging, Management: pre hospital, hospital phase
4	1	1	Complications of AMI & their treatments	Recurrent chest pain, Arrhythmia, LVHF, RV infarction, Mechanical complication, Secondary prevention.
	1	1	Hypertensive Vascular Disease	Definition Diagnosis & Classification Prevalence and Incidence. Primary Hypertension: Genetic consideration, Effect of hypertension, History, Clinic, Target organs, Laboratory, Treatment. Hypertensive Crises.
5	2	2	Hypertensive Vascular Disease	Secondary Hypertension: Definition Kidney disease, Endocrine disorders, Aortic, Coarctation, PIH, Drug induced HT, and Treatment.
6	2	2	Congenital Heart Disease in the adult	General consideration: Erythrocytosis, Eisenmenger syndrome, Pregnancy, Infectious endocarditis, Cardiac arrhythmias, Physical exertion. Acyanotic CHD with left to right Shunt (ASD,VSD,PDA) & without shunt (Aortic stenosis, Coarctation of Aorta, Pulmonary, stenosis (Etiology, prevention, Pathophysiology of Specific defects),Cyanotic heart diseases: Tricuspid atresia, Ebstein Anomaly, TOF(Etiology, prevention, pathophysiology of Specific defects)
7	2	2	Disorders of rhythm Conduction disturbances	Normal rhythm, Sinus arrhythmia, Sinus tachycardia, Sinus bradycardia. Atrial premature beat, Paroxysmal Supra Ventricular Tachycardia,

				Arial flutter, Atrial fibrillation, Ventricular Premature beats. Ventricular tachycardia, V. flutter, V. Fibrillation Junctional rhythm.
8	**2**	**2**		Sinus node dysfunction, Atrioventricular blocks Atrioventricular scape beat and rhythm Intraventricular blocks.
9	**2**	**2**	Heart Failure	Definition, Keywords, Epidemiology, Etiology, Pathogenesis, Precipitating causes, Basic mechanisms for HF. Clinical manifestation: Symphonies & signs: Orthopnea, PND, Cheyne -Stokes respiration, Pulmonary edema, Physical Examination. Diagnosis: Lab test, ECG, CXR, Echo, ET,Dx
10	**1**	**1**		Management: For depressed & Preserved Ef HF: ACE inhibitors, ARB inhibitors, Aldosterone antagonist. Reduce home work load, Diet, Diuretics, Vasodilators, Sympathomimetic amines, Phosphodiesterase inhibitors,
	1	**1**	Cor- Pulmonale	Definition, pathophysiology, pulmonary vascular disease, clinic, Diagnosis & treatment.
11	**2**	**2**	Cardiomyopathies	Congestive (Dilated) cardiomyopathy definition and Classification, Alcoholic CM, Peripartum CM, Neuromuscular disease. Hypertrophic cardiomyopathy: Homodynamic, Clinical feature, Treatment. Restrictive cardiomyopathy: End myocardial Fibrosis, Amyloidosis, Hemochromatosis, Takotsubo cardiomyopathy. Non-compaction cardiomyopathy.
12	**1**	**1**	Myocarditis	Definition, Etiology, Viral myocarditis, Chagas myocarditis, Giant myocarditis, Lyme myocarditis (Etiology, Clinic & Management)
	1	**1**	Pericardial diseases	Normal function of the pericardium, Acute Pericarditis and Pericardial effusion,
13	**1**	**1**		Cardiac tamponade, Chronic pericardial effusion, clinical constrictive pericarditis, post cardiac injury syndrome. Other diseases of the pericardium.
	1	**1**	Syncope, Cardiovascular collapse, sudden Cardiac Death, Cardiac Arrest, Cardiac Asystole	Definitions, pathophysiology, etiology, clinical manifestations, diagnosis & management.
14	**2**	**2**	Shock	Definition, general consideration .classification Specific types of shock, diagnosis and management

15	**2**	**2**	Cardiovascular diseases in moil - cardiac surgery patient	Cardiovascular consideration: Preoperative assessment of CV risk: Major predictors, Intermediate predictors, Minor predictors, Hemodynamic: monitoring, Medical therapies, Specific conditions, Common postoperative CV complications.
16	**2**	**2**	Cardiovascular diseases and pregnancy	Evaluation of CV state in pregnancy, Alteration of cardiovascular state in pregnancy; CV test in pregnancy, Congenital Heart diseases in pregnancy, RHD in pregnancy-IHD in pregnancy Cardiomyopathies in pregnancy, Arrhythmias in pregnancy, Heart surgery in pregnancy, Cardiovascular drugs in pregnancy.

Internal Medicine (Module 4)				
Discipline			**Clinical science and skills**	
Department			**Cardiovascular medicine (include GI System disease and Nephrology)**	
Course title			**Gastroenterology, Liver disease & Nephrology**	
Pre-requisite			**Internal Medicine (Module 1)**	
Course code			**MED8 023**	
Academic year			**IV**	
Semester		**8**	**Fall/Spring**	
Number of credits		**4**	**Knowledge**	**2**
			Clerkship	**2**

Week	**Hours**		**Topics**	**Descriptions**
	Knowledge	**Clerkship**		
1	**2**	**1**	Gastro esophageal Reflux disease	Definition pathogenesis, Clinical feature, Diagnostic examinations, Complication, Differential diagnosis, Diagnosis & Treatment
		1	Inflammatory diseases of esophagus	Definition pathophysiology, Clinical feature, Diagnostic examinations, Diagnosis &Treatment- Achalasia, Diffuse esophageal, spasm,- Scleroderma, esophagus
2	**2**	**2**	Gastritis & Gastropathy	Definition and classification. Etiology, Clinics, Diagnosis and Treatment of Chronic nonspecific gastritis, Infectious gastritis, Distinctive gastritis, Granulomatous gastritis, Reactive gastritis and Hyperplastic gastropathy

3	**2**	**2**	Peptic Ulcer Disease	Definition, Causes, Castro duodenal Mucosal defense, Physiology of gastric secretion, Pathophysiology, Epidemiology and pathology of Duodenal and Gastric ulcer, Clinical feature, Diagnostic examination, differential diagnosis and treatment. Refractory ulcer :Definition and cause
4	**1**	**1**	Peptic Ulcer Disease	Peptic ulcer complications: Clinics, Diagnosis, Differential diagnosis and Treatment of: Gastro intestinal bleeding, Perforation, Penetration, Gastric Outlet Obstruction, Zollinger -Ellison Syndrome: Epidemiology, pathophysiology, clinics, lab exam, Diagnosis & treatment.
	1	**1**	GI bleeding	Definitions, Source of GI bleeding, Stomach, Small intestine and colons, Dx upper & lower GI bleeding, Diagnostic evaluation of patient with GI bleeding, DDx, GI bleeding of Obscure bleeding, Lower GI bleeding and Occult GI bleeding.
5	**2**	**2**	Inflammatory Bowel Disease IBD	Definition, Epidemiology, Etiology, Pathogenesis, Genetic consideration, Pathology, Clinical presentation, Diagnostic examination, Diagnosis, Complications, Differential diagnosis, Extra intestinal manifestation, Treatment. Inflammatory bowel disease and Pregnancy, IBD in elderly and Cancer in IBD.
6	**2**	**2**	Malabsorption syndrome	Definition, Nutrients and Absorption, introduction, Lipids, carbohydrates, protein, approach to the patient with Specific disorders. Definitions, Etiology, Clinics, Diagnostic Examinations, Diagnosis, Complications and Treatment of Celiac sprue, Tropical Sprue, Short bowel syndrome, Bacterial overgrowth syndrome, Whipple's Disease and Protein Losing enteropathy
7	**2**	**2**	jaundice	Definition, Metabolism of bilirubin classification Unconjugated hyperbilirubinemia (increased bilirubin production, Decreased hepatic 1 bilirubin up take, Impaired conjugation) Mixed hyperbilirubinemia, Familial defect in hepatic Excretory, Acquired defect in hepatic excretory function, Approach to the jaundice, diagnostic examinations and Test for jaundice evaluations.
8	**1**	**1**	Irritable bowel syndrome	Definition, Epidemiology, Pathophysiology, Clinic, Diagnosis, DDx, Treatment

	1	**1**	Chronic Hepatitis	Definition, Classification, Chronic viral hepatitis and (General consideration, clinics, Diagnostic examinations and Treatment).
9	**1**	**1**	Chronic Hepatitis	Chronic hepatitis D (General consideration, clinics, Diagnostic examinations and Treatment) Autoimmune hepatitis(definitions pathogenesis, classification, clinics, Diagnostic examinations, DDx and Treatment) Drug induced hepatitis (General information)
	1	**1**	Liver cirrhosis	Definition, etiology, Alcoholic cirrhosis (pathogenesis, clinics, diagnostic exam Dx, treatment, prognosis), Cirrhosis due to Ch. hepatitis B and C (pathology, clinics, Dx and treatment), Cirrhosis due to Autoimmune hepatitis and Nonalcoholic fatty liver (General information and prognosis). Primary biliary cirrhosis .primary sclerosing cholangitis and Cardiac cirrhosis(definition, clinics, diagnostic exam .diagnosis and treatment)..
10	**2**	**2**	Liver cirrhosis	complications of liver cirrhosis, portal hypertension (definitions pathogenesis, clinics, diagnosis and treatment Esophageal varices with hemorrhage (Diagnosis clinics and treatments), Hypersplenism and Splenomegaly (General information and treatment), Ascites (Definition, pathogenesis, clinics, diagnosis, treatment and prognosis), spontaneous bacterial peritonitis (pathogenesis, clinics diagnosis and treatments), Hepatorenal syndrome (clinics and treatment). Hepatic encephalopathy (definition, pathogenesis, clinics, diagnosis DDx and treatment), hypoxemia and Hepatopulmonary syndrome (pathogenesis, diagnostic exam and treatment). Malnutrition, Abnormality in coagulation and hematologic and Bone disease in cirrhosis(General information)
11	**1**	**1**	Disease of gallbladder (Acalculous cholecystitis)	Definition, Etiology, Pathogenesis, Clinics, Diagnosis, treatment and prognosis.
	1	**1**	Chronic pancreatitis	Definition, Etiology, Pathogenesis, Clinics, Diagnosis, Diagnostic exam, complications, Treatment and Prognosis,
12	**2**	**2**	Urinary Tract infection	Definitions, Acute UTI (Acute prostatitis, Acute cystitis, Acute Pyelonephritis):

				Epidemiology etiology pathogenesis clinic, diagnosis, lab, treatment prognosis
13	**1**	**1**	Glomerular Diseases (Acute nephritic Syndrome)	Post streptococcal GN, Endocarditic associated glomerulonephritis, IgA nephropathy: Definition, Etiology, Clinics, lab exams, Diagnosis and Treatment. Name of the following, -Ant: GBM disease -Lupus nephritis, -Small vessel vasculitis Granulomatosis with polyangiitis, -Microscopic polyangiitis, -Church-Strauss syndrome
	1	**1**	Nephrotic Syndrome	Definition, clinic, Complication, Etiology, DDX, treatment.
14	**2**	**2**	Acute renal failure	Definition, Etiology, pathophysiology, Clinical feature, lap exams Differential diagnosis, Complication, Treatment, and prognosis
15	**2**	**2**	Chronic Kidney Disease (Chronic renal failure)	Definition, Etiology, Mechanism of chronic renal failure, Clinics, Lab exams, Complication. Treatment. Hemodialysis, Peritoneal dialysis, Kidney transplantation.
16	**2**	**2**	Water and electrolyte disturbances	Sodium, water, Hypovolemia, Hyponatremia, Hypernatremia, Hypokalemia, Hyperkalemia: definitions, etiology, clinic, Diagnosis and treatment.

Internal Medicine (Module 5)					
Discipline			**Clinical science and skills**		
Department			**Endocrinology & Hematology**		
Course title			**Endocrine disorders & Rheumatic diseases**		
Pre-requisite			**Internal Medicine (Module 1)**		
Course code			**MED9 023**		
Academic year			**V**		
Semester		**9**	**Spring/Spring**		
Number of credits		**4**	**Knowledge**	**2**	
			Clerkship	**2**	

Week	**Hours**		**Topics**	**Descriptions**
	Knowledge	**Clerkship**		
1	**1**	**1**	Approach to endocrine patients	General consideration, special features of endocrine illness, evaluation of patients with endocrine disorders (history, physical examination, Laboratory testing, management).
	1	**1**	Diabetes Mellitus	Introduction, classification, Epidemiology, Diagnosis, Pathogenesis, Genetic consideration, Pathophysiology, Type 1 &2 DM, GDM
2	**2**	**2**	Diabetes Mellitus	Clinical feature. Lab Ex, DDx, Acute complications(DKA,NKHS), chronic complications Management of DM
3	**2**	**2**	Hypoglycemia	Diagnosis and mechanism of hypoglycemia, symptom, type of hypoglycemia, recognition and documentation, urgent treatment, Insolinemia
			Thyrotoxicosis	Definition, Etiology, Epidemiology, Pathogenesis, Clinical features, Diagnosis, Laboratory Evaluation, Differential Diagnosis, Clinical course, treatment.
4	**1**	**1**	Thyrotoxicosis	Definition, Classification, Prevalence, Pathogenesis, Clinical feature, Laboratory Evaluation, Differential Diagnosis, Other causes of hypothyroidism, Complications, Treatment
	1	**1**	Hypothyroidism (Myxedema)	Definition, Epidemiology, Etiology, clinical Manifestations, Diagnosis, Differential Diagnosis, treatment.
5	**1**	**1**	Addison's disease Gushing syndrome	Definition, Epidemiology Etiology, clinical feature, Laboratory investigations, Differential Diagnosis,

				treatment. Adrenal crisis: Definition, Etiology, clinical feature, lab DDx, treatment
	1	**1**	Pheochromocytoma	Introduction, Epidemiology, Etiology and pathogenesis, clinical feature, Diagnosis, biochemical testing, diagnostic imaging, Differential Diagnosis, DDx, treatment, Pheochromocytoma in Pregnancy
6	**1**	**1**	Acromegaly	Definition, Etiology Pathophysiology, presentation and diagnosis, DDx, treatment.
	1	**1**	Diabetes Insipidus	Definition, Pathophysiology, Etiology, clinical characteristics, lab, DDx, treatment.
7	**1**	**1**	Hyperparathyroidism	Definition, Natural history and Incidence, Etiology, Solitary adenomas, hereditary syndromes
	1	**1**	Disorder of the Anterior pituitary and hypothalamus. Hypothalamus and anterior pituitary insufficiency	Introduction, Anatomy and Development of the pituitary gland, Hypothalamic and anterior pituitary insufficiency, Presentation & Diagnosis, Laboratory investigation, Treatment.
8	**1**	**1**	Gonadotropin deficiency	Presentation & Diagnosis, Laboratory investigation, Treatment. Non function and gonadotropin Production in pituitary adenomas: etiology, prevalence, presentation and diagnosis, Lab investigation, Treatment Disorders of the testes and male reproductive system normal male pubertal development: male factor infertility, clinical and lab ex, treatment.
	1	**1**	Obesity	Introduction, Definition and Measurement, Prevalence, Physiologic Regulation of Energy Balance Etiology, Classification, clinical feature, complication of obesity, treatment
9	**1**	**1**	Approach to articular and Musculoskeletal Disorders	Articular versus Non articular, inflammatory versus Non inflammatory disorder. Clinical history. Rheumatologic evaluation of the elderly, physical examination, Approach to Regional Rheumatic complaints, Lab investigations
	1	**1**	Rheumatoid Arthritis	Diagnosis, Laboratory Features, Synovial Fluid Analysis, Plain Radiography, Clinical Course, Prognosis, DDx, treatment
10	**1**	**1**	Gout	Introduction, Acute and Chrome Arthritis, pathogenesis, clinical feature, laboratory Diagnosis, Radiographic features prevention, Treatment.
	1	**1**	Degenerative joint disease (Osteoarthritis)	Introduction, Definition, Joint Protective Mechanisms and their Failure, Risk factors,

				Etiology, Epidemiology, Pathogenesis, Clinical feature, Treatment.
11	**1**	**1**	Systemic Lupus Erythematosus	Definition and prevalence, pathogenesis, Etiology, Pathology, Clinical feature, laboratory tests, diagnosis DDx, treatment.
12	**1**		Polymyositis, Dermatomyositis	Introduction, Definition, Incidence, Pathogenesis, Clinical Manifestation, Associated clinical findings, Extra muscular manifestations, Association with malignancies, Diagnosis and Differential Diagnosis, Treatment
13	**1**	**1**	Spondyloarthritis	Introduction, Ankylosing Spondylitis, Definition, Epidemiology, Pathogenesis, Clinical Manifestation, Lab and radiology finding, Diagnosis, Treatment.
	1	**1**	Reactive arthritis	Definition, Epidemiology, Etiology and Pathogenesis, Clinical Manifestation, Lab and radiology finding, Diagnosis, Treatment.
14	**1**	**1**	Systemic sclerosis (Scleroderma)	Definition, epidemiology, Genetic considerations, Related disorders, Environmental factors, Pathogenesis, Clinical feature, Diagnosis, Lab feature, Treatment.
	1	**1**	Pain Syndromes	Cervicobrachial pain syndrome. Chronic musculoskeletal strain, Thoracic outlet syndrome, Low back pain. Fibromyalgia: Definition, Pathogenesis, Clinical manifestation, Diagnosis, Treatment
15	**1**	**1**	Sarcoidosis	Definition Etiology, incidence and prevalence Pathophysiology, Clinical Manifestation, Complication, Lab finding, Diagnosis, Treatment
	1	**1**	Metabolic Bone Disease & Osteoporosis	Introduction, Definition, Epidemiology, Pathophysiology (Bone remodeling, Calcium nutrition, Vitamin D, Estrogen status, physical activity, Chronic disease, Medications, Cigarette consumption) Etiology, Clinical feature, Diagnosis, DDx, Treatment.
16	**1**	**1**	Osteomalacia	Osteomalacia: Definition, Etiology, clinical feature, Lab treatment.

Internal Medicine (Module 6)				
Discipline			**Clinical science and skills**	
Department			**Endocrinology & Hematology**	
Course title			**Hematology**	
Pre-requisite			**Internal Medicine (Module 1)**	
Course code			**MED10 023**	
Academic year			**V**	
Semester		**10**	**Fall/Spring**	
Number of credits		**4**	**Knowledge**	**2**
			Clerkship	**2**

Week	Hours		Topics	Descriptions
	Knowledge	Clerkship		
1	1	1	Approach to the anemic patient	History, -general symptoms, specific symptoms, physical examination .(The physician's goal is to prevent illness)
	1	1	Anemia	Definition, Signs and Symptoms, Compensatory mechanism of anemia, Approach, classification of anemia. Laboratory evaluation, Red cell indices. Absolute reticulocyte count, Reticulocyte production index. Bone marrow examination.
2	1	1	Iron deficiency anemia	Stage of Iron deficiency, Etiology, Clinical features laboratory investigation Serum Iron and TIBC, Serum Ferritin. Evaluation of Bone marrow Iron stores) Differential Diagnosis, Treatment
	1	1	Megaloblastic anemia	Definition, Cobalamine, Cause of Cobalamine I deficiency, Folic Acid, Cause of folic acid deficiency,
3	1	1	Hemolytic anemia	Definition, Diagnostic characteristic, Classification, Inherited hemolytic anemia, Etiology& Pathogenesis, Clinical feature, Diagnosis Complication, Treatment
4			Autoimmune hemolytic anemia and Cold agglutinin Disease	Pathogenesis, Cause, Clinical finding, Diagnosis, Laboratory Exam, Differential diagnosis, Diagnosis, treatment. Definition, Clinical finding, Lab exam, Treatment.
5	1	1	Aplastic anemia	Definition, Epidemiology, Etiology, Pathogenesis, Clinical Findings,
	1	1		Laboratory investigation, Differential Diagnosis, Treatment, Prognosis.

6	**1**	**1**	Polycythemia	Definition, Secondary Polycytemia, Etiology, Polycytemia Vera: Etiology, Sign and symptom, Laboratory investigation, Differential diagnosis, PV criteria, Complication, Treatment, Prognosis
	1	**1**	Myelodysplastic syndrome	Definition, Epidemiology, Etiology, Pathophysiology, Clinical feature, Lab Exam., Differential diagnosis, Prognosis.
7	**1**	**1**	Acute Lymphoblastic leukemia	Definition, Epidemiology, Etiology, Classification, Clinical feature
	1	**1**		Laboratory investigation, Differential diagnosis and supportive care, Diagnosis, Treatment
8	**1**	**1**	Acute Myeloid Leukemia	Definition, Etiology, Classification, Clinical feature, Laboratory investigation, Differential diagnosis Prognosis,
	1	**1**		Treatment. Complete remission criteria, Supportive care
9	**1**	**1**	Chronic Myeloid leukemia	Definition, Course and epidemiology, Clinical feature.
				Lab, Differential diagnosis, Diagnosis, Treatment, Prognosis.
10	**1**	**1**	Lymphocytic Leukemia (CLL)	Definition, Etiology, Epidemiology, Clinical feature, Diagnosis,, Differential diagnosis
	1	**1**		Lab, Clinical Staging, Treatment.
11	**1**	**1**	Hodgkin Disease	Etiology, Epidemiology, Clinical feature, Pathological classification, Staging, Lab Exam, Diagnosis, Treatment, Prognosis.
	1	**1**	Non Hodgkin Lymphoma	Definition, Classification, Clinical feature, Lab Exam, Treatment, Prognosis.
12	**1**	**1**	Multiple Myeloma	Definition, Etiology, Incidence and Prevalence, Global consideration, Pathogenesis, Clinical Manifestation, Diagnosis and staging, Laboratory Investigations, Differential diagnosis, Treatment, Prognosis.
	1	**1**	Myelofibrosis	Definition, Etiology, Symptoms and signs, Lab finding, Differential diagnosis, Complications, Treatment, Course and prognosis.
13	**1**	**1**	Disseminated Intravascular Coagulation (DIG)	Definition, Etiology, Pathogenesis, Clinical feature; Diagnosis,
14	**1**	**1**	Hemophilia A, Hemophilia B	Definition, Pathogenesis, Clinical feature, Laboratory Investigations, Differential Diagnosis, and Treatment.
	1	**1**	Immune thrombocytopenic purpura, Von	Definition, Incidence, Etiology, Clinical feature, Laboratory Investigations, Differential Diagnosis,

			willebruand disease	and Treatment. Definition, Laboratory Investigations, Clinical feature, Treatment,
15	1	1	Thrombotic Microangiopathy	General consideration, Clinical finding, Treatment.
	1	1	Thrombocytosis and Essential thrombocytosis	General consideration, Etiology, Clinical finding, Diagnosis, Lab Finding, Differential Diagnosis, Complication, Treatment, course and prognosis
16	1	1	Blood transfusion	Transfusion indication, Adverse Reaction to Blood transfusion (Immune Mediated reaction, Acute hemolysis, Delayed Hemolysis, Febrile reaction, Allergic reaction, Anaphylactic reaction, Acute lung injury, Graft host disease Post transfusion purpura, Alloimmunization, Non immunologic reaction (Fluid overload, hypothermia, Iron overload, Hypotensive reaction, Immunomodulation, Infection complication.)
	1	1	Primary immunodeficiency disorders	Linked hypogammaglobinemia, selective immunoglobulin A deficiency, Digeorge syndrome, severe co-bind immunodeficiency disease, complement deficiency, chronic granulomatous diseases.

Recommended Textbooks and Reference Books (Last Editions)

- Bates Guide to Medical Examination and History; taking,
- Harrison's Principles of Internal Medicine, Wener, Longo, Fauci, Kasper.
- Cecil Textbook of Internal Medicine, Goldman, Ousiello.
- Oxford Textbook of Internal Medicine, David A. Warrel.Timothy M. Cox.
- Harrison's Gastroenterology and hepatology, Dan Longo, Antonie Fauci.
- Harrison's Cardiovascular Medicine, Joseph Loscalzo.
- Braunwald's Heart Diseases, Robert O. Bono.
- David G, Gardner.Greenpan's Basic and Clinical endocrinology,
- Kelley's Textbook of Rheumatology, Garey S. Feinstein.
- William’s Hematology, Kennet Kaunshansky.

XXIX- Clinical Infectious Diseases

Learning objectives

At the end of the infectious diseases course student must be able to:

- Understanding of host defense mechanisms and immune responses in relation to infectious diseases;
- Understanding of the etiology, pathogenesis, diagnosis, and therapy of patients with the infectious diseases;
- Interpret and draw appropriate conclusions from laboratory results;

- Analyze and distinguish therapeutic treatments for microbial infections, and distinguish when a vaccine, antibiotic, or other therapy is likely to be the most appropriate response;
- Specify the role of ecology and evolution in the spread of infectious diseases, comparing the role of transmission, population size and susceptibility, and virulence in endemic disease epidemic disease emerging disease and bioterrorism;
- Develop the ability to work both independently and with others in teams and study groups;
- Develop an information base for making personal health decisions in regard to infectious diseases.

Course content

Infectious diseases				
Discipline			**Clinical science and skills**	
Department			**Infectious disease & Tuberculosis**	
Course title			**Infectious diseases**	
Pre-requisite			**Basic biomedical science**	
Course code			**MED8 026**	
Academic year			**V**	
Semester		**9**	**Spring/Fall**	
Number of credits		**4**	**Knowledge**	**2**
			Clerkship	**2**

Week	**Hours**		**Topics**	**Descriptions**
	Knowledge	**Clerkship**		
1	**1**	**1**	General information about infectious diseases	Definition, Causes of infectious disease. Infectious process, Host-pathogen interactions, Immunity, The complement system, .Approach to the patient, Treatment of infectious diseases
			Shigellosis	Definition, Etiology, Epidemiology, Pathogenesis and pathology, Clinical manifestations, Laboratory investigations, Differential diagnosis, Complications, Treatment and prevention
2	**2**	**2**	Enteric Fever	Definition Etiology, Epidemiology, Pathogenesis and pathology, Clinical manifestations, Laboratory investigations, Differential diagnosis, Complications, Treatment and prevention.
			Acute infectious diarrhea I and food poisoning	General information, Pathogenic mechanisms, Host defense factors, Genetic factors, Epidemiology

				Bacterial food poisoning, Laboratory investigations, Treatment and prevention
3	**2**	**2**	Cholera	Definition, pathology, Clinical manifestations, Laboratory investigations, Differential diagnosis, Complications, Treatment and prevention
			Amoebiasis	Definition, Etiology, Epidemiology, Pathogenesis and pathology, Clinical manifestations, Laboratory investigations, Differential diagnosis, Complications, Treatment and prevention
4	**2**	**2**	Acute viral hepatitis	Definition, Virology and etiology, Pathogenesis, Extra I hepatic manifestations, Pathology
			Acute viral hepatitis	Epidemiology and global features (Hepatitis A, & Hepatitis B, Hepatitis D, Hepatitis C, Hepatitis E), Clinical and laboratory features, Prognosis.
5	**2**	**2**	Acute viral hepatitis	Complications and sequelae, Differential diagnosis, Treatment, Prophylaxis.
			Influenza	Definition, Etiology, Epidemiology, Pathogenesis and f pathology, Clinical manifestations, Laboratory investigations, Differential diagnosis, Complications, Treatment and prevention
6	**2**	**2**	Diphtheria	Definition, Etiology, Epidemiology, Pathogenesis and pathology, Clinical manifestations, Laboratory investigations, Differential diagnosis, Complications, Treatment and prevention
			Infectious Mononucleosis	Definition, Etiology, Epidemiology, Complications, Treatment and prevention.
7	**2**	**2**	Acute Bacterial Meningitis	Definition, Epidemiology, Etiology, Pathophysiology, Clinical presentation, Diagnosis, Differential diagnosis, Complications, Treatment, prognosis.
			Tuberculosis Meningitis	Definition, Etiology, Epidemiology, Pathogenesis and pathology, Clinical manifestations, Laboratory investigations, Differential diagnosis, Complications, Treatment and prevention
8	**2**	**2**	Malaria	Definition, Etiology and pathogenesis, Epidemiology, Erythrocyte changes in malaria, Host response, Clinical features. Severe Falciparum malaria (cerebral malaria, hypoglycemia, acidosis, non cardiogenic pulmonary edema, renal impairment, hematologic abnormalities, liver dysfunction, other abnormalities), Malaria- in pregnancy, Malaria in children, Chronic complications (tropical splenomegaly, quartan malarial nephropathy, bukitt's lymphoma and EBV).
9	**2**	**2**	Malaria	Diagnosis, Laboratory findings, Treatment, Prevention
			Brucellosis	Definition, Etiology, Epidemiology, Pathogenesis and pathology, Clinical manifestations, Laboratory

				investigations, Differential diagnosis, Complications, Treatment and prevention
10	**2**	**2**	Anthrax	Definition, Etiology, Epidemiology, Pathogenesis and pathology, Clinical manifestations, Laboratory investigations, Differential diagnosis, Complications, Treatment and prevention
			Rabies	Definition, Etiology, Epidemiology, Pathogenesis and pathology, Clinical manifestations, Laboratory investigations, Diagnosis, Differential diagnosis, Complications, Treatment and prevention
11	**2**	**2**	Tetanus	Definition, Etiology, Epidemiology, Pathogenesis and pathology, Clinical manifestations, Laboratory investigations, Differential diagnosis, Complications, Treatment, prevention and prognosis
			Dengue Fever, Relapsing Fever, Yellow Fever and Leptospirosis	Definition, Causes, clinical manifestation, Laboratory investigations & treatment
12	**2**	**2**	Visceral Leishmaniosis (Kala Azar)	Definition, Life cycle and immunoregulation, Epidemiology, Prevention and control, Clinical manifestations, Diagnosis, Differential diagnosis, Treatment
			Toxoplasmosis	Definition, Etiology, Epidemiology, Transmission, Pathogenesis and pathology, Clinical manifestations, Diagnosis, Treatment and prevention
13	**2**	**2**	Ancylostomiasis	Definition, Life cycle, Epidemiology, Clinical features; Laboratory findings, Treatment
			Ascariasis	Definition, Life cycle, Epidemiology, Clinical features, Laboratory findings, Treatment
14	**2**	**2**	Enterobiasis	Definition, Life cycle, Epidemiology, Clinical features, Diagnosis, Treatment.
			Trichuriasis	Definition, Life cycle, Clinical features, Diagnosis and Treatment.
15	**2**	**2**	Echinococcosis	Definition, Etiology, Clinical features, Investigations, Management and Prevention
			Taenia Saginata	Definition, Life cycle, Epidemiology, Clinical features, Investigations, Management and Prevention
16	**2**	**2**	Human immunodeficiency virus infection and the human acquired immunodeficiency syndrome (HIV/AIDS)	Definition, Etiology, Epidemiology, Pathogenesis and pathology, Clinical manifestations, Laboratory investigations, Differential diagnosis, Complications, Treatment and prevention

Clinical skills

- Use critical thinking (problem solving);
- Use learning resources including mentors effectively;
- Order arid interpret appropriate laboratory and diagnostic studies;
- Integrate history, physical examination and laboratory results;
- Can select appropriate management at the right time;
- Work effectively with others on the healthcare team.

Textbooks & Reference books Recommended (Last edition)

- Essentials of Clinical Infectious diseases, William F. Wright.
- Harrison's Infectious Diseases, Denniel L. Kasper.
- Infectious Diseases, a Clinical Approach, Allen Yung, Denis Spelman.
- Clinical Infectious Diseases, Rickbard K. Root.
- Emergency management of Infectious diseases, Rackel L. Chinn.
- Netter's Infectious diseases, Elien C Jong.

XXX- Tuberculosis

Learning Objectives

At the end of the course the student should be able to:

- Discuss about tuberculosis (TB) elimination in Afghanistan;
- Identify TB disease trends in Afghanistan;
- List the racial and ethnic groups that are disproportionately affected by TB disease in Afghanistan;
- Discuss about management of pulmonary TB with DOT approach;
- Discuss about multidrug resistant pulmonary TB and its management;
- Discuss, about specific cases like pregnant with pulmonary TB;
- Discuss about prevention of pulmonary TB and vaccination;
- Identify ways in which tuberculosis (TB) is spread
- Describe the pathogenesis of TB
- Identify conditions that increase the risk of TB infection progressing to TB disease.
- Define drug resistance TB
- Describe the TB classification system
- Describe why high-risk groups should be tested for M. tuberculosis infection

- Identify appropriate testing methods for M. tuberculosis infection;
- Identify special considerations when using tuberculin skin tests (TSTs);
- Discuss general recommendations for the use Interferon-Gamma Release Assays (IGRAs);
- Describe the five components of a TB medical evaluation;
- Identify the major components of TB diagnostic microbiology;
- List at least five symptoms of pulmonary TB disease;
- Explain the purpose and significance of acid-fast bacilli (AFB);
- Explain the purpose and significance of the culture;

- Explain the purpose and significance of genotyping;
- List the high-risk groups who should be given priority for latent tuberculosis infection (LTBI) treatment;
- Describe LTBI treatment regimens;
- Describe LTBI treatment regimens for specific situations;
- Identify components of patient monitoring at baseline and during treatment of LTBI;
- Describe tuberculosis (TB) disease treatment adherence strategies;
- Identify anti-TB drugs;
- Describe treatment regimens for TB disease;
- Describe patient monitoring;
- List common adverse drug reactions to TB medications.

Course content

Tuberculosis				
Discipline			**Clinical science and skills**	
Department			**Tuberculosis**	
Course title			**Pulmonary Tuberculosis**	
Pre-requisite			**Internal medicine (Module 1)**	
Course code			**MED9 040**	
Academic year			**V**	
Semester	**9**		**Spring/Fall**	
Number of credits	**2**		**Knowledge**	**1**
			Clerkship	**1**

Week	**Hours**		**Topics**	**Descriptions**
	Knowledge	**Clerkship**		
1	**1**	**1**	Introduction (Brief history of tuberculosis) Etiology and pathogenesis	Brief history of TB in Afghanistan and world scientific progresses and views during the different socializations. Agent and characteristics typical and atypical mycobacteriurn, isolation of BK, method of eradication, TB pathogenesis,
2	**1**	**1**	TB diagnosis and its Classification	Describe the five components of a TB medical evaluation (Medical history, Physical examination, Test for M. tuberculosis infection, Chest radiograph, Bacteriologic examination of clinical specimens), Identify the major components of TB diagnostic microbiology, List at least five symptoms of pulmonary TB disease, Explain the purpose and significance of direct sputum examination for acid fast bacilll (AFB)

				Explain the purpose and significance of the culture, Explain the purpose and significance of genotyping and PCR.
3	**1**	**1**	Immunity & allergy in TB and tuberculin test	Types of immune response, mechanism of immune response, cells and factors involved in the process, allergy in TB and its mechanism. Methods of tuberculin test and more emphases on Mantoux testing method.
4	**1**	**1**	Primary Clinical forms of TB	Primary forms of TB: primary intoxication (Definitions, clinical features, Diagnosis, course and prognosis, and treatment) Chronic intoxication of TB definitions. clinical features, Differential Diagnosis, course and prognosis, and treatment, Primary Complex TB (Definitions, pathogenesis, clinical features, Diagnosis, course and complications, prognosis, and treatment). Tuberculosis Bronchoadinitis (Definitions, pathogenesis, clinical features. Diagnosis, D/Dx, course and complications, treatment).
5	**1**	**1**	Secondary clinical forms of TB (Acute Disseminated Pulmonary TB(Miliary TB)	Essential of differential diagnosis between primary and secondary forms of TB, Disseminated Pulmonary TB. Acute Disseminated Pulmonary TB (Miliary TB): Definitions, pathogenesis, predisposing factors, clinical forms and features, Diagnosis, D/Dx, complications, prognosis, treatment
6	**1**	**1**	Subacute disseminated pulmonary TB and Chronic disseminated pulmonary TB	Subacute disseminated pulmonary TB: Definitions, clinical features, Differential Diagnosis, prognosis, treatment. Chronic disseminated Definitions, pathogenesis, clinical features, Diagnosis, Differential Diagnosis, course and prognosis, treatment. Focal TB: Definitions, clinical forms, clinical features, Diagnosis, Differential Diagnosis, treatment.
7	**1**	**1**	Infiltrative TB	Infiltrative TB: Definitions, clinical forms, clinical features, Diagnosis, Differential Diagnosis, treatment
8	**1**	**1**	Cavernous TB and Fibro cavernous TB	Definitions, pathogenesis, clinical features, Diagnosis, Differential Diagnosis, course and prognosis, treatment.
9	**1**	**1**	Cirrhotic TB and Pulmonary Tuberculoma	Definitions, pathogenesis, clinical features, Diagnosis, Differential Diagnosis, course and prognosis, treatment
10	**1**	**1**	Dry & Exudative Pleurisy and	Dry TB pleurisy: Definitions, pathogenesis, clinical features, Diagnosis, Differential Diagnosis, course

			peripheral lymphadenitis TB	and prognosis, treatment. TB pleural effusion: Definitions, pathogenesis, clinical features, Diagnosis, Differential Diagnosis, course and prognosis, treatment. Peripheral lymphadenitis TB: Definitions, pathogenesis and routes of spread, structure of lymph nodes anatomopathologic changes, clinical forms clinical features, Diagnosis, Differential Diagnosis,
11	**1**	**1**	Complications of TB	Corpulmonal: Definitions, pathogenesis, clinical features, Diagnosis, treatment. Hemoptysis: Definitions., pathogenesis, clinical features, Diagnosis, treatment. Spontaneous Pneumothorax: Definitions, pathogenesis, clinical features, Diagnosis, treatment.
12	**1**	**1**	Treatment of TB and DOTS program	Principals of treatment for TB patients, objectives, specific or antibacterial treatments. Nonspecific treatment. DOTS methods for TB treatment.
13	**1**	**1**	Pharmacologic characteristic of anti TB drugs and MDR & XDR	Name, pharmacologic dose, side effects, and place of each drug in TB treatment. Pathogenic and symptomatic treatments. Explain of Multidrug-Resistant TB (MDR TB), Extensively Drug-Resistant TB (XDR TB), Types of Drug-Resistant TB Disease
14	**1**	**1**	Prevention of TB	BCG vaccination (what is BCG? pre administration preparations, administration and stages of prophylaxis, complications, contra indications,), chemoprophylaxis: - Definition, primary and secondary chemoprophylaxis, Qualified groups, period and method, Epidemiologic sanitary achievements).
15	**1**	**1**	Epidemiology of TB	Epidemiology of TB and Epidemiological parameters, National campaign in the country. Roles, and responsibilities of the public health sector providers. Planning and policy development. Detect TB disease early and promptly, Isolate those who have or are suspected of having TB disease (airborne precautions), Treat people who have or who are suspected to suffering TB disease
16	**1**	**1**	TB control program	Administrative controls; which reduce risk of exposure, Environmental controls, which prevent spread and reduce concentration of droplet nuclei, Respiratory-protection controls, which further reduce risk of exposure in special areas and circumstances. Treatment: - (D.O.T.S and treatment regimens, standard treatment).

Textbooks and Reference Recommended (last edition)

- Clinical Tuberculosis, P.D.O. Davies.
- Pulmonary Tuberculosis, Edward Osgood.
- Tuberculosis, William N. Rom.
- Tuberculosis Surrendra k. Sharma.
- Tuberculosis, A Comprehensive Clinical references, H. Simmon Sichaal.

XXXI- Obstetrics & Gynecology

Goals

The broad goals of teaching of the graduate student in obstetrics & gynecology are; to empower the student with the necessary knowledge in anatomy, physiology and pathophysiology of the reproductive system and to acquire the necessary skill to manage normal pregnancy and delivery and related problems and to diagnose and treat the common gynecological diseases.

Learning Objectives

a- Knowledge

At the end of course the student should be able to:

- To diagnose and manage normal pregnancy, labor, puerperium and the problems related to these conditions;
- To list the common causes leading to maternal and perinatal morbidity and mortality.
- Identify the use and side effects of drugs during pregnancy and to be aware of
- indiscriminate use of drugs during obstetric & gynecological practice;
- To be aware of the common indications, technique and complications of usually performed operations like cesarean section, hysterectomy etc.;
- Aware of the principles of contraception and the various techniques employed in family;
- Welfare practice including medical termination of pregnancy, male and female sterilization;
- To be familiar with the various National Programs in relation to maternal and child Health.

b- Skills

- Students should be trained about proper history taking, clinical examination;
- Advising relevant necessary investigations and their interpretation and management;
- Posting in OPD, wards, operation theaters, labor room and family planning clinics;
- Students should observe common OPD procedures;
- Observe normal deliveries, forceps and ventouse assisted deliveries, cesarean section, Ligations, minilap procedures like abdominal, vaginal hysterectomy;
- Examine a pregnant woman and diagnose abnormalities like preeclampsia, anemia, GDM, abnormal presentations and to make appropriate referrals if necessary
- Conduct a normal labor and to provide postnatal care;
- Preform resuscitation of newborn babies;

- Perform a pelvic examination and to diagnose common gynecological diseases;
- Examine a vaginal smear for trichomonas and fungus, and to take a Pap smear;
- To offer appropriate contraceptive advice to a couple, and to assist in insertion of IUCD;
- Interpret common investigation results (biochemical histopathological ultrasound)

Course content

Obstetrics			
Discipline		**Clinical science and skills**	
Department		**Obstetrics & Gynecology**	
Course title		**Obstetrics**	
Pre-requisite		**Basis of surgery**	
Course code		**MED7 028**	
Academic year		**IV**	
Semester	**7**	**Spring/Fall**	
Number of credits	**3**	**Knowledge**	**2**
		Clerkship	**1**

Week	Hours		Topics	Descriptions
	Knowledge	Clerkship		
1	2	1	Diagnosis of pregnancy	Presumptive evidence of pregnancy, Probable signs of pregnancy, Positive signs of pregnancy, Identification of fetal life or death.
			Physiology of normal pregnancy	Dating of pregnancy, organization of the placenta-circulation in the mature placenta, physiology of the fetus, the placental hormones - fetal adrenal glands-estrogen production in pregnancy
2	1	1	Maternal adaption to pregnancy	Reproductive system: abdominal wall &skin, metabolic changes, hematologic changes of normal pregnancy, cardiovascular system, respiratory tract, urinary system, gastrointestinal tract, liver & gallbladder, endocrine glands, musculoskeletal system.
	1		Prenatal care and management of common symptoms in pregnancy	Overview of Prenatal Care: Organization of Prenatal care, Nutrition: Recommendations for Weight Gain.
				Common Concerns: Nausea and vomiting, Backache, Varicosities, hemorrhoids, Heartburn, Pica, Ptyalism, Fatigue, Headache, Leucorrhea, Bacterial Vaginosis, Trichomonasis, Candidiasis

3	**1**	**1**	Antepartum Assessment	Fetal Movements: clinical Application, Fetal Breathing, Contraction stress Testing, Nonstress Tests, Acoustic Stimulation Tests, Biophysical Profile(BPP),Amniotic Fluid volume (AFI) umbilical Artery Doppler velocimetry.
	1		Prenatal diagnosis Investigations to be carried out in pregnancy	Fetuses at High Risk for Genetic or Congenital Disorders, Screening for Common Congenital Abnormalities,
4	**1**	**1**	labor and delivery	Mechanism of labor Characteristics of Normal Labor Management of labor and delivery, Labor Management Protocols: Active Management of Labor.
	1		Intrapartum Assessment	Electronic Fetal Monitoring, Other Intrapartum Assessment Techniques, Fetal Distress, Intrapartum Surveillance of Uterine Activity: Internal Uterine Pressure Monitoring, External Monitoring, Patterns of uterine Activity.
5	**1**	**1**	Newborn care	Initiation of Air Breathing, Methods used to Evaluate Newborn Condition Apgar Score, Umbilical Cord, Routine Newborn Care
	1		Puerperium, and its complications	clinical and Physiology Aspects of the Puerperium, Mammary Glands, Care of the Mother During the Puerperium, puerperal Infection,
6	**1**	**1**	Obstetric ultrasound	Ultrasonography in Obstetrics, Normal And Abnormal Fetal Anatomy, Doppler Velocimetry, M-Mode Echocardiography.
	1		Gestational Trophoblastic diseases	Hydatid form Mole (Molar Pregnancy), Gestational Trophoblastic Neoplasia, Etiology, Pathology, Clinical Course, Diagnosis, Treatment, Prognosis, Pregnancy after Gestational Trophoblastic Disease
7	**1**	**1**	Ectopic pregnancy	General considerations, Pathogenesis of ectopic Pregnancies, Clinical Features, Diagnosis, treatment,
	1		Abortions	Spontaneous Abortion, induced Abortion, consequences of elective Abortion, Septic abortion
8	**1**	**1**	Obstetrical Hemorrhage (Antepartum and Postpartum hemorrhage)	Antepartum Hemorrhage, Placental Abruption, Placenta Previa, Postpartum Hemorrhage, Hypovolemic Hemorrhage, Consumptive Coagulopathy
	1		Breech Presentation and Delivery	Etiology, Complication, Diagnosis, Prognosis Vaginal Delivery, Techniques for Breech Delivery, Version
9	**1**	**1**	Dystocia (Abnormal labor)	Dystocia, Abnormalities of the Expulsive Forces, Fetopelvic disproportion, Maternal- Fetal Effects of Dystocia.

	1		Operative delivery (cesarean section) Vaginal very (forceps and vacuum	Cesarean Delivery, Peripartum Hysterectomy, Forceps Delivery, Vacuum Extraction, Comparison of Vacuum Extraction with Forceps.
10	**1**	**1**	Preterm Labor PTL and Premature rupture of membrane PROM	Definition, causes of preterm birth, identification or women at for Spontaneous Preterm Labor, Management of Preterm Ruptured Membranes and Preterm labor,
	1		Post -Term pregnancy	Estimated Gestational Age Using Menstrual Dates Incidence Perir.aial Mortalrry. Pathophysiology, Management,
11	**1**	**1**	Multiple pregnancy	Etiology, Diagnosis, Maternal Adaption, Pregnancy Outcome, Unique Complication, Delivery of Twin Fetuses (Labor, Vaginal Delivery, Cesarean Delivery)
	1		Hypertensive disorders	Terminology and Classification, Diagnosis, Etiology, Pathogenesis. Management, Early Prenatal Detection, Termination of Pregnancy, Antihypertensive, Drug Therapy, Delayed Delivery with Sever Preeclampsia, Glucocorticoids, Eclampsia
12	**1**	**1**	Diabetes in Pregnancy	Classification, Gestational Diabetes, Pregestational (Overt) Diabetes, fetal Effects, Neonatal Effects, maternal Effects, Management, Contraception
	1		Hypertensive disorders	Terminology and classification, Diagnosis, Etiology, Pathogenesis. Management, Early Prenatal Detection, Termination of Pregnancy, Anti-hypertensive, Drug therapy, Delayed Delivery with sever preeclampsia, Glucocorticoids, Eclampsia
13	**1**	**1**	Rhesus Negative in Pregnancy	General Considerations, Incidence, Pathogenesis: Management Of the Unsensitized RH- Negative Pregnancy .Evaluation of the Pregnancy with Isoimmunization, Management of the Pregnancy with Isoimmunization,
	1		Fetal Growth Disorders and fetal Death	Normal Fetal Growth, Fetal Growth Restriction, Macrosomia, Fetal Death: Definition of Fetal Mortality, Causes of Fetal Death, Evaluation of the Stillborn infant, Psychological Aspects, Pregnancy After Previous Stillbirth.
14	**1**	**1**	Infection diseases in Pregnancy	Immunological Changes of Pregnancy, Viral Infections Bacterial Infection, Protozoal Infections Mycotic Infections.

	1		Induction of Labor	General Concepts, Elective induction of Labor Indicated Labor Induction, Contraindication Preinduction Cervical Ripening: Pharmacological Techniques. Mechanical Techniques, Summary of Preinduction cervical Ripening, Labor Induction and Augmentation with Oxytocin Intravenous Oxytocin Administration. Amniotomy.
15	**1**	**1**	Abnormalities of the Placenta, Umbilical, Cord, and Membranes	i.Placental Abnormalities, ii-Abnormalities of the Membranes, iii- Umbilical Cord Abnormalities iv-Pathological Examination
	1		Analgesia and Anesthesia in obstetric	General Principles, Analgesia and Sedation During Labor, Regional Analgesia, General Anesthesia,
16	**2**	**1**	Teratogenic Drugs, and other medication	Teratology, Counseling for Teratogen Exposure Known Teratogen, Drugs Commonly Used in Pregnancy
	1		Obstetrics Critical Care	Obstetric Disorders Requiring Critical Care, Obstetric Shock, hypovolemic Shock, Septic Shock, Amniotic Fluid Embolism, Pulmonary Thromboembolism, Disseminated Intravascular Coagulation (DIC), Acute Respiratory Distress Syndrome(ARDS), Cardiopulmonary Resuscitation During Pregnancy.

Gynecology			
Discipline		**Clinical science and skills**	
Department		**Gynecology and Obstetrics**	
Course title		**Gynecology**	
Pre-requisite		**Basics of Surgery**	
Course code		**MED8 029**	
Academic year		**IV**	
Semester	**8**	**Fall/Spring**	
Number of credits	**3**	**Knowledge**	**2**
		Clerkship	**1**

Week	Hours		Topics	Descriptions
	Knowledge	Clerkship		
1	**2**	**1**	Gynecologic diagnostic procedures	History & Physiologic Examination(General Evaluation, Breast Examination, Abdominal Examination, Pelvic Examination, Diagnostic Office Procedures, Diagnostic Laboratory Procedure
2	**2**	**1**	Therapeutic gynecologic procedures	Dilatation and Curettage(D & C): Indications, Technique Hysteroscopy Laparoscopy, Hysterectomy, Abdominal Hysterectomy, Supracervical Hysterectomy, Vaginal Hysterectomy, Laparoscopic Hysterectomy, Postoperative Care, Complications
3	**2**	**1**	Common Menstrual Problems and Abnormal Uterine Bleeding AUB	Premenstrual Syndrome, Dysmenorrhea, Abnormal Uterine Bleeding(AUB) abnormal Bleeding Due to Non If gynecologic Diseases and disorders .Dysfunctional Uterine bleeding: Treatment .Postmenopausal Bleeding
4	**2**	**1**	Amenorrhea	Definition and Incidence, Etiology & Pathogenesis: Amenorrhea in Women with 46, XY Karyotype Anatomic Abnormalities Associated With Amenorrhea,
5	**2**	**1**	Benign Vulvo-Vaginal Disorders	Anatomy & Physiology, Evaluation, Vaginal Disorders Vulvar Disorders, Vulvar Pain Syndrome, Vulvar Vestibulitis
6	**2**	**1**	Fibroid Uterus Adenomyosis	Leiomomas: Pathologic Appearance, Role of Hormones (Estrogen, Progestins), Risk Factors, Classification of Leiomyomas, Symptoms Diagnosis, Imaging, Management, Adenomyosis: Pathophysiology, Risk Factors, Symptoms, Differential Diagnosis, Diagnosis, Management.

7	**2**	**1**	Premalignant and Malignant Disorders of the Uterine cervix	Cervical Intraepithelial Neoplasia Cancer of The Cervix: Essentials of Diagnosis, General Considerations, Epidemiology & Etiology, Pathology, Clinical Findings, Clinical Staging, Complications, Prevention Treatment, Special Situations, complication of Therapy, Post treatment Follow-up, Prognosis
8	**2**	**1**	Premalignant and Malignant Disorders of the Uterine Corpus	Endometrial Hyperplasia and Carcinoma: Essentials of Diagnosis, General Considerations, Etiology, Surgical Staging, Classification, Clinical Findings, Differential Diagnosis, Complications, Prevention Treatment, Prognosis
9	**2**	**1**	Benign, Premalignant and Malignant Disorders of the Ovaries and Oviducts	Benign Disorders: Physiologic Enlargement: Functional Cysts f Hyperthrecosis, Polycystic Ovarian Syndrome (PCOS) (Stein-Leventhal Syndrome) b-Ovarian Neoplasia: Treatment of Ovarian Tumors, Epithelial Tumors, Sex Cord-stromal Tumors, Germ Cell Tumors Benign Tumors of the Oviduct Premalignant and Malignant Disorders:
10	**2**	**1**	Pelvic organs prolapses Or Relaxation of Pelvic Supports	General Considerations, Anterior Vaginal Wall Defects, Posterior Vaginal Wall Defects. Description and Staging of Pelvic Organs Prolapses, Cystocele & Urethrocele Rectocele, Enterocele, Uterine Prolapse, Malposition of the Uterine (Tipped Uterus), Vaginal Pessaries: Indication & Use, Contraindications, Type of Pessaries, Fitting of Pessaries.
11	**2**	**1**	Temporary and permanent methods of contraception	Contraception Estrogen Plus Progestin Contraceptives, Progestational- Contraceptive, Emergency. Contraception, Mechanical Methods of contraception: Intrauterine contraceptive devices, Barrier Method: Male Condom, Female Condom, Spermicide and Microbicides, Diaphragm plus Spermicide, Contraceptive Sponge, cervical Cap, Fertility Awareness Based Methods; Special Considerations for Contraception: Sterilization: Female Sterilization, Male Sterilization,
12	**2**	**1**	Problems	General Considerations: Etiology & Pathogenesis clinical Findings: Symptoms And Signs: Reduced Endogenous postmenopausal symptoms, Laboratory finding Ultrasonography, Differential Diagnosis, Prevention and management.
13	**2**	**1**	Endometriosis	Pathophysiology, Classification and Location of Endometriosis, Patient Symptoms, Differential Diagnosis, Diagnosis, Treatment: Expectant Management, Medical Treatment of Endometriosis

				Related Pain, Surgical Treatment of Endometriosis-Related Pain.
14	**2**	**1**	Infertility	Definitions and Statistic, Psychologic Aspects of infertility, Diagnosis, Treatment, Male Factors, Female Factors, Unexplained infertility .
15	**2**	**1**	Androgen excessive disorders (Hirsutism)	Definition, Etiology, Physiology of Androgens: Physiology of Hair Growth, Diagnosis & Clinical Findings, Treatment, Complications, Prognosis
16	**2**	**1**	Sexually Transmitted Diseases & Pelvic Infections	Sexually Transmitted Diseases, Vaginitis, Urethritis and Cervicitis. II-Pelvic Infections: Pelvic inflammatory Disease (PED), Recurrent or Chronic Pelvic Infection, Pelvic (Cul-De- sac) Abscess, Tubo-Ovarian Abscess, Postoperative Pelvic Infections, Pelvic Tuberculosis, Toxic Shock Syndrome.

B- Skills:

a- Obstetrics

- History taking and examination of-a pregnant woman, watching progress of labor and conduct of a normal delivery;
- Management of third stage of Labor, prevention and treatment of postpartum hemorrhage;
- Witness cesarean section, breech delivery, forceps and vacuum delivery;
- Essential care of a newborn;
- Non stress testing of fetus; biophysical scoring of fetus.

b- Gynecology

- How to take history and examination of female pelvic organs;
- Making of Pap smear, wet smear preparation on vaginal discharge;
- Minor gynecologic procedures; cervical biopsy, endometrial biopsy, dilatation & curettage (D&C);
- Medical termination of pregnancy; in first & second trimesters;
- Insertion and removal of intrauterine contraceptive device.

C- Operative Skills

- Conduct of normal delivery
- Making and repair of episiotomy
- Insertion and removal of intrauterine device
- Taking of pap smear

Textbooks and Reference books recommended (Last edition)

- Obstetrics & Gynecology. Charles RB. Beckman.
- Williams Obstetrics, Cunningham
- Gynecology, Robert W. Shaw.
- Williams Gynecology, John O Schorge.
- Berek & Novak's Gynecology, Jonathan S. Berek.

- Clinical. Gynecologic Endocrinology and infertility Leon Speroff and Marc A. Fritz.
- Dewhurst's Textbook of Obstetrics and Gynecology DR. Keith Edmonds.
- Shaw's Textbook of Gynecology, VG-Pathbedri.
- Clinical Practice in Obstetrics and Gynecology, Sanjay Gupta.
- A Comprehensive Textbook of Obstetrics and Gynecology, Sadhana Gupta.

XXXII- Ophthalmology

Goals

The broad goals of the teaching of students in ophthalmology are to provide such knowledge, and skills to the student that shall enable him/her to practice as a primary eye care physician, and also to function effectively as a community health leader to assist in the, implementation of national program for the prevention of blindness and rehabilitation of the visually impaired.

Learning Objectives

a- Knowledge

At the end of the course, the student will have knowledge of:

- Symptomatology in ocular disorders and their pathogenesis;
- Ocular involvement in systemic diseases;
- Disorders of the lid;
- Disorders of the lacrimal apparatus;
- Conjunctivitis;
- Ophthalmia neonatorum;
- Trachoma & other chronic conjunctivitis;
- Keratitis and corneal ulcers;
- Scleritis & Episcleritis;
- Refractive errors and method of correction;
- Presbyopia;
- Accommodation convergence;
- Cataract (Congenital cataract, Senile cataract, Metabolic & complicated cataract);
- Glaucoma (Primary closed angle glaucoma, Congenital glaucoma, Primary Open angle glaucoma, Secondary glaucoma);
- Uveitis (anterior uveitis, posterior uveitis)
- Blindness prevalence, prevention & rehabilitation;
- Retinopathies (Hypertensive, Toxemia & Pregnancy, Diabetic Retinopathy)
- Retinal Detachment, types, symptoms & predisposing factors;
- Endocrine ophthalmology;
- Retinal vascular disorders;
- Retinoblastoma & other ocular neoplasms;
- Binocular vision amblyopia & concomitant squint;
- Nutritional disorders;
- Incomitant strabismus (paralytic strabism);
- Visual acuity, pupillary path ways & cranial nerve palsies

- Optic nerve lesions;
- Ocular emergencies (Traumatic);
- Ocular emergencies (Non-traumatic);
- Minor ophthalmic surgery;
- National program for control of blindness;
- Comprehensive eye care in rural set-up;
- Ethics in ophthalmology;
- Trachoma;
- Entropion /ectropion;
- Pterygium;
- Nasal lacrimal duct block /Dacryocystitis;
- Conjunctivitis / allergic / acute;
- Corneal ulcer;
- Keratitis;
- Iridocyditis;
- Angle closure glaucoma;
- Scleritis /episcleritis;
- Dark room;
- Refractive errors & presbyopia:
- Cataract-senile:
  - Complicated
  - Post-operative Complications
  - Intraocular lenses
- Xerophthalmia;
- Corneal opacities;
- Ocular injuries (Perforating / concussional injuries);
- Amaurosis fugax;
- Indirect ophthalmoscopy;
- Orthoptics (study and treatment of defective binocular vision);
- Surgical Instruments;
- Magnitude of blindness in Afghanistan and its main causes;
- Principles of management of major ophthalmic emergencies;
- Effect of local and systemic diseases on the patient's vision and the necessary action required to minimize the sequelae of such diseases;
- Adverse drug reactions with special reference to ophthalmic manifestations.

b- Skills

At the end of the course, the student will be able to:

- Elicit a history pertinent to general health and ocular status;
- Perform diagnostic procedures such as visual acuity testing, examination of the eye, tonometry, staining for corneal pathology, confrontation perimetry (visual field determination), and subjective refraction including correction for presbyopia and aphakia (absence of lens), direct ophthalmoscopy, conjunctival smear examination and cover test;
- Diagnose and treat common problems affecting the eye;

- Interpret ophthalmic signs in relation to common systemic disorders;
- Perform therapeutic procedures such as subconjunctival injection, corneal/conjunctival foreign body removal, carbolic cautery for corneal ulcers, nasolacrimal duct syringing and tarsorrhaphy;
- Provide first aid in major ophthalmic emergencies;
- Organize community surveys for visual health;
- Organize primary eye care services through Primary Health Centers;
- Use effective means of communication with the public and individuals to motivate them for surgery for cataract, glaucoma etc.

Course content

Ophthalmology			
Discipline		**Clinical science and skills**	
Department		**Ophthalmology**	
Course title		**Eye Diseases**	
Pre-requisite		**Basics of Surgery**	
Course code		**MED11 037**	
Academic year		**VI**	
Semester	**11**	**Fall/Spring**	
Number of credits	**3**	**Knowledge**	**2**
		Clerkship	**1**

Week	Hours		Topics	Descriptions
	Knowledge	Clerkship		
1	2	1	Optical system of the eye	General approach to Anatorao- physiology of the Eye, Eye Optical system, Vision, Growth and Development of the Eye. Refractive errors, Hyperopia, Myopia and Astigmatism
2	2	1	Optical system of the eye and diseases of the eyelid	Anesometropia, anisekonia, presbyopia and convergence. Anatomo-physiology of eyelids, congenital anomalies of the, acquired diseases of the eye.
3	2	1	Disorder of eye lids	Skin diseases, Neuro-muscular diseases, marginal diseases of the eyes. Gland diseases of the eyes. Tumors of the eye lids.
4	2	1	Disorders of conjunctive	Anatomo-physiology of congenital anomalies of, conjunctival inflammations of, noninfectious conjunctivitis. Bacterial, neonatal, viral, Chlamydia (Trachoma and inclusion conjunctivitis).

5	**2**	**1**	Disorders of conjunctive and disorders lacrimal apparatus	Allergic, Autoimmune. tumors and degenerations and trauma. Lacrimation, dry eye, acute and acute, chronic dacryoadenitis and Lacrimal Gland tumors.
6	**2**	**1**	Disorders lacrimal apparatus and disorder of extra ocular muscles	Epiphora, acute Canaliculus, acute and chronic dacryocystitis, tumors of drainage passages, traumas, Anatomophysiology of extra ocular muse Is, definition of squint, classification of strabismus.
7	**2**	**1**	Disorders of extra ocular muscles and Disorders of orbita, vessels and nerves	Differential diagnosis of types of squint, motive and sensory changes in squint, squint patient examination, treatment of squint Anatomo-physiology of orbit, diseases of. traumas of, Anatomophysiology of vessels and nerves
8	**2**	**1**	Disorders of vessels, nerves a and Disorders of cornea	Disorders of blood vessels and nerves of the eye. Anatomo-physiology of cornea, congenital anomalies of, corneal inflammations, classification of Keratitis (superficial Keratitis, and noninfectious Keratitis
9	**2**	**1**	Disorders of cornea	Bacterial, chlamydial, viral, fungi, filamentry keratitis, keratomalacia and vernal keratitis. Peripheral Keratitis (marginal, rosacea, mooren), interstacial, Keratitis, disciform, keratitis, exposure Keratitis, corneal degenerations, tumors of, Injuries of, and principles of Keratoplasty.
10	**2**	**1**	Disorders of sclera and disorders of uvea	Anatomophysiology of sclera, congenital anomalies of the sclera and scleritis, Anatomo-physiology of uveal truct, Congenital anomalies of uveal tract, classification, clinical aspect of uveitis, tumor of uvea.
11	**2**	**1**	Disorders of retina	Anatomophysiology of retina, retinal artery occlusion, Retinal Vein occlusion, eales diseases.
12	**2**	**1**	Disorders of retina	Diabetic retinopathy, hypertensive retinopathy, retinopathy of blood disorders, retinopathy of prematurity, retinopathy of Gravidarum.
13	**2**	**1**	Disorders of retina and Glaucoma	Toxic retinopathy, Senile Macular degeneration, Retinal detachment, and tumors of the retina. Related anatomophysiology of glaucoma and congenital glaucoma.
14	**2**	**1**	Glaucoma and Disorders of lens	Primary and secondary glaucoma (open angle and closed angle). Anatomophysiology of lens, congenital anomalies of the Lens, course and stage of cataract, clinical aspect related to age.
15	**2**	**1**	Disorders of lens disorders of vitreous And	First period: Complication and treatment of cataract, Anatomophysiology of vitreous, congenital anomalies of Vitreous, acquired changes and vitreitis Second period:

			disorders of visual pathway	Anatomophysiology of (optic nerve, chiasma opticum) tract, radiation optic and visual cortex congenital anomalies of optic nerve.
16	**2**	**1**	Disorders of visual pathway	First period: Papilledema and Papillitis, Retrobulber neuritis, optic atrophy Second period: Tumors of the optic nerve and disorders of chiasma opticum .Disorders of the optic tract and optic radiation, Nystagmus and Migraine ophthalmic.

National Program for prevention of blindness and its implementation at various levels

- Eye care education for prevention of eye problems
- Role of Primary Health Center -PHC
- Organization of primary health care and the functioning of the ophthalmic assistant.
- Integration of the national program for control of blindness with the other national health programs

Textbooks and Reference books recommended (Last edition)

- Ophthalmology, Myron Yan off.
- Textbook of Ophthalmology, HV. Nema.
- Principles and Practice in Ophthalmology, Alberts Jacobieks.
- Illustrated Tutorial in Clinical Ophthalmology, Jack J. Kanski.
- A textbook Atlas of Ophthalmology, G.Lang.
- Jack J. Kanski Brad Bowling, Clinical Ophthalmology, Ken Niscal &Andrew Pearson.

XXXIII- Orthopedics

Goals

An MD student should know about the commonly encountered conditions in orthopedics pertaining to their diagnostic features basic pathophysiological aspect and the general and basic management strategies. It is expected to learn basic skills such as application of splints, skin and skeletal traction, as well as plaster slab and casts (including special casts, hip Spica, shoulder Spica, cylinder cast, and patellar tendon bearing casts).
Students should know the maneuvers for reduction of common fractures and dislocations such as Colles' fracture, supracondylar fracture of humerus, dislocation of shoulder, elbow and hip.

Learning Objectives

1. **Clinical decision making ability & Management expertise**

Diagnose conditions from history taking, clinical evaluation and investigations and should be able to distinguish the traumatic from infective and neoplastic disorders.

2. **Thrust areas:**

- **Pediatric orthopedics-** The student should be exposed to common congenital and developmental disorders such as Club-Foot, developmental dysplasia of hip, bone infections, and also should acquire adequate knowledge about the principles of management of these disorders.

- **Orthopedic oncology-** The graduate is expected to be familiar with the common tumors encountered in orthopedic practice. The student should be able to diagnose common bone tumors and should know principles of treatment
- **Management of Trauma-** Trauma in this country is one of the main causes of morbidity and mortality. The student is expected to be fully conversant with trauma in its entirety including basic life-saving skills, control of hemorrhage, splintage of musculoskeletal injuries and care of the injured spine. -
- **Sports Medicine-** The student should know about common orthopedic pathologies encountered in sportspersons and their diagnostic and preventive aspects.
- **Physical Medicine and Rehabilitation-** The student is expected to be familiar with common orthotic and prosthetic devices and their applications.

b- Clinical Skills

The graduate learns:

- Application of splints and tractions;
- Application of plaster, slabs and casts;
- Manipulative reduction of common fractures and dislocations;
- Infiltration of tender peri-articular lesions;
- Aseptic technique of joint fluid aspiration;

Course content

Orthopedics					
Discipline			**Clinical science and skills**		
Department			**Orthopedics and Traumatology**		
Course title			**Orthopedics**		
Pre-requisite			**Basics of Surgery**		
Course code			**MED11 025**		
Academic year			**VI**		
Semester		**11**	**Spring/Fall**		
Number of credits		**4**	**Knowledge**	**2**	
			Clerkship	**2**	

Week	**Hours**		**Topics**	**Descriptions**
	Knowledge	**Clerkship**		
1	**2**	**2**	Concept of orthopedics	History of orthopedics &Traumatology, physical examination, Traction & plaster
2	**2**	**2**	Fracture Healing	Methods of fracture healing and staging.

3	**2**	**2**	Bone and Joint infection	Acute and Chrome osteomyelitis Pathology, clinical findings, differential diagnosis, treatment, complications, Septic arthritis
4	**2**	**2**	Bone and joint TB and osteoarthritis	Definition, Pathology, Clinic findings, Diagnosis, Management.
5	**2**	**2**	Upper girdle fractures	Clavicular fracture& dislocations clinical findings, Treatment scapula fracture causes, treatment Sternum fracture Rib fracture clinical findings, treatment Acromioclavicular joint dislocation, signs, treatment Sternoclavicular joint dislocation Anterior dislocation of shoulder joint Humerus neck fracture Humerus shaft fracture Supracondylar humerus fracture.
6	**2**	**2**		Humerus condylar fracture Elbow joint dislocation Radius & ulna upper part fracture Olecranon fracture Monteggia fracture Galezzia fracture Fracture of the distal radius, Radius and ulna lower part fractures, Carpal injuries, Metacarpus fractures, Fracture of phalanges
7	**2**	**2**	Vertebral trauma	Classification, Mechanism of trauma Cervical spine injuries, thoracolumbar spine injuries, Treatment.
8	**2**	**2**	Pelvic fractures & acetabulum	Definition, classification, mechanism of trauma, clinical findings, treatment
9	**2**	**2**	Hip joint & femur & tibia and fibula, Knee joint & ankle joint & foot trauma	Hip dislocation, Neck of femur fractures Trochanteric fracture of femur Shaft of femur fracture Supracondylar fracture.
10	**2**	**2**		Patella fractures Tibia and fibula shaft fractures Ankle joint fractures Foot trauma Fractures of calcaneus and talus
11	**2**	**2**	Internal derangement of the Knee, Ankle and foot	Brief review of knee joint anatomy, Anterior Cruciate injury, Posterior Cruciate injury, Meniscal injury.
12	**2**	**2**	Deformities of foot	Club foot, Flat foot, Hallux valgus, Hallux rigidus Claw toes, Pes cavus,

13	**2**	**2**	Poliomyelitis	Definition, Clinic and stage of disease, management.
14	**2**	**2**	Amputation	Indication, Classification, Technique & principles Complications.
15	**2**	**2**	Bone tumors	Classification, Clinical findings, Differential diagnosis, Osteoma, Osteoblastoma.
16	**2**	**2**		Chondroma, Aneurismal bone cyst, Hemangioma Fibroma, Giant cell tumor, Osteosarcoma Eving tumor, Multiple myeloma

Textbooks and Reference books Recommended (Last edition)

- Textbook of Orthopedics, John Ebnezar.
- Textbook of Orthopedics and Trauma, Kulkarni GS.
- A Manual of Orthopedics Terminology, Fred RT. Nelson.
- Practical Orthopedics, Lonnie Mercier.
- Essential Orthopedics. J. Maheshwari.
- Natarajans Textbook of Orthopedics & Traumatology, MV. Natarajan.
- Color Atlas of Clinical Orthopedics, Szendroe, Miklos, Franklin.

XXXIV- Otorhinolaryngology

Goals

The broad goals of teaching graduate students' otorhinolaryngology are to ensure that they acquire adequate knowledge, skills and attitude for optimum treatment (including emergencies), rehabilitation of common otorhinolaryngology disorders and assessment of the need for referral to specialized care.

Learning Objectives

a- Knowledge

At the end of course, student shall be able to:

- Examine and diagnosis common ear, nose, and throat problems;
- Suggest common investigative procedures and their interpretation to diagnose and manage the patient;
- Treat the common ear, nose, throat and neck problem at primary care center, while treating the patient;
- He should know the rational use of commonly used drugs with their adverse effects.
- Train to perform various minor surgical procedures like ear syringing nasal packing and biopsy procedure;
- Assist common surgical procedures, such as tonsillectomy, mastoidectomy, septoplasty, tracheostomy and endoscopic removal of foreign bodies.

b- Skills

At the end of course, student shall be able to:

- Proper Ear, Nose and throat examination;
- Discussion on common ENT conditions like; deviated nasal septum, nasal polyps, cancer of larynx;
- Oriented to commonly used ENT instruments and X-Rays in ENT practice;

- Exposed to commonly done OPD procedures like nasal packing, ear packing, cautery etc;
- Exposed to selective operative procedures like tracheostomy, tonsillectomy, septoplasty, nasal polypectomy etc.

Course content

Otorhinolaryngology				
Discipline			**Clinical science and skills**	
Department			**Otorhinolaryngology**	
Course title			**Otorhinolaryngology**	
Pre-requisite			**Basics of Surgery**	
Course code			**MED10 035**	
Academic year			**V**	
Semester		**10**	**Spring/Fall**	
Number of Credits		**4**	**Knowledge**	**2**
			Clerkship	**2**

Week	Hours		Topics	Descriptions
	Knowledge	Clerkship		
1	**2**	**2**	Brief review of anatomy of the ear	Auricle, External auditory canal Anatomy of the Ear: Middle Ear, Inner Ear
2	**2**	**2**	Brief Review of physiology of the ear and deafness	Mechanism of hearing and sound transmission, Clinical Method of Ear, Symptomatology of aural diseases (Otalgia, Otorrhagia Irritation, Otorrhea, Tinnitus) Deafness: Definition, Types (Conductive, Sensorineurai)
3	**2**	**2**	Disease of the Ear	Disease of External Ear, Disease of the pinna Disease of External auditory canal
4	**2**	**2**	Disease of the Ear	Disease of Tympanic Membrane, Acute Suppurative Otitis Media. Acute Necrotizing Otitis Media, Serous Otitis media
5	**2**	**2**	Disease of the Ear	Chronic Suppurative Otitis Media Intracranial complications of otitis media, Otosclerosis and Meniere's disease
6	**2**	**2**	Disease of the Ear	Tumors of External Ear: Benign Tumors of External Ear : Malignant
7	**2**	**2**	Brief Review of Anatomy and physiology of the Nose.	External Nose, Nasal cavity, Maxillary sinuses, Frontal sinuses. Ethmoidal sinuses, Sphenoid sinuses, Physiology of Nose and Para nasal sinuses: Clinical Method of Nose

8	**2**	**2**	Epistaxis and fracture of the Nose	Epistaxis: Definition, Classification, Causes, Treatment. Fracture of Nose: Types, Clinical features, Investigation, treatment,
9	**2**	**2**	Rhinitis	Definition, Classification, Atrophic Rhinitis, Rhinitis Sicca, Rhinitis Caseosa, Malignant Granuloma, Allergic Rhinitis: Definition, Causes, Mechanism, pathology, Clinical of feature.
10	**2**	**2**	Sinusitis	Sinusitis: Complications of sinusitis, Tumors and Cyst of nose and Para nasal sinuses
11	**2**	**2**	Anatomy & physiology of pharynx	Nasopharynx, Oropharynx, Clinical Method of Pharynx Adenoids, Acute and Chronic Nasopharyngitis
12	**2**	**2**	Tumors of Nasopharynx	Benign and Malignant Tumors of Nasopharynx, Acute pharyngitis
13	**2**	**2**	Diseases of the Pharynx	Chronic pharyngitis: Chronic catarrhal pharyngitis, chronic Granular pharyngitis, chronic Atrophic, Pharyngitis, Keratosis Pharyngitis, Applied Anatomy of faucial tonsil, Acute Tonsillitis, Faucial Diphtheria, Chronic Tonsillitis, Indications for Tonsillectomy.
14	**2**	**2**	Deep Neck Space Infection and oropharynx tumors	Neck Space infection, Oropharynx tumors: Benign Malignant
15	**2**	**2**	Brief review of Anatomy of the Larynx	Muscles, Cavity of Larynx, Blood, Supply, Innervations, Lymphatic drainage, Physiology of Larynx and Clinical Method of Larynx
16	**2**	**2**	Stridor and Tumors of the Larynx	Stridor: (Types, Causes),Acute Laryngitis, Acute Epiglottitis, Acute Laryngotracheobronchitis, Chronic laryngitis, TB of Larynx, Perichondritis of the larynx Tumors of Larynx: Benign & Malignant, Tracheostomy Definition, Applied Anatomy of the, Trachea, Classification, Function of tracheostomy, Indication, Contraindication, Procedure.

Textbooks and Reference Books Recommended (Last editions)

- Cumming's Otorhinolaryngology, Head & Neck Surgery, Paul W. Flint, Bruce H. Haughy.
- Essential Otorhinolaryngology, Head and Neck, K, J. Lee.
- Scott-Brawn's Otorhinolaryngology, David Adams &Michael Cennamond.
- Key Topics in Otorhinolaryngology, NJ Roland, RDR. McRae, AW. Mc Combe.
- Ballenger's Otorhinolaryngology, Head & Neck surgery, James B. Snow-. AshleyWackym.

XXXV- Pediatrics

Goals

The broad goals of the teaching of graduate students in pediatrics are to acquire knowledge and appropriate skills for optimally dealing with major health problems of children and to ensure their optimal growth and development.

Learning objectives

a- Knowledge

At the end of the course, the student should be able to:

- Describe the normal growth and development during fetal life, neonatal period, childhood and adolescence;
- Describe the common pediatrics disorder and emergencies in terms of epidemiology, etiopathogenesis, clinical manifestations, diagnosis, rational therapy and rehabilitation;
- Describe age related requirements of calories, nutrients, fluids in health and disease;
- Describe preventive strategies for common infectious disorders, malnutrition, genetic and metabolic disorders, poisonings, accidents and child abuse;
- Outline national programs relating of child health including immunization Programs.

b- Skills

At the end of the course, the student should be able to:

- Take a detailed pediatrics history, conduct an appropriate physical examination of children including neonates, make clinical diagnosis, conduct common bedside investigative procedures, interpret common laboratory investigations and plan and institute therapy;
- Take anthropometric measurements, resuscitate newborn infants with bag and mask at birth, prepare oral rehydration solution, perform tuberculin test, administer vaccines available under current national programs, start an intravenous line and provide naso gastric Feeding, observe venesection and intra- osseous infusion if possible;
- conduct diagnostic procedures such as lumbar puncture, bone marrow aspiration, pleural tap and ascitic tap; observe liver and kidney biopsy;
- Distinguish between normal newborn babies and those requiring special care and institute early care to all new born babies including care of pre-term and low birth weight babies, provide correct guidance and counseling in breast-feeding;
- Provide ambulatory care to all sick children, identify indications for specialized/inpatient care and ensure timely referral of those who require hospitalization.

Course contents

Neonatology				
Discipline			**Clinical science and skills**	
Department			**Neonatology**	
Course title			**Neonatology diseases**	
Pre-requisite			**Basics of biomedical science**	
Course code			**MED9 033**	
Academic year			**V**	
Semester		**9**	**Spring/Fall**	
Number of credits		**2**	**Knowledge**	**1**
			Clerkship	**1**

Week	Hours		Topics	Descriptions
	Knowledge	Clerkship		
1	**1**	**1**	General consideration	Definitions, Neonatal reflexes
2	**1**	**1**	Routine Care of the newborn, resuscitation and transportation of sick neonat	Equipment of resuscitation, Initial steps, resuscitation with room air, Bag and mask Ventilation, Endotracheal Intubation, External Cardiac massage and medication, hypothermia, hyperthermia.
3	**1**	**1**	Perinatal Asphyxia (Birth Asphyxia)	Definition, risk factors, pathophysiology, Diagnosis and management
4	**1**	**1**	Common Problems of the Newborn	Definitions, Clinic, treatment, Asses and classification of diarrhea
5	**1**	**1**	Fluid and nutrition of the newborn baby	Physiologic requirement of fluid and electrolyte. feeding and asses and classify feeding problem.
6	**1**	**1**	Jaundice and hyperbilirubinemia	General considerations, Physiologic jaundice
7	**1**	**1**	Pathologic Jaundice	Causes, hemolytic disease of the new born Jaundice associated with breast feeding
8	**1**	**1**	Kernicterus	Definition, Clinic, diagnosis and treatment (Phototherapy, Exchange transfusion).
9	**1**	**1**	Neonatal sepsis (septicemia, pneumonia, meningitis, UTI)	Definition, causes, Clinic, diagnosis and treatment asses and classify possible serious bacterial infection
10	**1**	**1**	Birth injury	Intraventricular hemorrhage, caput succidanium cephal hematoma, spine and spinal cord injury,

				brachial palsy, facial palsy.
11	**1**	**1**	Prematurity	Causes, clinic, Physiological handicap, general problems, risk factors, assessment of gestational age, management.
12	**1**	**1**	Metabolic disorder (Hypoglycemia and hypocalcaemia)	Causes, clinical features, diagnosis and management
13	**1**	**1**	Respiratory distress syndrome(KMB)	Definition, General consideration, Classification, Diagnosis and Management.
14	**1**	**1**	Neonatal seizures	Types of seizures, causes, diagnosis, complication and prognosis, treatment.
15	**1**	**1**	Perinatal infections TORCH	Clinical features, diagnosis, management and prevention.
16	**1**	**1**	Bleeding disorder and Anemia	Causes, Clinic, diagnosis and treatment

Pediatrics (Module1)				
Discipline			**Clinical science and skills**	
Department			**Pediatrics**	
Course title			**Essential of pediatrics, Gastrointestinal and endocrine disorders**	
Pre-requisite			**Basics of biomedical science**	
Course code			**MED9 032**	
Academic year			**V**	
Semester		**9**	**Spring/Fall**	
Number of credits		**2**	**Knowledge**	**1**
			Clerkship	**1**

Week	**Hours**		**Topics**	**Descriptions**
	Knowledge	**Clerkship**		
1	**1**	**1**	Growth and development	Definition, weight, height, head and arm circumference .dentition, fine motor .gross motor assessment
2	**1**	**1**	Rights of children and child abuse	Definition, child survival, child protection.
3	**1**	**1**	Behavioral disorders	Definition & types (PICA, enuresis, anorexia, breath holding spells), diagnosis treatment,

4	**1**	**1**	Nutrition /feeding /breast feeding/ weaning	Definition, principle of feeding, steps of good feeding. Calorie requirement energy substrates, protein. carbohydrate, fat. minerals and vitamins,) Breast feeding. artificial feeding, time of weaning, weaning foods .IMCI
5	**1**	**1**	Malnutrition (under nutrition)	Definition, types, Complication, clinic, laboratory, Diagnosis & Management IMCI.
6	**1**	**1**	Vitamin A & D deficiency	Definition, Pathophysiology, Clinical presentation, Diagnosis, Laboratory Finding, Complication Treatment IMCI.
7	**1**	**1**	Water and electrolyte disturbances /fluid /acidosis /alkalosis	Fluid composition, regulation of water, sodium and potassium, fluid therapy in deferent clinical situations.
8	**1**	**1**	Approach to abdominal pain/ infantile colic	Approach, causes, acute abdominal pain, chronic and recurrent abdominal pain, management /causes, evaluation, and management.
9	**1**	**1**	Diarrhea	Definition, Acute watery diarrhea and chronic diarrhea, causes, pathophysiology, diagnosis, management (assessment of the child with IMCI).
10	**1**	**1**	Dehydration	Definition .assessment of severity .treatment plan A, B,C, nutrition management (IMCI)
11	**1**	**1**	Juvenile rheumatoid arthritis	Definition, Etiopathogenesis, Clinical feature, Lab Exam, diagnosis, treatment, complication.
12	**1**	**1**	Hypothyroidism	Definition, Etiopathogenesis, Clinical feature, Lab. Exam diagnosis, treatment,
13	**1**	**1**	Diabetes mellitus	Definition, classification, Clinical feature, Lab. Exam diagnosis, treatment, complication, prognosis
14	**1**	**1**	Approach to seizur (febrile convulsion and epilepsy)	Causes, clinic, role of investigation .management /types of febrile convulsion .treatment, prophylaxis
15	**1**	**1**	Down syndrome, cerebral palsy	Definition, Clinical feature, diagnosis, treatment.
16	**1**	**1**	Approach to child with coma	Definition, causes, stages of coma, GCS in children, diagnosis treatment

Pediatrics (Module 2)					
Discipline			**Clinical science and skills**		
Department			**Pediatrics**		
Course title			**Respiratory, Cardiac and hematological & Renal disorders of pediatrics**		
Pre-requisite			**Basics of biomedical science**		
Course code			**MED10 032**		
Academic year			**V**		
Semester		**10**	**Fall/Spring**		
Number of credits		**2**	**Knowledge**	**1**	
			Clerkship	**1**	

Week	**Hours**		**Topics**	**Descriptions**
	Knowledge	**Clerkship**		
1	**1**	**1**	Common cold and croup	Definition & Clinical feature, differential diagnosis of acute URTI (epiglottis, laryngitis and laryngothracheobronchitis spasmodic croup), management
2	**1**	**1**	Pneumonia	Definition, Etiology, pathology, Clinical feature Lab exam, diagnosis, deferential diagnosis, treatment, complication,(IMCI)
3	**1**	**1**	Approach wheeze and bronchial asthma	Definition, causes of wheeze; pathophysiology, pathology, clinical feature, diagnosis, Lab. exam, diagnosis, deferential diagnosis, treatment, complication, IMCI.
4	**1**	**1**	Bronchiolitis	Definition, Etiopathogenesis , Clinical feature, Lab exam, diagnosis, deferential diagnosis, complication, treatment and prognosis.
5	**1**	**1**	Congenital heart diseases	Definition, Etiopathogenesis, common type's Clinical feature, diagnosis and Nadas criteria treatment.
6	**1**	**1**	Congestive heart failure	Definition, causes, pathophysiology, clinical features, treatment and prognosis
7	**1**	**1**	Rheumatic Fever	definition, Etiopathogenesis ,Clinical feature criteria for diagnosis, treatment, complication, prevention and prognosis
8	**1**	**1**	Shock	Definition & BP measurement in children,

				Etiopathogenesis , Clinical feature types, Lab. Exam, diagnosis, treatment, complication, and prognosis.
9	**1**	**1**	Approach to anemia and nutritional (iron deficiency megaloblastic anemia)	Definition, classification, Etiopathogenesis, Clinical feature, Lab. Exam, diagnosis, treatment, complication, prevention, and prognosis.
10	**1**	**1**	Thalassemia/ G6PD	Definition, classification and types, Clinical feature, diagnosis, treatment, complications of recurrent blood transfusion, prognosis.
11	**1**	**1**	Aplastic anemia	Definition, causes, Clinical feature, Lab. Exam, diagnosis & Differential diagnosis ., complication, treatment prognosis.
12	**1**	**1**	Immune thrombocytopenic purpura /hemophilia	Definition, Etiopathogenesis, Clinical feature diagnosis and differential diagnosis, treatment, complication, prognosis
13	**1**	**1**	Leukemia/acute lymphoblastic leukemia	Definition, Etiopathogenesis, Clinical feature, Lab. Exam, diagnosis, treatment, complication and prognosis
14	**1**	**1**	Urinary tract infection /acute glomerulonephritis	Definition, Etiopathogenesis, Clinical feature diagnosis, complication, treatment, prevention and prognosis.
15	**1**	**1**	Nephrotic syndrome	Definition, classification, Etiopathogenesis, Clinical feature diagnosis, complication, treatment, prevention and prognosis.
16	**1**	**1**	Acute renal failure	Definition, causes, Etiopathogenesis ,Clinical feature diagnosis, treatment, complication And prognosis.

Pediatrics (Module 3)				
Discipline			**Clinical science and skills**	
Department			**Pediatrics**	
Course title			**Infectious diseases**	
Pre-requisite			**Basics of biomedical science**	
Course code			**MED10 042**	
Academic year			**V**	
Semester		**10**	**Fall/Spring**	
Number of credits		**2**	**Knowledge**	**1**
			Clerkship	**1**

Week	**Hours**		**Topics**	**Descriptions**
	Knowledge	**Clerkship**		
1	**1**	**1**	Fever and immunization	Definition of fever, Etiopathogenesis, Lab. Exam, diagnosis, treatment, complication, Definition of vaccines, types of vaccines, national Immunization table.
2	**1**	**1**	Measles & Rubella	Definition Etiopathogenesis, Clinical feature, Lab. Exam diagnosis treatment, complication, prevention and prognosis
3	**1**	**1**	Childhood tuberculosis & TBM	Definition Etiopathogenesis. Clinical feature, Lab. Exam, diagnosis, treatment, complication, prevention and prognosis
4	**1**	**1**	Mumps	Definition, Etiopathogenesis ,Clinical feature Lab. Exam .diagnosis, treatment, complication, prevention and prognosis
5	**1**	**1**	Pertussis	Definition, Etiopathogenesis, Clinical feature, Lab exam, diagnosis, treatment, complication, prevention and prognosis.
6	**1**	**1**	Poliomyelitis	Definition, Etiopathogenesis, Clinical feature, Lab. Exam, diagnosis, D/Dx, treatment, complication, prevention and prognosis.
7	**1**	**1**	Chicken pox	Definition, Etiopathogenesis , Clinical feature, Lab. exam, diagnosis, D/Dx, treatment, complication, prevention and prognosis.
8	**1**	**1**	Typhoid fever	Definition, Etiopathogenesis , Clinical feature, Lab. Exam, diagnosis, D/Dx, treatment, complication, prevention and prognosis.

9	**1**	**1**	Viral hepatitis(A,B)	Definition, Etiopathogenesis , Clinical feature, Lab. Exam, diagnosis, D/Dx, treatment, complication, prevention and prognosis.
10	**1**	**1**	Malaria	Definition. Etiopathogenesis, Clinical feature, Lab. Exam diagnosis, treatment, complication, prevention and prognosis.
11	**1**	**1**	Childhood HXV/AIDS	Definition, Etiopathogenesis, Clinical feature, Lab. Exam, diagnosis, treatment, complication, prevention and prognosis.
12	**1**	**1**	Shigellosis (bacillary dysentery) and Ameobiasis	Definition, Etiopathogenesis, Clinical feature, Lab. Exam, diagnosis, treatment, complication, prevention and prognosis.
13	**1**	**1**	Encephalitis & Encephalopathy	Definition, Etiopathogenesis , Clinical feature, Lab. Exam, diagnosis, D/Dx, treatment, complication, prevention and prognosis
14	**1**	**1**	Child hood pyogenic meningitis (ABM)	Definition, Etibphatliogenesis, Clinical feature. Lab. Exam, diagnosis, D/Dx, treatment, complication, prevention and prognosis.
15	**1**	**1**	Intestinal helminthosis	Definition, Etiopathogenesis , Clinical feature, Lab. Exam, diagnosis, D/Dx, treatment, complication, prevention and prognosis.
16	**1**	**1**	Sepsis	Definition, Etiopathogenesis , Clinical feature, Lab. Exam, diagnosis, D/Dx, treatment, complication, prevention and prognosis.

B- Skills

1-Inpatient training

- Taking a detailed Pediatric history;
- Conducting physical examination of children;
- Understanding normal growth and development;
- Performing anthropometry and its interpretation;
- Developmental assessment of a child;
- Assessment of calorie/ protein intake and advice regarding feeding practice;
- Immunization schedule and administration;
- Evaluation and management of common OPD conditions;
- Medical conduct dining patient examination.

2- Clinical OPD cases

- Approach to a child with acute fever (evaluation and management of common febrile conditions including viral fever, enteric fever, malaria, UTI);
- Approach to a child with chronic fever (evaluation and management of pulmonary tuberculosis);
- Common viral exanthemas including measles and chicken pox;

- Common skin conditions including pyoderma, scabies;
- Common GI conditions including acute gastroenteritis, persistent diarrhea and infective hepatitis;
- Common respiratory conditions including viral URI, bacterial pharyngitis, laryngeal stridor and croup, acute lower respiratory tract infection (LRTI) and asthma.
- Common CNS conditions including febrile seizures, epilepsy, developmental delay
- Evaluation of normal infants for growth and development and advice regarding nutrition and immunization.

3- Subjects for tutorials

- History taking, I (Present, past and family);
- History taking II (Antenatal, development, immunization, feeding);
- General physical examination and Anthropometry;
- Development examination and interpretation of abnormal development,
- Assessment of nutritional intake and nutritional advice;
- Demonstration of BCG, OPV, DPT and Measles vaccination, Manthoux testing.

4- Ward Rounds

Each student will be allotted 4 beds on the first day of the posting. The students are expected to maintain a diary of all the cases admitted on those 4 beds. The student should be acquainted with the diagnosis and day to day progress of the child. The rounds will be taken daily on a rotation basis.

Clinical case discussion

1 – Neonatology

- Neonatal history;
- Examination of newborn;
- Care of normal newborn at birth and lying in ward;
- Breast feeding;
- Management of common neonatal problems.

2 – Pediatrics

Clinical case discussion with emphasis on history taking, physical examination, nutrition and developmental assessment, differential diagnosis, investigations and management.

List of Instruments

- Tuberculin syringe;
- Intravenous cannula;
- Lumbar puncture needle;
- Bone marrow aspiration needle;
- Liver biopsy needle;
- Ambu-bag and mask;
- Endotracheal tube;
- Laryngoscopes;
- Emergency drugs/ Vaccine.

List of procedures

- Injections (EM, IV, S/C, I/D);
- Blood sampling, IV cannula insertion;
- Naso-gastric (NG) tube insertion;
- Lumbar puncture (LP);
- Pleural/Ascitic tap;

Textbooks and Reference books Recommended (last editions)

- Nelson's Textbook of Pediatrics, Kliegman, Stanton, ST Geme.
- Forfars & Arneils Textbook of Pediatrics, Neil Mcintosh, Peter J Helms.
- Achar's Textbook of Pediatrics, Swarna Rekha Bahat.
- Ghai's Essential Pediatrics, OP. Ghai, Vinod K. Paul, Bagga.
- Rennie & Robertso's Textbook of Neonatology, JM Rennie.
- Emergency in Pediatrics & Neonatology, Stuarts Crisp, Jo Reinbow.
- Textbook of Pediatrics Infectious Diseases, Carol J: Buck, Gail J. Demmier.

XXXVI- Pediatrics surgery

Objectives

Knowledge

- Variable requirements for communication according to age;
- Specific ethical and legal Issues affecting the practice of Pediatric Surgery (Including issues of consent);
- The symptom patterns, differential diagnosis, investigation and management of Common pediatric surgical conditions;
- The theoretical basis of life support approaches in pediatric surgery;
- The principles of surgical intervention.

Skills

- History taking relevant to specific age or developmental stage;
- Appropriate examination techniques for children of different ages;
- Basic life support skills in pediatric practice;
- **Ability to communicate appropriately with:**
  - Patients
  - Relatives/Careers
  - Colleagues, including ward & outpatient teams
- **In respect of common clinical presentations, including:**
  - The child with abdominal pain
  - Abdominal wall pathologies
  - The vomiting child
  - Common urological conditions.
  - Trauma
  - Constipation
  - Head / Neck swellings
  - Intussusception

  - Ingrowing toe nail
  - Abscess
- **Groin conditions:**
  - Hernia
  - Hydrocele
  - Penile inflammatory conditions
  - Undescended testis
  - Acute scrotum
- **The ability to:**
  - Construct a differential diagnosis
  - Interpret investigations
  - Construct a management plan for common conditions

Course Contents

Pediatrics Surgery					
Discipline			**Clinical science and skills**		
Department			**Pediatrics Surgery**		
Course title			**Pediatrics Surgical diseases**		
Pre-requisite			**Basics of surgery**		
Course code			**MED10 034**		
Academic year			**V**		
Semester		**10**	**Spring**		
Number of credits		**2**	**Lecture**	**1**	
			Clerkship	**1**	
Week	**Hours**		**Topics**	**Descriptions**	
	Lecture	**Clerkship**			
1	1	1	Congenital Anomaly of the Head	Cranial cerebral Herniation (Definition incidence, Classification sign and symptom Diagnosis, Differential Diagnosis, Treatment Complication After surgery complication Cranio-synostosis (Definition, Clinical feature, Type of cranio-synostosis, Treatment	
2	1	1	Hydrocephalous Spina bifida	Hydrocephalous: Definition, Classification, Clinical feature, Investigation Treatment, Complication Spina bifida: Definition, Classification, Diagnosis, Treatment.	
3	1	1	Abdominal wall anomalies	Urachal Anomalies (Definition, Classification, Treatment), Prune belly syndrome (Definition, Physiopathology, Sign arid symptom, Diagnosis, Treatment, Prognosis).	

4	1	1	Abdominal wall anomalies	Umbilical Hernia (Definition, sign and symptom, Treatment Exomphalocele (Definition, Type, Treatment)
5	1	1	Infantile congenital Gastrointestinal obstruction	Meconium, ileus, Definition, Pathognomonic Test, Pathology, Surgical Treatment, Post operation Care) Meckel's diverticulum (Definition, Type, Diagnosis, Complication, Treatment).
6	1	1	Infantile congenital Gastrointestinal obstruction	Imperforated Anus (Definition, Classification, Deference between low variety and high variety, Diagnosis, Treatment).
7	1	1	Infantile congenital Gastrointestinal obstruction	Intussusceptions (Definition, Causes, Incidence, Sign and symptom, Treatment, Complication of un operated Patient), Congenital Hypertrophic Pyloric stenosis (Definition, Incidence, Pathology, Sign and symptom, diagnosis, differential diagnosis Treatment, Operation Technique, Post Operation Preparation, Complication)
8	1	1	Congenital Mega colon	Hirsch prong Disease (Definition, Causes, Incidence, Clinical Type, Pathology, Sign and symptom, Diagnosis, Treatment, Medical Treatment, Complication), Acquired Mega colon (Definition, Treatment, Result).
9	1	1	Hernia	Definition, Classification, Anotomopathology Inguinal Hernia (Surgical Anatomy, Difference between g direct and indirect inguinal hernia) Direct inguinal hernia (Definition, Clinical Type, Sign and symptom, Deferential Diagnosis, Treatment) Indirect Inguinal Hernia (Definition classification, Conservative Treatment, Surgical Treatment).
10	1	1	Teratoma Postanal dermoid cyst	Definition, Classification Sign and symptom Treatment
11	1	1	Polycystic disease of the Kidney	Definition, Incidence, Clinical Type, Pathology Clinical Manifestation, Diagnosis, Differential Diagnosis, Prognosis, Treatment).
12	1	1	Nephroblastoma	Wilm's Tumor (Definition, Clinical presentation, Staging, Differential diagnosis, Treatment).
13	1	1	Neuroblastoma Bladder Extrophy Bladder Neck Sclerosis	Definition, Incidence, Clinical Presentation, Diagnosis, Differential Diagnosis, Staging, Treatment),(definition, Incidence, Sign and Symptom complication, Treatment, Osteotomy, Making Artificial Bladder), (Definition, Sign and Symptom, Staging, Diagnosis, Treatment).
14	1	1	Cardiac Injuries	Definition, History, Donor and recipient, Contraindication of cardiac Transplantation,

			Cardiac Transplantation	Compatibility of Donor-Recipient, Type and specification & of Donor, Operative Technic, Complication, Operation Result, Cardiac blind Injuries (Definition Classification, sign and symptom, Diagnosis, Treatment), Cardiac penetrating injuries (Definition, Sign and symptom, Diagnosis, Treatment).
15	1	1	Congenital Heart Diseases	Atrial Septal Defect (A.SD) (Definition, Clinical Presentation, Diagnosis, Treatment), Ventricular septal Defect (VSD) (Definition, Sign and Symptom, Diagnosis, Treatment).
16	1	1		Atria Ventricular Septal Defect (Definition, Sign and Symptom, Classification, Diagnosis Treatment, prognosis) tetralogy of fallot (definition, hemodynamic changes, sign and symptom, diagnosis, treatment.

Textbooks and Reference Books Recommended (last editions)

- Prognosis) Tetralogy of Fallot (Definition, hemodynamic Changes, Sign and symptom, Diagnosis, Treatment).
- Principles and practice of Pediatrics surgery, Keith E. Oldham, Paul M. Colombani.
- Pediatrics Surgery, Arnold G. Goran.
- Principles of Pediatrics Surgery, James A, Oneill, Jr. Jay R. Grosfeld.
- Pediatrics Surgery, Diagnosis & Management, Prem Puri, Michael Hollwarih.

XXXVII- Clinical Psychiatry

Learning objectives

At the end of the course, the student will be able to:

- Introducing concept of psychiatric disorders and their classification; Awareness of general issues about etiology of psychiatric disorders and methodology used to study etiology of these disorders;
- Ability to diagnose and treat common psychiatric disorders like schizophrenia, acute manic episode, depression, anxiety disorders including phobias and OCD, conversion and dissociative disorders;
- To be able to diagnose severe/suicidal cases of depression and to refer them;
- Understand the concept of personality disorders;
- Ability to diagnosis and treat alcohol and drug dependence and withdrawal states;
- Ability to diagnose common psychiatric disorders in children;
- To know the role of counseling and psychological therapies in treatment of psychiatric disorders;

Course content

Psychiatry				
Discipline			**Clinical science and skills**	
Department			**Neurology and Psychiatry**	
Course title			**Clinical Psychiatry**	
Pre-requisite			**Behavioral Science and basic biomedical Sciences**	
Course code			**MED11 038**	
Academic year			**VI**	
Semester		**11**	**Fall/Spring**	
Number of credits		**2**	**Knowledge**	**1**
			Clerkship	**1**

Week	Hours		Topics	Descriptions
	Lecture	Clerkship		
1	**1**	**1**	Psychiatric history and examination	Presentation, (level of consciousness, General appearance), motor behavior, Affect, cognitive state (Attention, orientation, language, memory), reasoning, mood, thought, perception.
2	**1**	**1**	Schizophrenic disorders	Definition, natural history, incidence, prevalence, etiology, sign & symptoms, sub type of schizophrenia, course, D/DX, diagnostic criteria, treatment, prognosis.
3	**1**	**1**	Mood disorders	Epidemiology, natural history, etiology, clinic, DSM -IV diagnostic critic for mania, DSM- IV diagnostic criteria for anxiety patients,
4	**1**	**1**		Bipolar disorders, dysthymia, cyclothymia, types of bipolar disorders, course and prognosis, treatment for mania, social treatment, behavior treatment, psychotherapy.
5	**1**	**1**	Anxiety disorders	Definition, epidemiology, theory of anxiety, panic attack, agoraphobia, social phobia, specific phobia, OCD, generalized anxiety disorders, treatment.
6	**1**	**1**	Sexuality disorders	Human Sexuality, Sexual identity, sexual response cycle, sexual dysfunction, desire disorders, arousal disorder, orgasmic disorders, sexual pain disorders, paraphilias, gender identity disorder.
7	**1**	**1**	Personality disorders	Definition, epidemiology, etiology, classification (paranoid personality disorders, schizoid personality disorders, schizotypal personality disorders, histrionic personality

				disorders, borderline personality disorders, Narcissistic personality disorders, antisocial personality disorders, avoidant personality disorders, OCD personality disorders, dependent personality disorders).
8	**1**	**1**	Somatoform disorders	Definition, types; somatization disorders, conversion disorders, pain disorders, hypochondriasis, body dysmorphic disorders.
9	**1**	**1**	Mental retardation	Definition, nomenclature, classification, severity, epidemiology, neurological disorders, genetic syndromes, psychosocial syndromes, etiology, genetic factors, Down syndrome, fragile x syndrome, cat cry syndrome, Acquired and developmental factors, environmental and socio cultural factors, diagnosis, prognosis, treatment.
10	**1**	**1**	Eating disorders	Definition, anorexia, eating disorder as a pathological behavior (epidemiology, etiology, clinic, diagnosis, course, prognosis, treatment). Elimination disorders, Enuresis, encopresis (epidemiology, etiology, diagnosis, treatment). Bulimia nervosa (epidemiology, etiology, clinic, treatment), PICA, Rumination disorders.
11	**1**	**1**	Cognitive disorders	Delirium (Definition, epidemiology, etiology, clinical sign and symptoms, Course, diagnosis, lab exam, treatment. Deniemia (Definition, epidemiology, etiology, Clinic) Alzheimer dementia, (etiology), vascular dementia, D/Dx of I dementia, diagnosis, treatment. Amnestic disorders (Definition, etiology).
12	**1**	**1**	Factitious disorders	Definition, epidemiology, etiology, diagnosis and clinical features, Factitious disorder predominantly psychological sign and symptoms, Factitious disorders with predominantly physical sign and symptoms, Factitious disorder with combined psychological and physical sign and symptoms, Factitious disorder not otherwise specified, pathology and laboratory examination, differential diagnosis, prognosis, treatment)
13	**1**	**1**	Malingering	Definition, sign and symptoms, diagnosis, treatment.
14	**1**	**1**	Normal sleep & sleep Disorders	Definition and sleep physiology, insomnia, hypersomnia, types of hypersomnia, sleep apnea, narcolepsy, (sleep attack, muscle atonia, sleep paralysis, hypnogogic and hypnopompic hallucination, treatment), klein Levine syndrome, parasomnia, night mare, night terror, Enuresis.

15	**1**	**1**	Dissociative disorders	Definition, types, dissociative amnesia (epidemiology, etiology, clinic, D/Dx, treatment), Dissociative fugue (epidemiology, etiology, clinic, D/Dx) Dissociative identity disorders (epidemiology, etiology, clinic, diagnosis, course and prognosis). Depersonalization disorders (epidemiology, etiology, clinic, diagnosis, course, treatment).
16	**1**	**1**	Adjustment disorders	Epidemiology, etiology, diagnosis and clinical feature, differential diagnosis, course and prognosis, treatment.

Teaching and learning methodology

- Lectures and discussions with patients

Textbooks and Reference books Recommended (last editions)

- Essentials of Psychiatry, Robert E. Hales, Stuart C.
- Textbook of Clinical Psychiatry, Robert Hales.
- Comprehensive Clinical Psychiatry, Thedore E Stern, Jerrold F. Rosenbaum.
- The Neuroscience of Clinical Psychiatry, Edmond S. Higgens, Mark S. george.
- Kaplan's & Sadoques Synopsis in Psychiatry, Benjamines James, Sadock MD.

XXXVIII- Clinical Neurology

Learning objectives

At the end of this module, students should be able to:

- List categories of diseases of the nervous system;
- Describe the common clinical presentations of nervous system diseases.
- Incorporate laboratory data into the assessment of a patient with a nervous system disorder;
- Correlate neuroradiographic and EEG findings with specific CNS disorders;
- Identify the pathogens and recognize the clinical manifestations associated with CNS infections;
- Describe the diagnostic procedures, work up, approach to the patient and treatment options for various disorders including cerebrovascular accident, neoplastic diseases, headache and epilepsy;
- Discuss the goals of therapy of CNS disorders based on the underlying pathophysiological condition;
- Explain how the mechanisms of action of drugs that act in the CNS lead to their therapeutic effect;
- Identify the most common side effects and toxicities of each class of CNS-acting

Course content

Clinical Neurology					
Discipline			**Clinical science and skills**		
Department			**Neurology and Psychiatry Department**		
Course title			**Clinical Neurology**		
Course code			**MED10 036**		
Academic year			**V**		
Semester		**10**	**Fall/Spring**		
Number of credits		**2**	**Knowledge**	**1**	
			Clerkship	**1**	

Week	**Hours**		**Topics**	**Descriptions**
	Lecture	**Clerkship**		
1	**1**	**1**	Neurological History and examination	Motor system examination (Inspection, tone, forces reflexes) Cranial nerves Examinations (olfactory, optic, oculomotor, trochlear, trigeminal, abducens, facial, vestibulocochlear, glossopharyngeal, vagus, accessory and hypoglossal nerves), co- ordination and cerebellar examination, station and gait, sensory system examination (lamniscal and extra lamniscal sensory -system), Clinical approach to the Unconscious patients: Glasgow coma scale, Eye ball movement, Respiration, pupils and motor system examination. Laboratory investigations Blood, CSF, urine and stool, imaging.
2	**1**	**1**	Ischemic Stroke	Definition, Epidemiology, Etiology (thrombosis, Emboli &Hemorrhage).TIA (transient ischemic Attack) and Reversible ischemic neurological Deficit (RIND): Definition, risk factors, clinic (internal carotid circulation occlusion, vertebrobasilar circulation occlusion, important points during assessment of TIA patient, routine laboratory investigations. Special investigation and imaging: differential diagnosis, treatment, prevention Cerebral infarction: Definition, cerebral thrombosis (risk factors, clinic, laboratory investigations and imaging, management, prognosis, follow up, prevention). Cerebral embolism (risk factors, clinic, laboratory investigations, differential diagnosis of embolic and thrombotic cerebral infarction, treatment, drugs used in treatment of cerebral infarction)

3	**1**	**1**	Hemorrhagic Stroke	Intra Cerebral Hemorrhages: Definition, epidemiology, etiology, risk factors, clinic, investigations and imaging, treatment, prevention, prognosis, Differential diagnosis of stroke. Subarachnoid hemorrhage: (Definition, etiology, clinic, classification of stages I-V, Diagnosis, additional investigations and imaging, complication, medical treatment, surgical treatment, prognosis). Epidural Hematoma: (Definition, clinic, treatment, prognosis), Acute subdural hematoma: (Definition, clinic, treatment), Chronic subdural hematoma: Definition, diagnosis, treatment).
4	**1**	**1**	Unconsciousness and Coma	Definition, mechanisms, classification, initial management of unconscious patient (ABCD), history, vital sign, respiration, head and neck, papilledema, position of eye ball, movement of eye ball, pupils, extremities, Etiology of unconsciousness and coma: metabolic & neurologic. Investigation: blood, CSF, urine, stool, imaging, special tests. Assessment of brain stem in unconscious patients, Glasgow Coma Scale: locked in syndrome, vegetative state, special nursing care for unconscious patient
5	**1**	**1**	Parkinson disease	Definition, epidemiology, etiology, classification, idiopathic (bradykinesia, rigidity, tremor) Post encephalitis: torticollis, blephero spasm, oculogyric crisis, siallhorrhea. Atherosclerotic (pseudo bulbar play), strait nigral, toxic (co), drug induced (Reserpine, metoclopramide, phenothiazine derivatives), differential diagnosis, treatment prognosis.
6	**1**	**1**	Multiple sclerosis	Definition, epidemiology, etiology, clinic, prognosis, diagnosis, complication, treatment, differential diagnosis, other clinical multiple sclerosis.
7	**1**	**1**	Seizure disorders	Definition, etiology, classification, petit mal seizure, Grand mal seizure, partial seizure: (simple & complex seizure), reflex seizure, febrile convulsion, pseudo seizure, status epilepticus, management of tonic and colonics status epilepticus, laboratory investigation, differential diagnosis, treatment of seizures disorders, prognosis.
8	**1**	**1**	Neuropathies	Definition, clinical manifestations, etiology, laboratory investigation. Gillian-Bare Syndrome: Definition, clinical lab exam, Imaging (NCV, EMG, ECG & EEG), electrolytes, respiratory capacities, differentia] diagnosis, mood of onset, treatment, complications. Chronic inflammatory Demyelization Polyradiculoneuropathy: Definition, clinic, differential diagnosis, treatment. Charcot Marie Tooth Neuropathy: Definition,

				classification, differential diagnosis, management. Brachial plexus neuropathy: etiology, classification.
9	**1**	**1**	Degenerative neurological diseases	Definition, common sign and symptoms, classification, Alzheimer's disease: clinical manifestation, pathology, laboratory and imaging, differential diagnosis, treatment, prognosis. Dementia with lewy bodies: picks disease, multi infarct dementia, binswangers disease, Huntington's chorea, Olivopontocerebellers atrophy, Progressive supranuclear palsy, Shy-Dragger syndrome, Hallervoden -Spatz; disease, Friedreichs ataxia, Roussy- levy syndrome. Motor neuron disease: classification, Amyotrophic Lateral Sclerosis, progressive spinal muscular atrophy, bulbar palsy, pseudo bulbar palsy, primary lateral sclerosis, labor's hereditary optic atrophy, cerebeller degeneration, spastic para paresis, acute transverse myelitis (clinic, treatment).
10	**1**	**1**	Trigeminal neuralgia and facial paralysis	Brief review of Anatomy physiology. Facial paralysis: Definition, incidence clinic, etiology, diagnosis, differential diagnosis, prognosis, treatment. Trigeminal neuralgia: definition, diagnosis, treatment, prognosis.
11	**1**	**1**	Headache & vertigo	Headache: etiology, history, classification, Migraine: Definition, classification, differential diagnosis, treatment. Cluster headache: Definition, diagnosis, treatment. Vertigo: Definition, etiology, classification; important point when faced to patient who-has vertigo, clinic and investigation.
12	**1**	**1**	Cerebral tumor	Anatomy of the skull and brain, mechanism and sign of RICP, Brain edema: body fluid, etiology, treatment, pseudo tumor cerebri, normal pressure hydrocephalus. Brain tumor: (clinical manifestation of the brain tumor, laboratory investigation, classification), primary brain tumors, Gliomas, meningioma, penialoma, treatment.
13	**1**	**1**	Sydenham chorea	Definition, incidence, pathology, etiology, sign & symptoms, reflex, prognosis, diagnosis, treatment.
14	**1**	**1**	Congenital nerves system malformation and low back pain	Low back pain: Definition, etiology, classification, history, laboratory and imaging, diagnosis, prolapsed intervertebral disc, (clinic, and treatment). Congenital malformation of the CNS: cranial synostosis, platybasia (clinic, treatment, basilar investigation) anencephaly, Arnold - chiari malformation (clinic, diagnosis), dandy walker syndrome, syringomelia (clinic, diagnosis), spine malformation: dysraphism, Diastematomyelia, Klipel Feil Anomaly.
15	**1**	**1**	Myopathies	Definition, primary Myopathy, Duchene dystrophic myopathy, (Definition, clinic, prognosis), neurogenic myopathy, congenital myopathy, secondary myopathy

				(etiology, clinic)-, Neuromuscular Junction disease &) myasthenia gravis: (Definition, clinic, investigation, differential diagnosis, treatment).
16	**1**	**1**	Movement disorders	(personal history, family history, drugs),Tremor: (resting tremor, action tremor, intention tremor), hemiballismus, athetosis, dystonia: classification, focal dystonia, blepharospasm, hemi facial spasm, occupational cramp, segmental dystonia, tardive dystonia, Generalized - dystonia (etiology), Tic, Gilles de la turreted syndrome, treatment

Teaching and Learning Methodology

Department stress on teaching of basic fundamentals of clinical neurology through various methods especially bed side teaching.

The following tools are employed:

- Didactic lectures: discussion a particular topic at length in a one-hour lecture;
- Clinical training: The clinical training of graduate medical students.

Textbooks and Reference Books recommended (Last editions)

- Neurology in Clinical Practice, Robert B. Darrof.
- Harrison's Neurology in Clinical Medicine, Stephen L. Hausen.
- Textbook of Clinical Neurology, Christopher G Goetz.
- Clinical Neurology, David A. David Greenberg, Michael Aminoff, Roger Simon.
- Special Tests in Neurological Examination, James R. Scifers.

XXXIX- Surgery

Goals

The surgical clerkship is designed to introduce students to the theoretical and skills aspects of surgical patient care. Emphasis is placed on the underlying pathophysiology rather than technical aspects students are fully involved in the daily care of surgical patients and participate in diagnostic and therapeutic decision making. This course includes; didactic teaching sessions as well as bedside clerkship

Learning objectives

A- Knowledge:

At the end of the course, the student shall be able to:

- Describe etiology, pathophysiology, principles of diagnosis and management of common surgical problems including emergencies, in adults;
- Define indications and methods for fluid and electrolyte replacement therapy including blood transfusion;
- Define asepsis, disinfection and sterilization and recommend judicious use of antibiotics;
- Describe clinical features and risk factors of common malignancies in the country and their management including prevention.

B- Skills:

At the end of the course, the student should be able to:

- Diagnose common acute and chronic surgical conditions;
- Plan various laboratory tests for surgical conditions and interpret the results;
- Identify and manage patients of hemorrhagic, septicemic and other types of shock
- Be able to maintain patent air-way and resuscitate:
  - A critically injured patient
  - A patient with cardiorespiratory failure
  - A drowning case
- Monitor patients of head, chest, spinal and abdominal injuries, both in adults and children;
- Provide primary care for a patient of burns;
- Acquire principles of operative surgery, including pre-operative, operative and post -operative care and monitoring;
- Treat open wounds including preventive measures against tetanus and gas gangrene;

Procedures:

- Gets the permission;
- Explains the procedure;
- Wears gloves;
- Chooses an appropriate site;
- Applies tourniquet
  - *Cleans the area with antiseptic.*
  - *Holds the cannula properly (avoids touching the catheter)*
  - Inserts the cannula at an appropriate angle (oblique angle & in line with the vein)
  - Inspects the backflow of blood in the chamber
- **Advances the cannula for "a further distance**
  - Withdraws the stiletto & advances the cannula
  - Fixes the cannula
  - Connects the drip
  - Disposes the sharps in appropriate container
  - Disposes the glove in an appropriate container
  - Overall performance
  - Suturing
  - ET intubation
  - Bladder catheterization
  - Rectal examination
  - IV cannulation
  - Forceps application
  - Surgical knot

Course content

Surgery (Module 1)				
Discipline		**Clinical science and skills**		
Department		**Basics of Surgery**		
Course title		**First aid**		
Pre-requisite				
Course code		**MED2 024**		
Academic year		**I**		
Semester	**2**	**Spring/Fall**		
Number of credits	**2**	**Knowledge**	**1**	
		Clerkship	**1**	

Week	Hours		Topics	Descriptions
	Knowledge	Clerkship		
1	**1**	**1**	first aids	Introduction, Definition of first aid, Responsibilities of first aid, Philosophy of first aid
2	**1**	**1**		Health and safety, Exposure to biological Hazards, Universal precautions, Immediate action at scene following exposure, Priorities, General principles of first aid, General assessment of the situation
3	**1**	**1**	Casualty assessment	The primary survey; DRS ABCD Danger: (Moving casualty.), Response:(overview, causes of unconsciousness, How to check for responsiveness, four level of, responsiveness),Send for help: (Activating the Emergency Medical services),-Airway:(overview, airway obstruction, suffocation, strangulation, choking, how to check an airway)
4	**1**	**1**		Breathing:(causes of absent or ineffective breathing, Signs of ineffective breathing, How to check for breathing, rescue breaths, Mouth to mouth, Mouth to mouth Ventilation: Bag valve mask Laryngeal mask, Endo-tracheal intubation, Cricothyroidectomy) Cardiopulmonary Resuscitation: Ah- way opening, Chest compressions, Rescue.
5	**1**	**1**		Disability, Casualty position, Stable side position, Foreign Body Airway obstruction (Choking), Airway obstruction (partial, complete, signs and symptoms, treatment)
6	**1**	**1**		The secondary survey: secondary assessment procedure, Managing a responsive casualty, vital signs.

7	**1**	**1**	Stop the Bleeding	General: Clothing, methods of temporary, homeostasis, elevation, bandage, application, direct pressure, bent the joint. Tourniquet application, methods, indications, inconvenient, mistake, application.
8	**1**	**1**		clamping the bleeding vessels, Special types of external bleeding, From an open fracture, From tooth socket, From the ear passage, From the nose, From the lips, cheek and tongue, Internal bleeding. Check for Shock: (Signs and Symptoms of hemorrhagic Shock-First Aid Measures for hemorrhagic Shock.
9	**1**	**1**	Dressings, Bandages, Slings and Splint	Standard dressing, Bandage: Bandages; rules, fixing the end of bandage: type of bandage, Tube gauze finger I bandage, Triangular bandage, Broad and narrow fold bandage, Hand bandage, Wrist and palm bandage.
10	**1**	**1**		Elbow bandage, Shoulder bandage, crutch bandage, Hip bandage, Knee bandage, Foot bandage, Eye bandage, Head and scalp bandage, Ring pad. Slings, Splints
11	**1**	**1**	First aid for fractures .	General, Types of Fractures, Signs and Symptoms of Fractures, Management .Principles of treatment, Examination, General treatment, Collarbone, Shoulder blade and shoulder upper arm, elbow, forearm and wrist, Hand fingers, crash injury to the hand, Hip to knee, Kneecap, Knee to foot, lower limb, Ankle, Heel bone, Bones of the foot, Both legs, Jaw, spine, Neck, Pelvis
12	**1**	**1**		Dislocation. Soft tissue injury, Overview Treatment RICED, Signs and symptoms, Management
13	**1**	**1**	Basic Clinical Procedures	Introduction, General principles, Needle thoracentesis, Urinary catheterization Vein puncture, Venous cut down wound suturing techniques
14	**1**	**1**	First aid for specific injuries	General, First Aid for Head, Neck, and Facial Injuries, First Aid for Chest Wounds, First Aid for Abdominal. Wounds, First aid for Burn Injuries, Heat Injuries.
15	**1**	**1**		Cold Injuries, Chemical burn, Eye injury, loose foreign ; body, Ear injuries, foreign body, Nose injury, foreign bodies
16	**1**	**1**	First aid for bites and stings	General Types of Snakes, Snakebites, Human or Animal Bites, Insect Bites and Stings, First Aid for Bites and sting.

Surgery (Module 2)					
Discipline			**Clinical science and skills**		
Department			**Basics of Surgery**		
Course title			**Principles of Surgery**		
Pre-requisite			**Basics Biomedical Sciences**		
Course code			**MED5 024**		
Academic year			**III**		
Semester		**5**	**Spring/Fall**		
Number of credits		**4**	**Knowledge**	**2**	
			Clerkship	**2**	

Week	**Hours**		**Topics**	**Descriptions**
	Knowledge	**Clerkship**		
1	**1**	**1**	Principles to complete the file of surgical patient	Taking History of the patient Physical exam of the patient, provisional diagnosis, special exam, clinical diagnosis, treatment, prognosis, follow up, termination
2	**1**	**1**	General responses to injury and acute illness	Introduction, Clinical responses to tissue injury initiating factors, Inflammatory responses Cytokine Response to Injury, Hormonal responses, Metabolic effect, salt and water balance, Glucose, fat, Protein, Modification of responses, General anesthesia, regional an aesthesia, Blockade of inflammatory mediators
3	**1**	**1**	Aseptic Techniques (Antisepsis & Asepsis)	Antisepsis, definition, mechanical antiseptics, chemical antiseptics, physical antiseptics Biological antiseptic, Antibiotics
4	**1**	**1**	Aseptic Techniques (Antisepsis & Asepsis)	Asepsis, Disinfection, sterilization Techniques and Methods, Scrubbing up, gowning, gloving, preparation of surgical area, operative theatre .infection control in surgical ward& in the hospital
5	**2**	**2**	Fluid and electrolyte Management of the surgical patient	Introduction, Body fluids, Total body water, Fluid compartment, Composition of fluid compartment, Osmotic pressure, Classification of body fluid changes, Normal exchange of fluid and, electrolytes, Disturbances in fluid balance Volume control, Concentration change Hyponatremia, Hypernatremia, composition changes: etiology and diagnosis, potassium abnormality, magnesium abnormality, calcium

				abnormality. Phosphorus abnormality, Acid -base balance, Acid- base homeostasis, Metabolic derangement, Respiratory derangement, Fluid and electrode therapy, Alternative resuscitative fluids, Correction of life- threatening electrolyte abnormalities
6	**1**	**1**	Fluid and electrolyte Management of the surgical patient	Pre-operative fluid therapy, intra operative fluid therapy, post-operative fluid therapy
	1	**1**	Pre & post-operative Care	Definition & goals, preoperative care, preoperative evaluation, preoperative preparation, Consultations, preoperative note, preparations, awareness of patient, operation, consent, preoperative order
7	**2**	**2**	Pre & post-operative Care	Post-operative care, The immediate post-operative period, Postoperative orders Monitoring, Respiratory care, Position in bed and mobilization, Diet, Administration of fluid and electrolytes, Drainage tube, Medication Laboratory examination and imaging, the intermediate period, Care of the wound Management of drains, Postoperative pulmonary care, Respiratory failure, Postoperative fluid and electrolyte management Postoperative care of the gastrointestinal tract
8	**1**	**1**	Pre & post-operative Care	postoperative pain& treatment of pain
	1	**1**	postoperative complication	Introduction, wound complication, hematoma wound dehiscence, A-systemic risk factors, B-local risk factors, C- diagnosis and management, Miscellaneous problems of the operative wound
9	**2**	**2**	postoperative complications	Respiratory complications, Atelectasis, Pulmonary aspiration, Postoperative pneumonia, Post-operative pleural effusion and pneumothorax, Fat embolism, Cardiac complication, Peritoneal complications Hemoperitoneum, Complications of drains Postoperative parotitis, Complications caused by postoperative alteration of gastro intestinal motility, Gastric dilatation, Bowel obstruction, Postoperative pancreatitis, Post-operative hepatic dysfunction, post operative cholecystitis, clostridium deficil Urinary complications, postoperative urinary retention, Urinary tract infection, Complication of intravenous, Air embolism, Phlebitis, Post operative fever
10	**1**	**1**	Dressing	Dressing; goals, Purpose of Wound Dressings, Types of dressings: primary dressings, Secondary dressings, One layer dressings, Skin closure dressing (island dressing), Dry sterile dressing, Three layer dressings, Pressures

				dressing, Stent dressing, Bolster/tie-over dressing, Wet-to-dry dressings, Wet-to-wet dressings, Vacuum-assisted dressings, Changing the dressing, material to fix the dressing.
	1	**1**	Blood - borne viruses and the surgeon	Introduction, Risk for surgeons, Post exposure prophylaxis for occupational exposure, Risks for the patient of acquisition of infection during surgery, Acquired immunodeficiency syndrome and the human immunodeficiency, Viral hepatitis
11	**1**	**1**	wound healing	Introduction, Steps of wound healing, elements of healing, phase of healing, Types of wound healing, Factors affecting wound healing, Surgical wound I classification.
	1	**1**	Surgical metabolism and nutrition	Introduction, Nutrient requirement and substrates, Carbohydrate metabolism, Protein metabolism, A-glutamine, B- arginine
12	**1**	**1**	Surgical metabolism and- nutrition	Lipid metabolism, Nucleotides, vitamins and trace elements, Nutritional pathophysiology, Starvation, Elective operation or trauma, Sepsis, Enteral | nutrition therapy, Parenteral nutrition therapy, peripheral parenteral nutrition, 2-Total parenteral nutrition
	1	**1**	power sources in surgery	introduction, Electro-surgery, principles of electricity, - electrocautery, - principles of electro- surgery, Mono-polar circuit,
13	**1**	**1**	power sources in surgery	Bipolar circuit, The electromagnetic spectrum and tissue effects, Types of electro-surgery Cutting, Coagulation, Principal applications for electro surgery, Ultrasonic scalpels and clamps Cavitational ultrasonic surgical aspiration
	1	**1**	Surgical Oncology	Introduction, Tumor nomenclature, Tumor grade, Tumor stage, Cancer epidemiology Role of the surgical oncology. Diagnosis and staging, Curative surgery, Palliation, Prophylaxis
14	**1**	**1**	Surgical Oncology.	Cytotoxic chemotherapy, Principles of chemotherapy use, A-curative chemotherapy B- adjuvant treatment, C-neoadjuvant treatment, D- chemotherapy for metastatic disease Classes of chemotherapeutic agents, Side effects of chemotherapy, Regional therapy, Targeted therapies, Hormonal, therapies Radiation therapy.
	1	**1**	Organ transplantation	Introduction, Kidney transplantation Heart transplantation
15	**1**	**1**	Minimally- invasive surgery	The Minimally-Invasive Team, Physiology Laparoscopy, Thoracoscopy, Extracavitary Minimally-Invasive Surgery, Anesthesia General Principles of Access and Equipment

				Laparoscopic Access, Access for Subcutaneous and Extra peritoneal Surgery.
16	**1**	**1**	Minimally- invasive surgery	Hand-Assisted Laparoscopic Access, Post Placement, Imaging Systems, Energy Sources for Endoscopic, Instrumentation, Robotic Assistance, Room Setup and the Minimally-Invasive Suite, Patient Positioning, Special Considerations, Cirrhosis and Portal, Hypertension, Economics of Minimally-Invasive Surgery.
	1	**1**	Ulcer, fistula, and sinus	Ulcer: Classification, nonspecific ulcer, clinical exam, Symptomatology, Pathologic exam Sinus and fistula: treatment,

Surgery (Module 3)				
Discipline			**Clinical science and skills**	
Department			**Basics of Surgery**	
Course title			**Surgical Emergencies**	
Pre-requisite			**Principles of surgery**	
Course code			**MED6 024**	
Academic year			**III**	
Semester		**6**	**Fall/Spring**	
Number of credits		**4**	**Knowledge**	**2**
			Clerkship	**2**

Week	**Hours**		**Topics**	**Descriptions**
	Knowledge	**Clerkship**		
1	**2**	**2**	Bleeding & Transfusion	Definition, classification, clinic, body reaction to bleeding, treatment of bleeding; permanent hemostasis, methods, mechanical, thermal chemical biological, Transfusion, definition, blood groups compatibility transfusion root, indication & contraindications, Deferent forms of transfusion
2	**2**	**2**	Shock	Definition, etiology, classification, hypovolemic shock: pathophysiology immediate& continue compensatory reaction, Septic shock: path physiology, diagnosis, treatment, neurogenic shock: pathophysiology, diagnosis, treatment, cardiac compressive shock: path physiology, diagnosis treatment, cardiac obstructive

				shock, vasovagal shock, psychogenic shock, burn shock, anaphylactic shock
3	**2**	**2**	Trauma	Definition, epidemiology, prophylaxis, mechanism & intensity of trauma, death due to trauma, management before hospital, triage, Evaluation, care in the hospital, primary survey : ABCDE, emergency thoracotomy, trauma severity score, resuscitation phases, secondary survey & treatment priority, definitive care
4	**2**	**2**	Abdominal Emergencies	Intra-peritoneal sepsis, Introduction, Abdominal wound complication, Intra- abdominal sepsis, Advanced diffuse peritonitis, Abdominal abscesses Hernia: Strangulated inguinal hernia, Strangulated sliding hernia, Strangulated femoral hernia, Acute gastric dilatation, Gastric Outflow obstruction. Pyloric stenosis, Volvulus, Special situations Acute Gastrointestinal bleeding: Introduction, Bleeding) peptic ulcer, Other complications of ulcer, Stress gastritis, Mallory - Weiss syndrome, Acute gallbladder disease: acute cholecystitis and biliary colic, Acute acalculous cholecystitis, Acute gaseous, cholecystitis, Biliary peritonitis, acute cholangitis.
5	**2**	**2**		Acute pancreatitis, Acute duodenal ileus, Small bowel volvulus, Emergencies connected with Meckel's diverticulum, lower gastrointestinal bleeding, Torsion of an appendix epiploica, Acute lesions of the greater omentum, Acute nonspecific mesenteric adenitis Acute appendicitis, Intestinal obstruction, The acute anus and perineal injuries.
6	**2**	**2**		Abdominal trauma, clinic, principles in diagnosis, radio logic finding, Para syntheses, peritoneal lavage, penetrating trauma of the abdomen, Gunshot wounds, treatment of abdominal wall trauma, trauma of the liver, biliary tract, spleen, pancreas & GI tract trauma.
7	**2**	**2**	Chest emergencies	**Thoracic injury and sepsis:** Airway obstruction chest trauma: form of chest trauma, chest wall trauma, Trauma of trachea, branches, lung, diaphragm, pleural cavity (hemothorax, pneumothorax, chylothorax), A etiology, Diagnosis. Management, chest tube application, Heart and great vessels: Introduction, Pericardial tamponade, penetrating injuries of the great vessels, Traumatic rupture of the aorta, Dissecting aneurysm of the aorta. **Esophagus:** Introduction, Acute dysphagia, Esophageal perforation, Corrosive injuries of the esophagus

8	**2**	**2**	Head and Neck Emergencies	**Head injuries:** Introduction, forms of head trauma, care of brad trauma patients, reanimation, evaluation, diagnosis study, treatment, Scalp injuries, Skull fractures, Intra cranial hematomas, Gunshot wounds intracranial compression and sepsis, Introduction, Extra-dural abscess, Subdural empyema, Brain abscess
9	**1**	**1**		**The spine:** Introduction, Spinal infection, Spinal trauma The neck: neck wound, Closed injury, infection
	1	**1**	Wounds	Definition, etiology, determination of severity, depth & site of burn, inhalation injuries, co morbid factors, categorization, Pathophysiology of thermal burn,, metabolic reaction,
10	**1**	**1**		D2PC, blast injury: mechanism, treatment special tissue injuries, Chronic wound : ulcer, bed sore
	1	**1**	Burns	Definition, etiology, determination of severity, depth & site of burn, inhalation injuries, co morbid factors, categorization, Pathophysiology of thermal burn, metabolic reaction,
11	**1**	**1**		Clinic, treatment, definitive treatment, fluid management. Respiratory care, nutrition& metabolic needs, wound care, complications Frost bite: Definition, etiology, pathophysiology, clinic, treatment Electric burn: etiology, pathophysiology, clinic, treatment. Chemical burn: etiology, pathophysiology, clinic, treatment Radiation burn:- immediate action, on normal tissue, systemic reaction, prevention, treatment, late reaction to radiation.
12	**2**	**2**	Vascular Emergencies	Venous emergencies: Introduction, Classification Clinical features, Management, Superficial Thrombophlebitis, Deep venous thrombosis Pulmonary embolism
13	**1**	**1**		Vascular injuries: Introduction, Arterial injury Accidental intra arterial of drugs, Acute on chronic occlusion from atheroma Arteio venous fistula
	1	**1**	Dislocation Ligamentous tears nerves injuries, injuries of the hand	Introduction, Dislocations Etiology, pathology, Clinic forms, Diagnosis, treatment. Ligament and joint, injuries
14	**1**	**1**		Nerves injuries: Introduction, Classification and diagnosis, Open wounds, Closed wounds Injuries of the hand: Introductions, Types of injury Diagnosis.
	1	**1**	Surgical infection	Definition, pathogenesis, Principles for treatment, Sepsis, forms of surgical infection, lymphangitis, sepsis, forms of surgical infection, lymphangitis, erysipelas, erysipeloid, abscess, hidradenitis, carbuncle, furuncle, Phlegmon, anthrax, actinomycosis, clostridial

				infection, tetanus, clinic, differential diagnosis, treatment, Other clostrridal infections, postoperative & iatrogenic infections
15	**1**	**1**		Hand infections, periangual infections, felon, subcutaneous infections & abscess, infection of the web space, deep palmer abscess, tendon sheath infection, Hydatid disease, liver hydatid disease, lung hydatid disease, amoebiases
16	**1**	**1**	The surgery of urban violence	Introduction, Injury control, Primary prevention, Secondary prevention, Tertiary prevention, Urban injuries, Pattern of injury, Vehicular, Pedestrian Other blunt injuries
	1	**1**	Urological emergency	urinary tract obstruction: Upper urinary tract obstruction, Lower urinary tract obstruction Trauma of urethra, urinary bladder, kidney & Genital emergencies, Acute urinary tract bleeding and infection
			Obstetrics and Gynecology emergency	Abortion, Ectopic pregnancy, Uterine rupture, Preeclampsia, eclampsia, torsion of ovarian cyst, Trauma of uterus

Surgery (Module 4)				
Discipline			**Clinical science and skills**	
Department			**Abdominal Surgery**	
Course title			**Abdominal Surgery**	
Pre-requisite			**Principles of Surgery**	
Course code			**MED7 024**	
Academic year			**IV**	
Semester		**7**	**Spring/Fall**	
Number of credits		**4**	**Knowledge**	**2**
			Clerkship	**2**
Week	**Hours**		**Topics**	**Descriptions**
	Knowledg	**Clerkship**		
1	**2**	**2**	The stomach and Duodenum Peptic Ulcer	Anatomy - Physiology, Complications, common surgical treatment of peptic ulcer.
2	**2**	**2**	Perforated peptic ulcer Pyloric stenosis	Etiology, Pathology, Clinical features and treatment
3	**2**	**2**	Peptic ulcer bleeding Gastric Neoplasm	Classification, Etiology, Pathology, clinical features and treatment.

4	**2**	**2**	Other gastric surgical disease	Foreign bodies in the stomach (Clinical features and treatment), Volvulus of the stomach (Etiology, Clinical features and management: preoperative, operative, and postoperative).
5	**2**	**2**	The Small Intestine	Brief review Anatomy, Physiology, Meckel's Diverticulum's And TB of small bowel(pathology, clinic and treatment)
6	**2**	**2**	Obstruction of the mesenteric vessels and small intestine Tumors of small intestine	Etiology, Pathology, Clinical features and treatment: non surgical and surgical Classification, Clinical features Treatment
7	**2**	**2**	Intestinal obstructions	Definition, Classification, Etiology, Anatomopathology, Clinical features, Specific type of obstructions, Intussusception, Pathology, Etiology, clinics, and treatment.
8	**2**	**2**		Volvulus of colon sigmoid and Caecum: Etiology, pathology, Clinical features, Treatment. Paralytic Ileus: Etiology, Clinical features, Differential
9	**2**	**2**	The Appendix Vermiform	Acute Appendicitis : Etiology, Pathology, Clinical features diagnosis, DD and Treatment The Appendix Mass: Pathology, Clinical features, treatment
10	**2**	**2**	The colon	sign and symptoms of Colonic diseases The common surgical treatment in colonic diseases Colostomy: classifications, indications, Preparation and complications
11	**2**	**2**	Ulcerative colitis Diverticulitis and diverticulosis.	Definition, Etiology, Pathology, Clinical features, investigations, DD, complications and treatment Amoebic colitis: Etiology, Pathology, Clinical features, complications and treatment.
12	**2**	**2**	Tuberculosis of colon And Colonic tumors	Tuberculosis of Ileocecal: Definition, Clinical features, Anatomopatliology Diagnosis and treatment, Colon cancer: Classifications, Pathology, Clinical features investigations, differential diagnosis and treatment.
13	**2**	**2**	The Hernia	Definition, Etiology, composition of a hernia, classification or Anatomopathology. Reducible Hernia- Etiology clinical features, Pathology and Treatment. clinical features
14	**2**	**2**	Hemorrhoids, Anal Fissure	Definition, Classification, Etiology, course of hemorrhoid, Clinical features, Treatment and complications, Etiology, clinical features, differential diagnosis and treatment: surgical and nonsurgical
15	**2**	**2**	The ano- Rectal fistula And Abscess	Incidence, etiology, classifications, clinical features, and Management, Abscess: etiology, clinical features, differential diagnosis, Drainage and management.

16	**2**	**2**	The Ano-rectal Prolapse And The Ano-rectal tumors	Definition, Etiology, Pathology Clinical Features Complication and treatment. Classification, pathology, clinical features, differential diagnosis, surgical and neo-adjuvant therapy.

Surgery (Module 5)				
Discipline			**Clinical science and skills**	
Department			**Abdominal Surgery**	
Course title			**Abdominal surgery**	
Pre-requisite			**Principles of surgery**	
Course code			**MED8 024**	
Academic year			**III**	
Semester		**8**	**Spring/Fall**	
Number of credits		**4**	**Knowledge**	**2**
			Clerkship	**2**

Week	**Hours**		**Topics**	**Descriptions**
	Knowledge	**Clerkship**		
1	1	1	The liver	Brief review of anatomy - Physiology of the liver and specific investigations. Hepatic and post hepatic jaundice: History, examinations, specific investigations.
2	2	2	The Liver traumas Pyogenic Abscess The Amebic abscess of Liver	Type of hepatic injuries, clinical features and treatment. Abscess: Etiology, Pathology, Clinical features and treatment.
3	2	2	the liver hydatid cyst Hepatic Neoplasms	Etiology, Pathology, clinical features and medical and surgical treatment
4	2	2	The Gall Bladder	Review anatomy, physiology, congenital anomalies and investigations. Gall stones or cholelithiasis: Epidemiology, etiology, Pathology, type of stones, course of gall stones.
5	2	2	Acute and Chronic Cholecystitis, the bile duct stones	Etiology, Pathology, clinical features and Medical and surgical management.
6	2	2	Sclerosing cholangitis	Definition, Etiology, pathology, Clinical features, Treatment.
			Carcinoma of Gall Madder and biliary-fistula	Etiology, clinical features, pathology, differential diagnosis, and treatment.

7	2	2	The Pancreas	Brief review of Anatomy, physiology, Congenital anomalies. Injury to the pancreas and pancreatic fistula: etiology, clinical features, differential diagnosis, and management.
8	2	2	Acute Pancreatitis And Chronic Pancreatitis	Definition, Etiology, Pathology, Clinical features Complication and treatment. Etiology, pathology, clinical features, treatment.
9	2	2	Pancreatic Cysts and Tumors	Definition, Classification, Etiology, Pathology, Clinical features, Complication and treatment
10	2	2	The Spleen	Anatomy, physiology, Splenomegaly Rupture of spleen: Etiology, pathology, Clinical features and Treatment
11	2	2	The Peritoneum	Anatomy, Physiology of the peritoneum Acute generalized peritonitis :Etiology, pathology, Clinical features and Treatment
12	2	2	Acute localized Peritonitis	Etiology, pathology, Clinical features and Treatment,
13	2	2	The Hernia	Definition, Etiology, composition of a hernia, classification or anatomopathology. Reducible Hernia: Etiology, clinical features, pathology and treatment
14	2	2	Irreducible Hernia or Strangulated Hernias	Etiology, pathology, clinical features, treatment Inguinal hernia: Anatomy, etiology, clinical features, differential diagnosis, and management.
15	2	2	Femoral hernia Incisional Umbilical and para-umbilical hernia	Definition, Etiology, Pathology, Clinical features and treatment, Etiology, pathology, clinical features, treatment.
16	2	2	Epigastric Hernia and other rare hernias Acute Abdomen.	Definition. Classification, Etiology, Pathology, Clinical features Complication and treatment Definition, Etiology, pathophysiology, clinic, investigation, anatomopathology, DD

Surgery (Module 6)					
Discipline			**Clinical science and skills**		
Department			**Thoracic and vascular surgery**		
Course title			**Thoracic and vascular surgery**		
Pre-requisite			**Principles of surgery**		
Course code			**MED9 024**		
Academic year			**V**		
Semester		**9**	**Spring/Fall**		
Number of credits		**4**	**Knowledge**	**2**	
			Clerkship	**2**	

Week	**Hours**		**Topics**	**Descriptions**
	Knowledge	**Clerkship**		
1	**2**	**2**	Thyroid disease	Surgical anatomy, Physiology, Classification, History and Physical examination Thyroid function tests, Simple goiter.
2	**2**	**2**	Thyroid disease	Thyrotoxicosis, Symptoms and Signs, Treatment, Thyroid tumors, Thyroiditis.
3	**2**	**2**	Breast diseases	Surgical anatomy, Physiology, Symptoms, Breast injury, Acute and Chronic infection & inflammation.
4	**2**	**2**	Breast diseases	Breast cyst, Tumors, Spread of breast tumors, Clinical features, Treatment
5	**2**	**2**	Thoracic Trauma	Thoracic injuries & trauma, Rib fracture, Sternum fracture, Flail chest.
6	**2**	**2**	Thoracic Trauma	Pneumothorax, Hemothorax, Cardiac tamponade, Mediastinal emphysema, Thoracotomy.
7	**2**	**2**	Diaphragmatic Hernia	Hiatus Hernia, Clinical feature, Treatment, Treatment of reflux esophagitis.
8	**2**	**2**	Mediastinum	Mediastinitis, Clinical features, Treatment, Cysts & tumors of mediastinum.
9	**2**	**2**	Esophageal diseases	Surgical anatomy and physiology, Esophageal foreign bodies & Injuries.
10	**2**	**2**	Esophageal diseases	Corrosive esophagitis Esophageal diverticula, Achalasia, Benign stricture &Tumors of esophagus, Treatment
11	**2**	**2**	Lung & Pleural diseases	Lung & Pleural diseases, Surgical anatomy, Inhaled foreign bodies, Lung abscess, Bronchiectasis, Lung cysts.

12	**2**	**2**	Lung & Pleural diseases	Lung TB, Bronchopleural fistula, Pleural empyema, Lung & Bronchial tumors, Clinical feature, treatment,
13	**2**	**2**	Heart diseases	Anatomy and physiology, Physical examination, Cardiac arrest, Prosthetic valves, Aortic valvular heart diseases, Mitral valve diseases, Tricuspid stenosis and insufficiency, Pulmonic valve diseases.
14	**2**	**2**	Heart diseases	Coronary artery disease, Pericardial disorder, Congenital heart disease, Thoracic aortic aneurysms.
15	**2**	**2**	Arterial diseases	Arterial stenosis, Acute arterial occlusion due to embolism and trauma, Peripheral aneurysm, AV fistula, Vasospastic disorders.
16	**2**	**2**	Venous diseases	Pathophysiology, Investigation, Deep vein thrombosis Superficial vein thrombosis, Varicose vein. Symptoms, Treatment.

Teaching Learning Methods

The Following strategy is used for organizing teaching learning activities:

- Lectures are used for teaching the basic principles for 6 semesters;
- Clinical teaching to a group of 12 students on surgical Inpatient Wards and OPD's;
- Clinical skill training- We teach basic surgical skills to our fins year students and interns in minor, casualty theatre and main theatre. In the department also organize yearly workshop on suturing & knot tying where students get an opportunity to acquire hands-on-experience on these important skills.

Guidelines for student's clerkship in department of surgery

This is the first introductory posting in surgery to provide orientation, towards the general functioning of the department and the nature of clinical work performed in the department of-surgery. Student will be posted in the surgical out-patients' department. The learning objectives for this session are to learn:

- The art and science of history taking;
- General evaluation of overall health;
- Basic principles of examination of a lump;
- Examination of hernia, hydrocele and abdomen;
- Examination of breast;
- Examination of head and neck;
- Evaluation of wounds, ulcers;

You cannot acquire the practical skills by sitting in the Library!

"To study the phenomena of disease without books is to sail an uncharted sea whilst to study books without patients is not to go to sea at all"

Besides seeing patients, you should also acquire the following basic surgical skills:

- wound dressing, debridement, abscess aspiration and drainage, excision biopsy of skin lesions, lipoma and epidermal cysts, skin suturing and knot tying, proctoscopy, rubber banding of piles;
- All MD students attend minor surgical operation theatre situated at-the end of the surgical OPD corridor to acquire the above skills. Please maintain a record of cases seen and surgical. skills learnt in a diary/log book.

XL- Neurosurgery

Learning objectives

a- Knowledge

At the end of course the student must be able to:

- Perform a comprehensive neurologic examination;
- Assess clinical level of neurologic dysfunction and propose etiologic differential diagnosis;
- Assess skull and spine x-ray films, CT and CTA scans, and MRI;
- Access relevant laboratory data including intracranial pressure, arterial blood pressure arterial blood gases, serum electrolytes and osmolality, and central venous pressure as they relate to proper management of the neurologically impaired patient;
- Demonstrate the ability to differentiate between trauma, metabolic disorders, congenital anomalies, tumors and infections which result in neurologic dysfunction with specific reference to their manner of presentation and methods of treatment;
- Undertake initial management of the acutely impaired neurologic patient by assessing the degree of neurologic dysfunction, assessing the quality of the airway.

b- Skills/ Procedures

- Perform neurologic examination (determine Glasgow coma scale); Perform a lumbar puncture for cerebrospinal fluid analysis and placement of lumbar drain;
- Understand the indications for various invasive procedures including myelography, Angiography, intracranial pressure monitoring, and placement of arterial and central lines;
- Develop interpersonal skills with neurologic patients and their families.

Course contents

Neurosurgery				
Discipline			**Clinical science and skills**	
Department			**Neurosurgery**	
Course title			**Neurosurgery**	
Pre-requisite			**Principles of surgery & Neurosurgery**	
Course code			**MED10 024**	
Academic year			**V**	
Semester		**10**	**Spring**	
Number of credits		**2**	**Knowledge**	**1**
			Clerkship	**1**

Week	Hours		Topics	Descriptions
	Knowledge	Clerkship		
1	**1**	**1**	Introduction & history of Neurosurgery	Introduction of Neurosurgery, Historical Background of Neurosurgery Neuroanatomy (functional), Brain g and Cranial Nerves, Spine &Spinal Cord, Peripheral Nerves, CSF and neurovascular Review, The principals of Neuro-investigation
2	**1**	**1**	Intracranial diseases topics diagnosis and management of head trauma	Introduction and classification of H.I Understand and assign the Glasgow Coma Score. Recognize the presentation of brain herniation syndromes in the setting of trauma. Initiate management of elevated intracranial pressure in head trauma. Recognize and initiate management of concussion, brain contusion and diffuse axonal injury.
3	**1**	**1**	Intracranial diseases topics diagnosis and management of head trauma	Recognize and initiate management of acute subdural and epidural hematoma, including surgical indications. Recognize and initiate management of penetrating trauma including gunshot wounds. Recognize and understand the principles of management of open, closed and basilar skull fractures, including cerebrospinal fluid leak, and chronic subdural hematoma (in children and adults).
4	**1**	**1**	Closed head injury	Scalp Injury, Abrasion, Laceration, infected wound of the Skull, Vault fractures. Linear fracture Depressed Fracture, Compound Depressed Fracture Base crani fractures. Anterior cranial fossa, Middle

				Cranial fossa, Posterior Cranial Fossa.
5	**1**	**1**	Head injury	Traumatic Brain Injury, Concussion Cerebral. Contusion Cerebral. Compression. (EDH&SDH). Laceration Cerebral, Management and principles of treatment. Complication of Head Injury. Traumatic Coma Synd Increased Intracranial Pressure Brain Death.
6	**1**	**1**	Open head injury	Open Head Injury I Penetrated Brain Injury. Perforated Brain Injury (War wound and Non war wound).
7	**1**	**1**	Spinal diseases	Introduction and classification of SCI The emergency room diagnosis and interpretation of radiologic studies in spinal trauma. Initiate acute management of spinal cord injury including immobilization, steroids and systemic measures. Understand the definition and subsequent management principles of the unstable spine. Understand management principles in spinal cord injury including indications for decompressive surgery and treatment of the medical complications associated with cord injury (skin, bladder, bowel movement, respiratory).
8	**1**	**1**	Spinal cord Injury	The history and examination of SCI a Complication of Spinal Cord Injury, Paraplegia (Caring). Caring for a spinal injury and principals of treatment. Neuro-Rehabilitation
9	**1**	**1**	Diagnosis and Management of Brain Abscess	disease associated with immune deficiency, and how they differ from the mimic tumors. Understand the general principles in the treatment of abscess and focal intracranial infections. Brain abscess, T.B (Complications) Parasites (Hydatid cyst)
10	**1**	**1**	Diagnosis and Management of Peripheral Nerve Injury and Entrapment	Diagnose traumatic nerve injury (laceration, stretch and compression) and understand indications and general strategies of treatment. Recognize the signs and symptoms of common nerve entrapment (carpal tunnel syndrome, ulnar nerve entrapment, thoracic outlet syndrome and meralgia paresthetica), their etiology, conservative management strategies and indications for surgical intervention
11	**1**	**1**	Spine TB And Spinal Cord Tumors	Introduction, etiology, Pathophysiology, Clinic, Laboratory and imaging, Diagnosis, Complications, Surgical and Medical management & prognosis.

12	**1**	**1**	Diagnosis and Management of Non-Traumatic Neck and back problems	Diagnose and understand the natural history and management principles of whiplash and soft tissue injury. Recognize the broad categories of spinal pain and radiculopathy: The signs and symptoms (including cauda equina syndrome). Their common causes, their diagnosis and their management. (Their differential diagnosis and management if (Including metastatic disease and primary spinal tumors). Recognize the broad categories of myelopathy: The signs and symptoms (including comparison of acute and chronic spinal cord injury). The common causes, their diagnosis and their management (cervical and lumbar disc herniation and osteoarthritic disease).Differential diagnosis and management (including transverse myelopathy, metastatic disease and primary spinal tumors).
13	**1**	**1**	Diagnosis and Management of Brain Tumor	Introduction: Know the relative incidence and location of the major types of primary and secondary brain tumors. Understand the general clinical manifestations (focal deficit and irritations, mass effect; supratentorial infratentorial) of brain tumors. Recognize specific syndromes: extra-axial (cerebellopontine, pituitary, frontal....) and intra-axial, in brain tumor presentation. Review the diagnostic. tools that are currently used for revaluation (laboratory, tests, radiology, and biopsy). Understand broad treatment strategies (surgery, radiosurgery, radiation, and chemotherapy) in the treatment of tumors.
14	**1**	**1**	Diagnosis and Management of Surgically Treatable Pain Problems, Movement Disorders	Recognize the features of trigeminal and p gloss pharyngeal neuralgia, causalgia and cancer pain, an indication for surgical referral and the spectrum of surgical therapeutic options. Recognize movement disorders amenable to surgical intervention, including Parkinson's disease,
15	**1**	**1**	Diagnosis and Management of Surgically tractable pain Problems, Movement Disorders	Dystonia, spasticity, and hemifacial spasm, indications for surgical referral and the spectrum of surgical therapeutic options Understand the general classification of seizure disorders, definition of intractable epilepsy, and the broad categories of surgical intervention for epilepsy including invasive electrodes, respective and disconnective surgery.
16	**1**	**1**	Diagnosis and Management of Headaches	Know the major causes of intracranial hemorrhage: vascolopathy in the aged (hypertension and amyloidosis), aneurysm, vascular malformation,

				tumor and coagulopathy. Recognize the symptoms and signs of subarachnoid, cerebral and cerebellar hemorrhage. Apply diagnostic tools in evaluation of acute headache (CT and MRI, role of lumbar puncture)- Understand the natural history and broad treatment strategies (surgery, radiosurgery, interventional radiology as well as treatment of vasospasm) of intracranial aneurysms and vascular malformations. Differentiate the symptomatology of migraine, cluster, and tension headache and sinusitis headache.

Skills

- The Neurological Examination;
- Examine the cranial nerves;
- Evaluate patient's mental status and speech;
- Examine cerebellar function and gait;
- Examine central and peripheral sensory function;
- Examine motor function;
- Examine cranial and peripheral reflexes;
- Fundamental of Neuro-Imaging;
- Recognize spine fractures and dislocations;
- Differentiate on computerized images between blood, air, fat, CSF, and bone;
- Recognize specific disease entities listed below such as epidural, subdural intracranial hematoma, subarachnoid hemorrhage, brain tumors, and hydrocephalus;
- Intracranial Hypertension;
- Understand the pathophysiology of elevated intracranial pressure, cerebral perfusion and the influence of blood pressure, blood gases, and fluid and electrolyte balance;
- Recognize the clinical manifestations of acute brain herniation including the
- Gushing reflex, midbrain effects and vital signs;
- Understand the impact of focal mass lesions, structural shifts and their consequences.

XLI- Urology

Learning Objectives

Urology is a surgical specialty that treats diseases of the male and female urinary tract and the male reproductive organs. Although urology is classified as a surgical specialty, knowledge of internal medicine, gynecology, and other specialties is also required because of the wide variety of clinical problems encountered. In recognition of the wide scope of urology.

At the end of the course and Clerkship the student must be able to:

- List the distinctions between urinary infection, contamination and colonization in diagnosing a UTI;
- List the important host and bacterial characteristics involved in the genesis of
- a clinically important UTI;
- Name the most common gram negative and gram-positive bacteria associated with adult UTI;
- Name the five organisms constituting normal perineal flora;
- List methods of urine collection and the advantages of each;
- Describe-the different signs and symptoms associated with upper and lower adult UTIs and the organs involved with each;
- Describe and perform chemical and microscopic urinalysis, and its usefulness in the diagnosis of adult UTI;
- Name six pathogens or disease entities that need to be considered in the differential diagnosis of UTI;
- Describe the differences between complicated and uncomplicated adult UTI.
- List imaging modalities used in the diagnosis of adult UTI, and the indications to order them;
- Outline treatment principles of both complicated and uncomplicated adult;
- Define microscopic hematuria;
- Describe the proper technique for performing microscopic urinalysis;
- Identify four risk factors that increase the likelihood of finding malignancy during evaluation of microhematuria;
- Explain the- significance of finding red cell casts in patients with microscopic Hematuria;
- Contrast the evaluation of hematuria in the low risk patient with that of high risk Patient;
- Identify the indications for screening urinalyses in the general population;
- Understand the controversy surrounding the use of serum PSA as a screening tool for prostate cancer;
- List the signs & symptoms of prostate cancer;
- Describe the natural history and the common patterns of progression of prostate cancer;
- List the major components in the staging of prostate cancer;
- Briefly describe the treatment options for localized and metastatic prostate Cancer;

- Describe when prostate cancer does NOT need to be treated;
- List risk factors for the most common types of kidney stones;
- Contrast differences between the clinical presentation of acute renal colic versus an acute abdomen;
- Names of kidney stone chemical compositions;
- Describe the best imaging study to diagnose kidney or ureteral stones;
- Describe 3 types of medications effective for relief of renal colic pain;
- List 3 clinical situations that warrant urgent decompression of a ureteral stone;
- Medications that may help medical expulsion therapy of a distal ureteral stone;
- Medical prophylaxis options-for hypercalciuria
- Common surgical techniques to manage a renal stone and a ureteral
- stone that fails to pass with observation;
- Define incontinence;
- List the symptoms and signs of the various types of incontinence; stress, urge, Overflow and mixed;
- Describe the epidemiological features of incontinence;
- Describe the natural history and progression of incontinence;
- List the risk factors for incontinence;
- List the important components of the history when interviewing a patient with Incontinence;
- List the important components of the physical exam of a patient with incontinence;
- Summarize the laboratory, radiologic, or urodynamic tests, if any, that should be ordered in a patient with incontinence;
- List the indications for treatment of incontinence;
- List the nonsurgical treatment options for stress and urge incontinence, describe, their side effects, and outline the mechanisms by which they work;
- Briefly describe the surgical treatment options for stress and urge incontinence.
- Distinguish, through the history, physical examination and laboratory testing, testicular torsion, torsion of testicular appendices, epididymitis, testicular tumor, scrotal trauma and hernia;
- Appropriately order imaging studies to make the diagnosis of the acute scrotum;
- Determine which acute scrotal conditions require emergent surgery and which may be handled less emergently or electively.

Urology (Module 2)				
Discipline			**Clinical science and skills**	
Department			**Urology**	
Course title			**Urology**	
Pre-requisite			**Principles of surgery, internal medicine and gynecology**	
Course code			**MED11 024**	
Academic year			**VI**	
Semester		**11**	**Spring/Fall**	
Number of credits		**2**	**Knowledge**	**1**
			Clerkship	**1**

Week	Hours		Topics	Descriptions
	Knowledge	Clerkship		
1	**1**	**1**	Brief Review of Anatomy and physiology of Urogenital system	Kidney, Calices & Pelvis, Ureter, Urinary bladder, Prostate gland, Seminal vesicle, Spermatic cord, Epididymis, Testes, Male urethra and Penis, Female Urethra, Physiology of Urogenital tract.
2	**1**	**1**	Sign and Symptoms in Urologic Disorders	Pain, Dysuria, Frequency, Dysuria, Urinary Incontinence, Urgency, Nocturia, Enuresis, Urine retention, Polyuria, Oliguria, Anuria, Hematuria.
3	**1**	**1**		Pyuria, Hemoglobinuria, Myoglobinuria, Ghyluria, Pneumaturia, Echinococcuria, Calciuria, Lipouria.
4	**1**	**1**	Physical and Special Examination	Physical examination of UG system. UB Catheterization, Urethroscopy, Cystoscopy, Ureteral Catheterization, Radiologic and Imaging examination, Pyelography, Urethrography
5	**1**	**1**	Congenital anomalies of urogenital system	Kidney: Agenesis, Hypoplasia, Malrotation, Renal fusion, Sigmoid kidneys. Horse shoes kidney, Ectopic kidney. pelvis and Ureter: Double pelvis and Ureter, Ureterohydronephrosis, Retrocaval ureter, Ureterocele. UB and urachus congenital malformation, Penis: Megalopenis, Micropenis, Hypospadiasis, Epispadiasis. Urethra: Congenital stenosis, valve in prostatic urethra, Urethro-rectal and Vesico-rectal fistula. Testes: Polyorchidism, Hypognadism, Cryptorchidism.
6	**1**	**1**	Urinary Tract Infections	Acute pyelonephritis, Acute Cystitis, recurrent/chronic cystitis, Epididymitis, Acute orchitis, Acute bacterial

				prostatitis, Prostate abscess, Urethritis, GU tract tuberculosis,
7	**1**	**1**	Benign Prostatic Hyperplasia and Cancer of Prostate	Benign Prostatic Hyperplasia (BPH): Antomopathology, Symptoms and signs. Lab exam, Complication of BPH, Management. Carcinoma of prostate: Anatomopathology, symptomes and signs, Management.
8	**1**	**1**	Urinary Tract Stones	General considerations, Kidney stones, Ureteral Stones, Urinary bladder stones. Management: Chemolysis, Shock wave lithotripsy, pneumatic lithotripsy, electrohydrolic lithotripsy, Ultrasonic lithotripsy, Cystolitholapaxy, Percutaneous cystolithtomy, Cystolithotomy
9	**1**	**1**	Traumatic injuries of UG system	Closed kidney injuries: anatomopathology, Symptoms and signs, Arteriography, Management. Ureter injuries: Closed ureter injuries, Iatrogenic symptoms and signs, management.
10	**1**	**1**		UB injuries: Iatrogenic, Accidental, Closed, Extra peritoneal rupture of UB Urethral injuries: Etiology, symptoms and signs, management.
11	**1**	**1**	Hydronephrosis	Congenital, Acquired, Symptoms and signs and management.
12	**1**	**1**	Bladder Neck Obstruction, Urethral strictures	Bladder Neck Obstruction: Etiology, Diagnosis and management. Urethral stricture: Definition, Etiology, Trauma, Infection, Congenital strictures, Dermatosis, pathology, Clinic, Diagnosis, DDx, Complications, Management.
13	**1**	**1**	Urogenital system tumors	Kidney tumors: Lipoma, Hemangioma, Adenoma, fibroma, Malignant tumors: Adenocarcinoma, Emberyoma, Sarcoma; Anatomopathology, Symptoms and signs, Diagnosis and Management.
14	**1**	**1**		Renal Pelvis and ureter tumors: Anatomopathology, Clinic and Management. UB tumors: Benign UB tumors; Papilloma, Diagnosis and, management. UB Carcinoma: Anatomopathology, Clinic, Radiography, Ultrasound, Cystoscopy, Management.
15	**1**	**1**		Penis Ca: Anatomopathology, Clinic, Diagnosis &Management. Testes tumors: Anatomopathology, Non-Germinal cell tumors, Metastasis, Clinical staging, Clinic, Management.
16	**1**	**1**	Scrotal Contents Disorders	Spermatocele, Varicocele, hydrocele, Clinic, Complications, Diagnosis, Management. Torsion of Spermatic cord and Torsion of testes: Clinic, Management, prognosis. Torsion of Testes appendage and Epididymis: Clinic and Management.

Textbooks & Reference books recommended for all surgery discipline (last edition)

- Short Practice of Surgery- Bailey & Love, Norman S. Williams. Christopher' JK. Bulstrode.
- Schwartz Principles of Surgery
- Hamilton Bailey's Physical Signs in Surgery.
- General Thoracic surgery, Thomas'S.WShields, Joseph Losicro.
- Cardiothoracic surgery, Larry R. Keiser, Irving L. Cran, Thomas L. Spray.
- Oxford Cardiothoracic surgery, Joana Chikwe, Emma Beddow.
- Farqharson's Textbook of Operative Surgery, Margaret Farquharson, James
- Hollingshead, Brendan Moran.
- General Urology, Smith &Tanaghos, Jac W. Mcaninch, TomF.Loe.
- Compbell –Walsh Urology, Alan J. Vein MD. Pemi Clinical Manual of Urology,
- Philip M Hanno, Alan J. Wein, Bruce Malkowicz.
- Principles of Neurosurgery, Robert G. Grossman, Christopher M. Loftus.
- Emergency Surgery, Adam Brooks, Bryon A. Cotton.

XLII- English language

Learning objectives

First semester

By the end of this course, students should be able to:

- Enhance their language skills of speaking, reading /listening and writings;
- They will learn how to pronounce the English vocabularies and medical expressions correctly, and will be familiarized with phonetic transcription of standard dictionaries such as (Longman and Oxford, etc);
- And as part of grammar, they will learn the parts of speech in English in order to be able to use the words correctly in a sentence;
- In addition, they will learn how to read a text of reading with comprehension and to be able to introduce himself, describe a friend, a place or solve his /her problems by himself;
- Our focus in the first semester is to stress on General English more than Medical English

Second semester

- Meet their real life communicative needs;
- Talk fluently, and read the texts with comprehension;
- Standing by himself, solving his / her problems by using dictionaries internet and other available sources;
- Enhancing their language skills of speaking, reading listening and writings perfectly;
- Knowing medical terms derived from Greek or Latin and a number of most common abbreviations, such as AIDS etc;
- In addition, they will be able to catch their lectures in English properly;
- And finally they will be able to write, case note, medical report, surgery report, paragraph, and letter writings. In this semester we focus more and more on Medical English than General English.

Course Contents

English Language (Module 1)				
Discipline			**English Language**	
Department			**Department of English Language**	
Subject			**General English/ interchange two**	
Course code			**MED1006**	
Class			**First**	
Semester		**1**	**Spring/Fall**	
Number of credits		**4**	**Theory**	
			Practical	**4**

Week	**Hours**		**Topics**	**Descriptions**
	Theory	**Practical**		
1		**4**	Unit one: People; childhood; Memories	Speaking: Talking about yourself, asking about someone's childhood Reading: Reading about a career. Writing: Writing a short paragraph about your childhood. Listening: Listening to the people talking about their past. Grammar: Past tense; Used to for habitual activities in the past
2		**4**	Unite two: Transpiration; Transpiration problems; City cervices	Speaking: Talking about transportation and transportation problems. Reading: Reading about new transportation inventions. Writing: Writing a letter to the editor Listening: ask for personal information Grammar: Adverbs of quantity with count and noncount nouns.
3		**4**	Unite three: Houses and apartments; life style change; wishes	Speaking: Describing positive and negative features; making comparisons Reading: Reading about ways to end bad habits Writing: Writing an e-mail describing an apartment Listening: Listening to people ask and answer questions about apartments for rent Grammar: Evaluations and comparisons with adjectives
4		**4**	Unite four: Food; recipes;	Speaking: Talking about food

			instructions; cooking	Reading: Reading about how food affects the way we feel Writing: Writing a recipe Listening: Listening to descriptions of food Grammar: simple past vs. present perfect
5		**4**	Unit five: Travel; vacations; plans	Speaking: describing vacation plans Reading: Reading tips about an expert backpacker Writing: Writing travel suggestions Listening: listening two people discuss vacation plan Grammar: future with be going to and will
6		**4**	Unit Six: Complaints; households chores, requests excuses; apologies	Speaking: Making request; complaining; apologizing; giving excuses. Reading: Reading about ways to deal with neighbors. Writing: Writing a set of guidelines Listening: listening to people making requests Grammar: two- part verbs
7		**4**	Unit Seven Technology; instructions	Speaking: describing technology; giving instructions; giving suggestions Reading; Reading about the life the future. Writing: Writing a note giving instructions Listening: Listening to people discuss computers Grammar; Infinitives and gerunds for uses and purposes
8		**4**	Unit eight Holidays; festivals; Customs; celebrations	Speaking: Describing holidays, festivals, customs, and special events Reading: Reading about read about holidays and unusual customs Writing: Writing a travel guide. Listening: Listen someone talk about Halloween Grammar: Relative clauses of time
9		**4**	Unit nine: U Life in the past, present and future; changes and contrasts; consequences	Speaking: Talking about change; comparing time periods; describing possibilities Reading: Reading about the signs of being in love Writing: Writing a description of a person Listening: Listening to people talk about changes Grammar: Time contrasts; conditional sentences with if clauses
10		**4**	Unit ten: Abilities and skills; job preferences; personality s traits; careers	Speaking: Describing abilities and skills; talking about job preferences, Reading: Read about how to find a job. Writing: Writing a cover letter for a job application Listening: Listening to people talk about their job I preferences Grammar: Gerunds; short responses; clauses with because

11		**4**	Unit eleven: Landmarks and monuments; world knowledge	Speaking: Talking about landmarks and monuments; describing countries, Reading: Reading about interesting I museums Writing: Writing a guidebook introduction, Listening: Listening for information about a country Grammar: Passive with by (simple past); passive without by (simple present)
12		**4**	Unit twelve: Information about someone's past; recent past events	Speaking: Asking about someone's past; describing recent experiences, Reading: Reading about gifted children Writing: Writing a short story, Listening: Listening to people talk about recent experiences, Grammar: Past continuous vs. simple past; present perfect continuous
13		**4**	Unit thirteen: Entertainment; movies and books; reactions and opinions	Speaking: Describing movies and books, Reading: Reading about author's career, Writing: Writing a movie review. Listening: Listening to opinions. Grammar: Participles as adjectives; relative clauses
14		**4**	Unit fourteen: Nonverbal communication Gestures and meanings; signs; drawing conclusions	Speaking: Interpreting body language; explaining gestures and meanings, Reading: Reading about the proverbs, Writing: Writing a list of rules, Listening: Listening to people talk about the meanings of signs. Grammar: Modals and adverbs
15		**4**	Unit fifteen: Money; hopes; predicaments; speculations	Speaking: Speculating about past and future events; giving advice and suggestions, Reading: Reading an advice column Writing: Writing a letter to an advice columnist, listening: Listening to a radio talk show. Grammar: Unreal conditional sentences with if clauses; past modals
16		**4**	Unite sixteen: Requests; excuses; invitations	Speaking: Reporting what people say; making requests; a making invitations, reading: Reading about “white lies” Writing: Writing a voice mail message, Listening: Listening for excuses; listening to voice mail message, Grammar: Reported speech. General Review: solve the problems of the students/quizzes and test

English Language (Module 2)				
Discipline			**English Language**	
Department			**Department of English Language**	
Subject			**ESP/ Professional English in use**	
Course code			**MED2006**	
Class			**Second**	
Semester		**2**	**Spring/Fall**	
Number of credits		**4**	**Theory**	
			Practical	**4**

Week	Hours		Topics	Descriptions
	Theory	Practical		
1		**4**	Health and illness parts of the body	Speaking: Talk about health, sickness and, recovery and name parts of the body. Reading: Read the passage Listening: Listen to someone who is talking about the radiation of pain in his body. Writing: Homework assignment -Write an advice for keeping fit
2		**4**	Function of the body Medical practitioner	Speaking: Talk about the functions of your organ/job of GPs, Reading: Read the passage. Listening: Listen to the pronunciation of the new Words. Writing: Write five questions about a patient who has diabetes.
3		**4**	Nurses Allied health professionals	Speaking: Talk about the job of nurses and their grades. Reading: Read the passages silently. Listening: Listen to nurse talks about her routine. Writing: Write an article about the nurses responsibility in a hospital
4		**4**	Hospitals Primary care	Speaking: Talk about the hospital and the different ward of a hospital. Reading: Read the relevant passages about hospital Listening: Listen to a doctor introducing hospital
5		**4**	Medical Education The overseas doctor	Speaking: Talk about medical education in your country Reading: Real the passages. Listening; Listen to the pronunciation of the new words. Writing: Write about the systems of education in your country
6		**4**	Signs and symptoms Blood	Speaking: Describe anemia, reading: Read the passages Listening: Listen to the pronunciation of the new words Writing: Write a short case report.

7		**4**	Bones Childhood	Speaking: Look at the human skeleton and name them. Reading: Read the passages. Listening: Listen how the anatomical name of the bones are pronounced Writing: write a short article about a stress fracture
8		**4**	The endocrine system The eye	Speaking: Talk about the glands and their functions in the body, Reading: Read the passages. Listening: Listen to the pronunciation of the new words. Writing: Write a referral letter
9		**4**	The gastrointestinal system	Speaking: Talk about digestive system, Reading: Read the passage about the abdomen. Listen to People making invitation. Writing: Write a short article about human digestive system
10		**4**	Gynecology	Speaking: Talk about reproductive system of women Reading: Read the passages. Listening: Listen to pronunciation of the new words in the cassette. Writing: Write a passage about women menstruation.
11		**4**	The heart and circulation	Speaking: Talk about heart and its function in the body Reading. Listening: Listen for a medical conversation about the heart. Writing: Write about hear failure
12		**4**	Infections Mental illnesses	Speaking: Talk about microorganism /about mental illnesses. Reading: Read the passages, Listening: Listen to the new words. Writing: Write about the cases of HIV in your country
13		**4**	The nervous system	Speaking: Talk about sensory loss and motor-loss. Reading: Read the passages about epileptic fit and syncope attack. Listening; Listen to the pronunciation of new words. Writing: Write about tendon reflex.
14		**4**	Oncology	Speaking; Talk about neoplasm. Reading: Head the passages silently and then aloud. Listening: Listen to medical conversation. Writing: Write about the treatment of tumors
15		**4**	Pregnancy and child birth	Speaking: What is labour? Describe it. Reading: Read the passages about labour and lie presentation. Listening: Listen to the new words. Writing: Write short article about the oldest and youngest age in your country
16		**4**	The respiratory system	Speaking: Talk about respiratory system. Reading: Read the passages. Listening: Listen to doctor talking about cough. Writing: Write a case report about a man who is complaining of chest pain

Reference Books

- Professional English in use Medicine, Erich H Glendenning, Cambridge University,2007
- Grammar in Context, by Sandra NElbum, 1986 USA
- New interchange book two, by Jack C. Richards Cambridge University press in 1999.
- English grammar and composition by Wren and Martin,2001
- Professional English in use Medicine, Erich H Glendenning, Cambridge University,2007
- English grammar by Betty Schampfer, 3rd edition
- Essential grammar in use by Roymound Murphy,3rd edition,2007
- English grammar and composition by Wren and Martin,2001
- New Inter change book one, byJack C Richards, students text book 2008

XLIII- Medical Physics

Learning Objectives

Goals

At the end of courses the students must be learning about:

- To understand of the nature of the sound, mechanism of hearing and clinical uses of sound;
- To understand the concept of the physiological effects of electricity and detection of bioelectricity;
- To learn about electromagnetic spectrum and waves and their interaction with body;
- To explain the mechanism of vision and cause of vision defects;
- To understand the mechanism of Laser production and its application in medicine;
- To learn the mechanism of x-ray production, production of radiology images, the x-ray interaction with the body and to know different modalities of radiology;
- To get acquainted with basic concepts of nuclear medicine and its spectrum of application;
- To learn about radiotherapy and its mechanism of the work in medicine;
- To learn about radiobiology, effect of radiation on the body and how to protect patients and other individuals from unnecessary exposure;
- To understand the basic fundamentals of magnetism and application of magnetism in the medicine, MRI and its safety.

Course contents

Medical Physics					
Discipline			**Basic Biomedical Sciences**		
Department			**Physics**		
Course title			**Medical Physics**		
Pre- requisite			**None**		
Course code			**MED1 007**		
Class			**I**		
Semester		**1**	**Spring/Fall**		
Number of credits		**3**	**Knowledge**	**2**	
			Practical	**1**	

Week	**Hours**		**Topics**	**Descriptions**
	Knowledge	**Practical**		
1	**2**	**1**	Waves and sound	Properties of Sound, Some Properties of Waves (Reflection and Refraction, Interference, Diffraction).
2	**2**	**1**	Hearing mechanism and defects	Hearing and the Ear (Performance of the Ear, Frequency and Pitch, Intensity and Loudness), Clinical Uses of Sound, Hearing defects, hearing aids
3	**2**	**1**	Ultrasound	What is ultrasound? Ultrasound and energy, how echoes are formed? How to produce ultrasound?, Images from echoes, Ultrasound scanner design, I Ultrasound is absorbed by the body, Limitations of ultrasound: Image quality and artifact
4	**2**	**1**		How safe is ultrasound imaging? Obstetrical ultrasound imaging, Echocardiography: Ultrasound images of the heart, Origins of the Doppler effect, Using the Doppler effect to measure blood flow, Color flow images, Three-dimensional ultrasound.
5	**2**	**1**	Electromagnetic Waves	Definition, Electro Magnetic Spectrum, Radio Waves, Micro waves, Infra-Red, Visible light, Ultraviolet, X-ray's, Gamma Rays, Interaction of Electro Magnetic Radiations with human body, Non Ionizing Radiations, Ionizing Radiations, NCRP, ICNIRP.
6	**2**	**1**	Application of light in medicine	Optics fiber, Imaging, endoscopy, fiber optics endoscope, video endoscope
7	**2**	**1**	Laser	Introduction. What is Laser? How Laser work? Photocoagulation, Tradeoffs in photocoagulation Photo vaporization, Lasers and color

8	**2**	**1**	Application of Laser in a medicine	How selective absorption is used in Laser surgery?, Lasers in Dermatology, Laser surgery on the eye, Lasers in Dentistry, Advantages and drawbacks of Lasers for medicine, Photodynamic therapy
9	**2**	**1**	Radiology	Introduction, Diagnostic x-rays: The body's x-ray shadow, Types of x-ray interactions with matter, Basic issues in x-ray image formation, Contrast How x-rays are generated, X-ray detectors, Different modalities in Radiology, Conventional radiology, Digital Radiology, fluoroscopy, mammography, dental radiology, OPG, Angiography.
10	**2**	**1**	CT Scan	Basics of computed tomography, Generations of CT Scan, Hounsfield units, Density, How images are created in CT-Scan, Indications and Contraindications of using radiation for diagnosis How images are created in CT-Scan, Indications and Contraindications of using radiation for diagnosis.
11	**2**	**1**	Radioactivity	Radioisotopes, Radioactivity and medicine, Nuclear physics basics, Decay, half-life (Physical, Biological), Alpha, Beta and Gamma rays.
12	**2**	**1**	Nuclear Medicine	Selection of radiopharmaceuticals, Gamma camera imaging, Emission tomography with radionuclide: SPECT and PET, Radiation in medical treatment
13	**2**	**1**	Radiobiology	Introduction, External Beam Radiotherapy, Cobalt 60 machine, Linear accelerators, Brachytherapy (LDR, HDR).
14	**2**	**1**		Interaction of radiation with the body, Radiation units, absorbed dose, equivalent dose, effective dose, Radiation constraints.
15	**2**	**1**	Radiation Protection	Shielding, Personal protection, Protection of patients, Environmental safety, dosimetry, detectors and imaging machines, types of detectors
16	**2**	**1**	Magnetism and MRI	Introduction, The science of magnetism, Nuclear magnetism, Contrast mechanisms for MRI, Listening to spin echoes, How MRI maps the body, How safe is MRI?

Skills:

Introduction to practical course of medical physics, Units of measurement, metric system, British system;

Centrifuge: Introduction, The use of centrifuge in medicine, sedimentation principle, centripetal acceleration, demonstration of centrifuge;
Blood pressure: Sphygmomanometer, Physical aspects of measurement of blood pressure, demonstration and practical measurement of blood pressure;
Thermometers and units used in heath: Centigrade, Fahrenheit, Kelvin, Conversion of heath units;
Microscope: types of microscopes Physical aspects, Magnification factor, mechanism of the work;
Defibrillator: Electrical current of the heart, physical aspects of defibrillator, demonstration of defibrillator;
Chest tube and water seal: physics of respiration, what is chest tube and water seal? Pathologies require chest tube, mechanism of chest tube work;
Ultrasound machine: Probes, different parts of the machine, demonstration of the work of ultrasound machine;
ECG machine: Electrical activity of the heart, demonstration of the machine and' mechanism of its work;
Optometry: Defects of vision, Concave and convex lenses and glasses;
Introduction to Laser machine: demonstration of the machine, mechanism of its work, wavelength and filters;
X-ray machine: X-ray tube, Table, Cassette, Film, Analogue and digital x-ray;
CT-Scan machine: Table, Gantry, Control unit, Density, Contrast, Hounsfield unit, CT protocols;
Radiotherapy: Introduction to Linear accelerator, Treatment planning, Dose distribution, Dose fractionation, PTV, CTV;
Introduction to radionuclides: Calculation of half-life of radionuclides and decay, Calculation of half-life, Biological and physical half-life;
MRI machine: Table, Gantry, Intensity, Tl contrast, T2 Contrast images, Proton Density, MRI protocols;
Endoscopes demonstration (Esophagogastroduodenoscope, Cystoscope & Bronchoscope).

XLIV- Biophysics

Learning objectives

- Develop basic understanding of Biophysics concepts;
- To learn the effect of stability and static forces applied in different states of the body and calculation of forces using lever rules;
- To understand the friction principles and its effect in the joints;
- To learn the formulas and equations used to evaluate the motion of fluids;
- To learn the fundamentals of the heat and thermoregulation in the body;
- To understand the concept of the physiological effects of electricity and detection of bioelectricity;
- To explain the mechanism of vision;

- To understand the causes of vision defects and their correction;
- To understand the Hemodynamic rules in cardiovascular medicine (e.g.; Frank-Starling law, Laplas Law, Bemuli-Venturi effect etc.)

Course Content

Biophysics				
Discipline			**Basic Biomedical Sciences**	
Department			**Physics**	
Course title			**Biophysics**	
Pre- requisite			**None**	
Course code			**MED1 008**	
Class			**I**	
Semester		**1**	**Spring/Fall**	
Number of credits		**1**	**Knowledge**	**1**
			Practical	

Week	**Hours**		**Topics**	**Descriptions**
	Knowledge	**Practical**		
1	**1**		Introduction	Introduction to physics application in Medical sciences, equilibrium and stability, general anatomy of the skeletal system.
2	**1**		Biomechanics	Equilibrium considerations for the human body, stability of the human body under the action of an external force, standing, bending, lifting.
3	**1**		Friction	Definition of Friction, Standing at an Incline, Friction at the Hip Joint
4	**1**		The cell	Cells and sizes, diffusion via membrane, dance of the cells
5	**1**		Heat and kinetic theory	Heat and Hotness, Kinetic Theory of Matter, Definitions: (Unit of Heat, Specific Heat, Latent Heats), Transfer of Heat, Conduction.
6	**1**			Convection, Radiation, Diffusion, Transport of Molecule's by Diffusion, Diffusion through Membranes, The Respiratory System, Surfactants and Breathing. Diffusion and Contact Lenses.
7	**1**		Thermal regulation	Energy Requirements of People, Energy from food, Regulation of Body temperature, Control of Skin temperature, Convection, Radiation, Radiative Heating by the Sun, Evaporation, Resistance to Cold, BMR

8	**1**		Electricity and electric potential	Biopotential, nerve tissues, action potential and resting potential, heart and vessels system, control of heart function
9	**1**		Muscles Activities	Brain activities, electrotherapy (ECT), defibrillation, heart stimulation counter, diathermy, electro cauterization (electrical surgery)
10	**1**		Bioelectricity	Detection of electrical signals from body, ECG, EMG, EEG
11	**1**		Interaction of Electricity with body	Physiological effects of electricity, Electric shock, Heath, Factors in lethality of electric shock (current, frequency, direction of current, time, AC/DC).
12	**1**		Fluid dynamics	Bernoulli's Equation, Viscosity and Poiseuille's Laminar Flow, Turbulent Flow, Circulation of the Blood, Blood Pressure, Control of Blood Flow.
13	**1**		Hemodynamics	Energetic of Blood Flow, Turbulence in the Blood, Arteriosclerosis and Blood Flow, Power Produced by the Heart, Measurement of Blood Pressure. Laplace's law, Frak Starling's law related to the heart mechanics.
14	**1**		Optics and vision, Defects in vision and Correction	Vision, Nature of Light, Structure of the "Eye, Accommodation, Eye and the Camera, Aperture and Depth of Field, Lens System of the Eye
15	**1**			Reduced Eye (a model for calculations), Retina, Resolving Power of the Eye, Threshold of Vision, Vision and the Nervous System
16	**1**			Defects in vision, Lens for Myopia, Lens for S Presbyopia and Hyperopia, Astigmatism.

Textbooks & reference books recommended (last edition)

- Suzanne Amador Kane; Physics in Modern Medicine,
- Perray Sprauls, Slavik Tabakov; Medical Physics International,
- Dr.R.N. Roe; A Textbook of Biophysics,
- William Bialek; Biophysics, Searching for Principles,
- A.N. Misra; Biophysics,
- Irving P.Herman; Physics of the Human Body
  Simon R.Cherry. Physics in Nuclear Medicine,

LV—Radiology & Medical imaging

Goals

MD doctors should have enough knowledge and exposure to various radiological techniques and be able to interpret radiological-findings with accuracy and confidence.

Different pathologies have characteristics radiological features which are strong basis for diagnosis of different diseases. Modem imaging facilities e.g. Intravenous urography, ultrasonography, CT and MRI have made diagnosis easy and accurate.

Learning objectives

At the end of the course, students should be able to:

- To select/order and justify the required radiological examination correctly;
- Identity gross abnormalities in the films;
- List indications and advantages of modern techniques;
- Recognize major abdominal viscera and their imaging characters.

Course content

Medical Imaging and science of Radiation (Module 1)					
Discipline			**Basic Biomedical Sciences**		
Department			**Medical Imaging and science of Radiation**		
Course title			**Medical Imaging and Radiology**		
Pre- requisite			**Medical physics, Medicine & surgery course**		
Course code			**MED7 027**		
Class			**IV**		
Semester		**7**	**Spring/Fall**		
Number of credits		**2**	**Knowledge**	**1**	
			Practical	**1**	
Week	**Hours**		**Topics**	**Descriptions**	
	Knowledge	**Practical**			
1	**1**	**1**	Radiology and Medical Imaging	Preface, Technics of Medical Imaging, Definition of X - Ray, Conventional Radiography, X-Rays Production, Dynamic Spatial Reconstruct or (DSR),Radioscopy, positron Emission Tomography (PET)	
2	**1**	**1**		Image quality, Technology of screen intensifier, Danger of X-Rays (Local accident, General accident), Radioprotection (radioprotection of patient, Radioprotection of medical staff, protection material, Drug Protection, Radio detection)	
3	**1**	**1**	Ultrasonography	Mechanism of production of sound, Physics of Ultrasound, Types of wave of sound, Transmission of sound in tissue, Different types of transducer Usefulness of ultrasound, Mass in ultrasound view	

4	**1**	**1**	Angiography	Coronography (procedure of coronography, value of therapeutic coronography) Computed tomography (CT Scan), Scintigraphy or Radionuclide scan
5	**1**	**1**	Contrast material MRI (principle)	Positives contrast, minus contrast, double contrast, Magnetic Resonance Image (production of image, uses of MRI, usefulness of MRI, use of contrast in MRI, Contraindication for MRI
6	**1**	**1**	Radiography of chest	Thoracic Disease, (Technics of imaging, Simple chest X- ray, studies of diaphragm, heart, mediastinum, lungs, hilus of the lung), Computed Tomography (Technics, Indication and normal image), MRI imaging, Radionuclide lung c canning, PET Scanning, Ultrasound of chest, Thoracic disease with normal chest X ray, Abnormal Chest Silhouette sign)
7	**1**	**1**		Radiologic sign of pulmonary disease (Air space filling, pulmonary collapse, spherical shadow, calcification, cavitation, increase pulmonary radiolucency, Pleural effusion, pneumothorax)
8	**1**	**1**		Mediastinum (mediastinal mass, calcification), Hiatus hernia, Pneumomediastinum, Aortic aneurism, Hilar enlargement, Neoplasm, Specific Disease (Bacterial pneumonia, Viral and mycoplasma pneumonia, Lung abscesses, Pulmonary tuberculosis, Sarcoidosis, Carcinoma of the Bronchus, Lymphoma.
9	**1**	**1**	Heart	Cardiac disorder (plain chest X ray, Heart size and shape, Cardio-Thoracic Ratio (CTR), Increased pulmonary blood flow due to left to right shunt, Pulmonary arterial and venous hypertension, Pulmonary edema.
10	**1**	**1**		Echocardiography, Radionuclide study CT Scan, MRI, Specific cardiac disorder (Heart failure, Pericardial effusion, Valvular heart disease, Ischemic heart disease, congenital heart diseases).
11	**1**	**1**	Urinary tract disorders	Method of imaging (Ultrasound, Urography, TVU, CT urography, CT KUB, CT after contrast injection MRI, Radionuclide examination, Specific technics
12	**1**	**1**		Congenital anomalies of the urinary tract (bifid collecting system, ectopic kidney, horse-shoe kidney, renal agenesis^), Urinary tract Disorder (urinary calculi, 'Nephrocalcinosis, Urinary tract obstruction, etiology of ureter -o Obstruction, Renal parenchymal masses (Ultrasound, IVU, CT scan & MRI), Urethral tumors.
13	**1**	**1**	Urinary tract disorders	Renal and peri-renal abscess, Tuberculosis, Chronic pyelonephritis, Renal trauma, Bladder (Tumor of Bladder, diverticula, trauma of bladder and urethra,

				Prostate and urethra (prostatic enlargement, bladder outflow obstruction, ureteral stricture), scrotum and testis, renal trauma,
14	**1**	**1**	Digestive system	Diagnostic methods, Plain abdomen, Intestinal gas pattern, Esophagus, normal swallow of barium, indication, contraindication, dysphagia, pharyngeal pouch (Zinker's diverticulum) reflux esophagitis.
15	**1**	**1**		Achalasia, Schertz's ring, diaphragmatic herniation, sliding hiatus hernia, rolling hiatus hernia, foreign bodies and trauma, varices, esophageal tumors.
16	**1**	**1**		Pneumoperitoneum, abdominal calcification, Gastrointestinal tract: Contrast examination, Barium Examination of the esophagus stomach and I duodenum, small bowel, Large Intestine, malignant tumors, gastric carcinoma, lymphoma, acute abdomen, intestinal obstruction, acute appendicitis, acute cholecystitis, Crohn's disease, Ulcerative colitis, Diverticular Disease, Volvulus, Intussusception, Colorectal tumors,

Medical Imaging and Science of Radiation (Module 2)				
Discipline			**Basic Biomedical Sciences**	
Department			**Medical Imaging and science of Radiation**	
Course title			**Medical Imaging and Radiology**	
Pre- requisite			**Medical physics, Medicine & Surgical diseases**	
Course code			**MED8 027**	
Class			**IV**	
Semester		**8**	**Spring/Fall**	
Number of credits		**2**	**Knowledge**	**1**
			Practical	**1**
Week	**Hours**		**Topics**	**Descriptions**
	Knowledge	**Practical**		
1	**1**	**1**	Neuroradiology	Brain & Cranium, Simple skull x-ray, CT scan, MRI, Angiography, Nuclear Medicine, cerebrovascular disease, Infarction with different types, Intracerebral hematoma.
2	**1**	**1**		Trauma of Brian, contusion, subdural hematoma, extradural heamatoma

3	**1**	**1**		Intracranial tumors in adult, Glioblastoma, meningioma, neuroradiology diagnosis infection of central nervous system, Meningitis, TB meningitis, Empyema of brain, brain abscess.
4	**1**	**1**	Paranasal sinuses	Developmental anatomy of sinuses, Techniques, Different projection in sinuses findings, anatomical changes with nasal obstruction
5	**1**	**1**		Choanal Atresia, Opaque sinus, mucocele, Acute sinusitis, Chronic sinusitis, nasal polyposis, mucous retention cyst, Trauma
6	**1**	**1**	Musculoskeletal system	Reaction of bone against disease, hyperactivity of osteoblast, trauma, classification of fracture, complication of fracture,
7	**1**	**1**	Spine	Spondylosis, spondylolysis, spondylolisthesis, ankylosing spondylitis, cervical spine position, thoracic lumber spine, congenital skeletal anomalies, Chromosomal disorder-springel's shoulder,
8	**1**	**1**	The lower limb	Congenital dislocation of the hip, proximal femoral focal deficiency, abnormalities of the patella, hemivertebra, congenital vertebral fusion, cervical rib, spina bifida, osteogenesis imperfect, separated odontoid, down's syndrome, periostal reaction.
9	**1**	**1**	Congenital skeletal anomalies	Congenital skeletal anomalies, Chromosomal disorders, Springl's shoulder, Congenital dislocation of the hip, proximal femoral focal deficiency.
10	**1**	**1**	Infection of the bones	Osteomyelitis (radio logic findings), tuberculosis of bone and joints, (radiographic appearance), greater trochanter lesion, spine(radiographic appearance),
11	**1**	**1**	Tumors of bones	tumors and tumor like condition of the bone, bone forming tumors (osteoma, osteoid osteoma, osteoblastoma, osteosarcoma)
12	**1**	**1**	Metabolic and endocrine disorder affecting bone	Change due to' vitamin -D deficiency, Rickets, Osteomalacia, hypo phasphatasia, Vitamin -C deficiency, scurvy, Osteoporosis, Local osteoporosis Vascular necrosis, osteonecrosis.
13	**1**	**1**	Female genital tract	Normal appearance (ultrasound, Computed tomography, MRI, PET/CT, gynecological pathology (pelvic masses, ovarian masses, Uterine tumors (fibroid, adenomyosis),
14	**1**	**1**		Carcinoma of uterine body and cervix, pelvic inflammatory disease, endometriosis, intrauterine contraceptive devices, hysterosalpingography, obstetric ultrasound, ultrasound in the first, second and third trimester, placenta, large for dates, intrauterine growth

				retardation, ultrasound for Karyotyping, fetal death, ectopic pregnancy,
15	**1**	**1**	Mastoiditis	Acute and chronic mastoiditis, Cholesteatoma, congenital cholesteatoma.
16	**1**	**1**	Mammography	Indications and technics

Skills (able to demonstrate radiological abnormalities)

A- Plain Radiography

1- Chest

- Normal anatomy and projections
- Pneumothorax
- Pneumonia
- Effusion
- Cardiomegaly
- Pulmonary edema
- Fractures
- Surgical emphysema
- Neoplastic diseases
- Chronic inflammatory disease (TB)

2- Skull

- Normal Anatomy and Projections
- Fracture
- Lytic lesions
- Calcifications
- Pituitary

3- Abdomen

- Normal anatomy and projections
- Renal and urinary tract stones, gall stones and other calcifications
- Fluid levels (intestinal obstruction)
- Free gas under diaphragm (perforation)
- Enlarged liver and spleen

4- Spine/bones

- Normal anatomy and various projections.
- Disc space reduction
- Vertebral collapse
- To recognize changes due to rickets
- fractures in children and adults
- To understand the importance of plain x-rays in bone tumors

B- Barium studies single and double contrast

- Normal anatomy and various projections
- Gastric outlet obstruction
- Stomach mass/filling defect

- Esophageal outline/strictures
- Intussusception
- Stricture
- Any filling defect
- Ulcerative colitis

C- Intravenous Urograms

- Hydronephrosis and renal masses
- Micturating cystourethrogram
- Vesico-ureteric reflux

D- Echocardiogram

- Be able to interpret the reports.

E- Computerized tomography (CT)/ Magnetic Resonance Imaging (MRI)

- To know the cross sectional anatomy'
- Understand the principals of radiation safety in CT scan
- To know and understand the clinical indications and contraindications
- Be able to interpret the report

F- Ultrasound

- Understand the indications and applications of ultrasound.
- Able to interpret the report of ultrasound.

G- Nuclear medicine

- Understand the indications of nuclear studies
- Able to understand the hazards of radionuclides and internalize the rules of radiation protection
- Able to interpret the reports

Textbooks & reference books recommended (last edition)

- David Sutton. Textbook of Radiology and Imaging,
- Adams, A.K. Dixon. Diagnostic Radiology,
- David Sutton. Radiology. & Imaging for Medical Students,
- Jerry L. Prince. Medical Imaging, Signal and System,
- Lawrence R. Goodman. Felson's Principles of Chest Roentgenography,
- Sabala R. Mandava. Breast Imaging, Biren A. Shah.
- K. Kirk Shung.Diagnostic Ultrasound,
- William E. Brant. Clyed A. Helms. Fundamentals of Diagnostic

XLVI- Information – Communication Technology

Learning objectives

At the end of the course the student should be able to:

- Demonstrate literacy for all,
- Introduce the main concept of:
  - Information Communication Technology
  - Hardware
  - Software
  - Data storage and memory
  - Computer performance

- Demonstrate knowledge and competence in using the common functions of a personal computer and it is operating system;
- Basic operations, Formatting, Installation, editing documents, Proofing and printing;
- Work with Microsoft Word, Microsoft PowerPoint and Microsoft Excel;
- Web Navigation, Web Searching, Downloading Security issues.

Course content

Information Communication Technology ICT (Module 1)				
Discipline			**Computer science**	
Department			**information – communication Technology**	
Course title			**ICDL Module 1 & 3 (concept of information – communication Technology, word- processing)**	
Pre- requisite			**None**	
Course code			**MED1 002**	
Class			**I**	
Semester		**1**	**Spring/Fall**	
Number of credits		**2**	**Knowledge**	**1**
			Practical	**2**
Week	**Hours**		**Topics**	**Descriptions**
	Knowledge	**Practical**		
1		**2**	Concepts, and Hardware	Concepts: Personal Computer (Laptop & Palmtop Computers, Futures of Handheld Portable digital devices, PDA, Mobile Phones, Media Players,
				Smart Phones), Parts Of Computer (The CPU, Memory, ROM-BIOS, Disks)
2		**2**	Input/output ports	Input/output ports USB Port, Serial Port, Parallel

			And Computer Performance	Port, Network Port, Fire Wire Port. Computer Performance Factors affecting performance(CPU Clock Speed, RAM size, Hard disk, Free hard disk space, Fragmentation, De-fragmenting files, Multitasking Considerations, CPU Speeds).
3		**2**	Memory and Storage	Memory: RAM, ROM, ROM-BIOS, Video (Graphics) Memory, Measurement of storage capacity, Measurement of storage capacity. Types \ of Storage Media: Internal Hard Disk, CDs, DVDs, Recordable CDs and DVDs, USB flash drives, Memory Cards, Network Drives & File Storage, Floppy Disks.
4		**2**	Input devices	Input Devices: Keyboard, Mouse, Scanners, Tracker balls Touch Pads, Joysticks, Webcams Digital Cameras, Microphones.
5		**2**	Output Devices	Output devices: Traditional Computer Monitors, Flat Screen Computer Screens, Projection Devices, Speakers And Headphones, Printers, Type of Printers, Laser Printers, Inkjet Printers, Dot Matrix Printers Input and Output devices.
6		**2**	Software	Operating System: Example of Software Application are: Word Processing Application, Spreadsheets Application Databases Application, Presentations Application E-mailing Application, Web browsers Application Photo editing Application.
7		**2**	Software	Software: Difference between operating systems and application software, Accessibility options, S Voice recognition Software, Screen Reader Software, Screen magnifier Software, On-Screen Keyboard.
8		**1**	Networks and DATA Transfer	Network: Network Types (LAN, WAN, WAN, Client/server network, Internet, WWW, Intranet, and Extranet) DATA Transfer: Downloading from and uploading to a network Broadband versus Dial-up Internet connection services Internet connection Options Features of Internet connection.
9		**2**	ICT in Everyday Life	ICT in Electronic World, ICT in Communication ICT in Virtual Communities/Cr in Health If ICT in Environment.
10		**2**	Security	Security: Identity and Authentication, Password policies, Off-site backups, Firewalls, Data theft Issues, Viruses, computer Virus (Computer Virus. infection Issue, Protecting Against Computer Virus infection, what to do if you discover a virus on your Computer, The limitation of antivirus Software).

11		**2**	Legal Issue and Site Licenses	Legal Issue: Copyright, Copyright Issue when Copying files. Site Licenses, End-user license agreement, Types of software license agreements, Shareware, Freeware, Open source software, Open source software, Data protection, Data protection and Privacy, Data protection Legislation.
12		**2**	The Microsoft Word	Working with Documents: Starting Microsoft Word, The Microsoft word Screen The level of command organization, the office button Ribbon Tabs, Switching between tabs using the mouse wheel Groups.
13		**2**	Starting To Use Microsoft Word	Using the default Microsoft Word document: Saving Microsoft Word Document, Opening and Closing documents. Saving your file using a different file name, Creating a new document, Using Help within Microsoft Word, Alt key help Saving document using different formats, Creating documents using different templates, Switching between Word Views.
14		**2**	Manipulating Text And The Clipboard	Manipulating Text: Select, then format, inserting text Inserting, deleting, undo and redo, Insert and overtype mode, copying text within 1 a document Moving text within a document. The Clipboard: Using the clipboard, The Office Clipboard .Removing items from Clipboard.
15		**2**	Formatting	Text Formatting: Changing the font size or font type. Formatting text as bold, italic or underline Applying subscript or superscript formatting Applying Colors to selected text, applying different background colors to selected text changing the text case Setting hyphenation options.
16		**2**	Paragraph Formatting	Paragraph Formatting: Paragraph marks, Creating a paragraph, Deleting a paragraph, Merging, paragraphs, Aligning text within a document Modifying paragraph spacing, Applying a different H bullet or numbering style to a list, Adding border and Shading, Finding and Replacing Text.

information – communication Technology ICT (Module 2)				
Discipline			**Computer science**	
Department			**information – communication Technology**	
Course title			**ICDL Module 4 & 6 (Spread sheet, presentation)**	
Pre- requisite			**None**	
Course code			**MED2 002**	
Class			**I**	
Semester		**2**	**Fall/Spring**	
Number of credits		**2**	**Knowledge**	
			Practical	**2**

Week	Hours		Topics	Descriptions
	Knowledge	Practical		
1		**2**	Microsoft Excel	Starting the excel program, What is active cell, The excel referencing system, Entering numbers and text, Default text and number alignment, Summing a column of numbers, Entering a date, Worksheets and workbooks Selection techniques.
2		**2**	Manipulating Rows and Columns, Manipulating Cells and cell contents	Manipulating Rows and Columns inserting rows and columns into a worksheet, Deleting rows and columns within a worksheet, Modifying columns widths and heights, Automatically resizing the column width to fit contents, Manipulating Cells and Cell contents: Copying a cell or range contents within a workbook, Deleting cell contents, Editing cell content, AutoFill, Copying a data range using AutoFill, Sorting a cell range
3		**2**	Worksheets, Formatting Freezing Row and Column. Titles	Worksheets: Switching between worksheets, I Renaming, inserting, Deleting, Copying, Moving a worksheet, Formatting: Alignment Formatting (Aligning Contents in a cell range, Centering a title over a cell range, Cell Orientation, Text wrapping),Number formatting (decimal point display, currency symbol, date styles, percentages),Freezing: Freezing row and column titles.
4		**2**	Formula	Formula: Creating formulas, Copying, formulas, Operators, Using operator in formulas, Formula error messages.
5		**2**	Functions	What is a function, Common functions (Sum, Average, Max, Min, Count, Count, Count Blank, Round and If functions)

6		**2**	Charts	Charts: Inserting (column chart, line chart, bar chart, pie chart), Resizing a chart), Deleting a chart, Chart title or labels.
7		**2**	Charts	Charts: Changing the chart background color, Changing the column, bar, line or pie slice colors in chart, Modifying the legend fill color, Changing the chart type, Modifying charts using the layout tab, Copying and moving charts within a worksheet, Copying and moving charts between worksheets and workbooks .
8		**2**	Printing	Printing: Worksheet setup (Worksheet margins, Worksheet Orientation, Worksheet page size, Header And Footers).
9		**2**	Preparing to Print A Worksheet	Preparing to Print A Worksheet: Visually check your calculations, Displaying gridlines when printing, Printing titles on every page when printing, printing the excel row and column headings, Spell checking Previewing a worksheet, Comparing workbooks
10		**2**	PowerPoint Presentation	Opening and Viewing: First Steps With Presentations Creating a Presentation (Manipulating Slides, Themes: Text editing and formatting).
11		**2**	Tables	Tables: Table selection techniques, Creating a table Apply style to a table, Apply border to cells Inserting, Deleting & Modifying rows or columns.
12		**2**	Illustrations	Formatting Shapes: (Grouping and ungrouping objects, Rotating or flipping an illustration) Formation charts: (Changing the chart type, adding data table to chart). Organization charts: (what is an organize chart, creating an organize chart, Adding a manager whiten an organization chart).
13		**2**	Moving, Copying and Deleting slides	Moving, Copying and Deleting Slides: Moving slides within a presentation or between presentations, Copying slides within a presentation, Deleting slides, Copying slides between presentations, Moving slides between presentations.
14		**2**	Slide Masters	Slide Masters: What is slide master, Inserting a picture (clip art) into a master slide .Inserting an image (form a file) into a master slide, Creating a footer and automatic slide numbering.
15		**2**	Slide Shows & Printing and Proofing	Slide Shows: Running a slide show, Slide show transition effects. Slide Show animation effects Printing And roofing: Spell-checking, Selecting your output format, Printing a presentation.
16		**2**	Customizing & Compatibility Issues	Customizing & Compatibility Issues: Modifying power point options Compatibility issues when saving a presentation Other file types you can use for a saving a presentation Saving a presentation as a template, Creating a new presentation based on a customized template.

Textbooks & Reference books Recommended (last edition)

- Nell Dale & John Levis. Computer Science Illuminated.
- G Michael Schneider, Judith L. Gersting. Invitation to Computer Science.
- William Stallings. Computer Organization and Architecture.
- Seema Bhatnagar. Textbook of Computer Science.
- Carol Critchlow & David Eck. Fundamental of Computation.
- Angela B. Shiflet & George W. Shiflet. Introduction to Computer Science.
- J. Glenn Brook. Computer Science.
- Shanti Keropani, Prashi Jain, Amrita Mishra, Nitish Jain. Computer Science & Information Technology.

XLVIL- Substance Related Disorders

Goals

This course provides an overview of the fundamental concepts in substance related disorders. The contents of this course will help to introduce participants to terminologies used in substance related disorders, as well as their definitions. Students will be provided with a comprehensive overview of these substances that are most commonly used in the Afghanistan, in addition to an overview of common substance induced disorders. Factors (historical, geographic, economic, socio-cultural, genetic) impacting on substance related disorders in the Afghanistan will be also covered.

It describes the problems associated with substance related disorders (personal, public health, family, social, economic), explaining the transition from experimentation with substances to dependence, and identifying substance misuse as a chronic medical illness. Personal and social responsibilities in the onset of substance misuse are highlighted and the economic impacts of these disorders in Afghanistan is also discussed.

Learning objectives

At the end of this course student will be able to:

- Explain why there is a drug abuse problem in our country;
- Recall what are the substances being abused;
- Design prevention initiatives suitable for various groups; and predict, integrated programs that increase the probability of successfully preventing substance misuse;
- Define and distinguish between substance use, abuse and dependence;
- Describe substance misuse as a chronic medical illness;
- Explain the public health outcome of substance related disorders;
- Approaches to managing drug abuse, with particular reference to primary, Secondary and tertiary prevention;
- Summarize the stages of motivational change in the process of addiction treatment;
- Identify mood altering substances, most frequently abused in our community;
- Explain the biological, psychological and social origins of substance addiction;
- Describe the stages of adolescent development and explain how these stages and other factors relate to or influence experimentation or substance abuse;

- Recall the signs, risks and consequences of experimentation and substance abuse among adolescents.

Course content

Substance Related Disorders				
Discipline			**Clinical Science and Skills**	
Department			**Neuropsychiatry**	
Course title			**Substance Related Disorders**	
Pre- requisite				
Course code			**MED11 041**	
Class			**6th**	
Semester			**1st**	
Number of credits		**1**	**Knowledge**	**1**
			Practical	**1**

Week	Hours		Topics	Descriptions
	Knowledge	Practical		
1	**1**	**1**	Introduction and overview about substance- related disorders	Afghanistan National Drug Use Survey, Substance related disorders in DMS-IV-TR and ICD-10, Definitions and Diagnosis, Substance Dependence, Abuse
2	**1**	**1**	Introduction and overview about substance- related disorders	Substance withdrawal and their Diagnostic criteria. Terminologies, Other Terminologies, History, Epidemiology, Neuropharmacology, Etiology, Psychopathology, Treatment.
3	**1**	**1**	Opioid- related disorders	Comparative Nosology, Introduction, Nosology, Etiology, Diagnosis and Clinical Features, Treatment.
4	**1**	**1**	Opioid- related disorders	Pathology and Laboratory Examination, Differential Diagnosis, Course and Prognosis, Toxicity, Morbidity, Medical Complication,
5	**1**	**1**	Opioid- related disorders	Treatment (Treatment of Intoxication, Dependence), Medications (Opioid Medication and Nonopioid), Harm reduction and treatment, Maintenance Medications for opioid Dependence
6	**1**	**1**	Opioid- related disorders	Differential Diagnosis, Pharmacological and Nonpharmacological treatment, Outpatient Drug- Free Program Psychotherapies, Treatment of Special Populations, Opioid Dependence with other substance abuse

7	**1**	**1**	Cannabis – Related Disorders	History, Cannabis preparations, Methods of use, Nosology, Epidemiology, Pharmacology, Correlates of Cannabis use, Pharmacology of Cannabis
8	**1**	**1**	Cannabis -Related Disorders	Diagnostic and clinical Features, Adverse effects of cannabis Use, Laboratory Examination, Treatment, Therapeutic Effects of Cannabis,
9	**1**	**1**	Sedatives, Hypnotics, Anxiolytics-Related Disorders.	Definition, Determining Abuse Liability, Etiology, Epidemiology, Diagnosis and Clinical Features (Intoxication, Withdrawal, Delirium, Persisting Disorders, Other Disorders
10	**1**	**1**	Sedatives, Hypnotics, Anxiolytic-Related Disorders	Patterns of Abuse (Oral, Intravenous), Overdose, Dependence and Withdrawal, Treatment (Withdrawal, Detoxification from Multiple Drugs of Abuse, Psycho logical Treatments
11	**1**	**1**	Amphetamine-Related Disorders	Kinds for use, Epidemiology, Diagnosis, Intoxication, Delirium, Clinical Features, Treatment and Rehabilitation
12	**1**	**1**	Nicotine- Related Disorder	Definition, History and Comparative Nosology, Epidemiology, Etiology, Diagnostic and Clinical Features, Course and Prognosis, Treatment Psychosocial, Pharmacological, Replacement)
13	**1**	**1**	Nicotine-Related Disorder	Nonnicotonic medications, Combined Psychosocial and Pharmacological Therapy, Smoking Cessation Treatment in Special Populations, Prevention and Policy intervention
14	**1**	**1**	Alcohol-Related Disorder	Definition and Nosology, Epidemiology, Pharmacology and Effects on the Body, Etiology, Diagnosis and Clinical Features-Identification in Clinical Settings, Differential Diagnosis,
15	**1**	**1**	Alcohol-Related Disorder	Course and Prognosis, Withdrawal, Severe withdrawal, Protected withdrawal, Rehabilitation, Counseling, Medication, Self-help Groups
16	**1**	**1**	Other substance-Related disorder	Caffeine, Epidemiology, Pathology, Etiology, Clinical Features, Dependence, Diagnosis, Treatment, Intoxication, Withdrawal.

Textbooks & Reference books recommended (Last edition)

- Afghanistan National Drug Use Survey, 2015.
- Kaplan & Sadock's Synopsis of Psychiatry.
- Ladewig D, Basic and Clinical Science of Substance Related Disorders,
- David Mee-Lee, ASAM Patient Placement Criteria for the Treatment of Substance-Related Disorders,2nd edition, American Society of Addiction Medicine.
- Joyce H, Lowinson, -Pedro Ruiz, Robert B Millman, Substance Abuse, a comprehensive textbook, Philadelphia, Lippincott Williams & Wilkins.
- Stuart'Gitlow, Substance Use Disorders, A practical guide, Philadelphia, Lippincott Williams & Wilkins.

A Comprehensive List of Skills, Recommended as Desirable for MD Degree

I- Clinical evaluation

- To be able to take a proper and detailed history;
- To perform a complete and thorough physical examination and elicit clinical signs;
- To be able to properly use the Stethoscope, Blood pressure apparatus, otoscopy, thermometer, nasal speculum etc;
- To be able to perform internal examination - per rectum (PR), per vaginum (just for female students) etc;

II- Bed side diagnostic tests

- To do and interpret hemoglobin (Hb), total count (TC), erythrocyte sedimentation rate (ESR), blood smear for parasites, urine examination / albumin/ sugar / ketones / microscopy:
    - Stool exam for ova and cysts.
    - To do Gram's stain and Ziehl- Neelsen stain for AFB. To do skin smear for lepra bacilli.
    - To do and examine a wet film vaginal smear for Trichomonas.
    - To do a skin'scraping and potassium hydroxide (KOH) stain for fungal infections.
- To perform and read Mantoux test,

III- Ability to carry out procedures

- To conduct CPR (cardiopulmonary resuscitation) and first aid in newborns, Children and adults.
- To give subcutaneous (SC) / intramuscular (IM) / Intravenous (TV) injections and start Intravenous (IV) infusions.
- To pass a nasogastric tube and give gastric lavage
- To administer oxygen - by mask / catheter.
- To administer enema.
- To pass a urinary catheter - male and female.
- To insert rectal tube.
- To do pleural tap, ascitic tap and lumbar puncture
- Insert intercostal tube to relieve tension pneumothorax
- To relieve cardiac tamponade
- To control external hemorrhage

IV- Anesthetic procedures

- Administer local anesthesia and nerve block
- Be able to secure airway patency,
- Administer oxygen by Ambu- bag.

V- Surgical procedures

- To apply splints, bandages and plaster of Paris (POP) slabs
- To do incision and drainage of abscesses
- To perform the management and suturing of superficial wounds
- To carry out minor surgical procedures, e.g. excision of small cysts and nodules
- Circumcision, reduction of paraphimosis
- Debridement of wounds etc.
- To perform vasectomy
- To manage anal fissures
- Give injection for piles

VI- Obstetric procedures

- To perform thorough antenatal examination and identify high-risk pregnancies
- To conduct normal delivery
- To apply low forceps
- Perform and suture episiotomies
- To insert and remove IUD's
- Perform tubectomy

VII- Pediatrics

- To assess new born and recognize abnormalities and I.U. retardation
- To perform immunization
- To teach infant feeding to mothers
- To monitor growth by the use of 'road to health chart'
- Recognize development / retardation
- To assess dehydration and prepare and administer Oral Rehydration Therapy (ORT)
- To recognize ART clinically

IX, Ophthalmic Procedures

- To be able to remove foreign bodies
- To perform nasal packing for epistaxis
- To perform tracheostomy

X- Community health

- To be able to supervise and motivate, community and para-professionals for
- Cooperative efforts for the health care system
- To be able to carry on managerial responsibilities – e.g. management of stores, indenting, stock keeping and counting
- Planning and management of health camps
- Implementation of national health programs
- To effect proper sanitation measures in the community e.g. disposal of hospital solid waste, chlorination of drinking water.
- To identity and institute control measures for epidemics including its proper date collection and reporting.

XI- Forensic medicine including toxicology

- To be able to carry on proper medico legal examination and documentation of
- Injury and age reports.
- To be able to conduct examination for sexual offences and intoxication
- To be able to preserve relevant ancillary materials for medico legal examination
- To be able to identify important post-mortem finding; in common unnatural deaths

XI- Management of Emergencies

- To manage acute anaphylactic shock
- To manage peripheral vascular failure and shock
- To manage acute pulmonary edema and Left Ventricular Failure (LVF)
- Emergency management of drowning
- Poisoning and seizures
- Emergency management of bronchial asthma and status asthmaticus
- Emergency management of hyperpyrexia
- Emergency management of comatose patients regarding airways, positioning, prevention of aspiration and injuries
- Assess and administer emergency management of burns

Internship (House Job) Program

Internship (House Job) Program

Definitions

Internship: Internship is a phase of training wherein a graduate is expected to learn methods and modalities for actual practice of medical and health care and acquire skills under supervision so that he/she may become capable of functioning independently.
Intern: Is a doctor who is undergoing the training period in the internship.
Internship supervisor: The senior member of staff who co-ordinates the internship in each department and hospital, ensuring there is a proper setting for each intern without overloading a single department.

Learning objectives of the Ghalib University- Continuing Medical Education Program

The main aim of the Ghalib University-CME Medical Internship Program is to integrate the medical knowledge received by the graduated medical students during their higher education studies with the clinical work taking place in the hospitals or clinics in a way that will consolidate what they have learned and help them in developing and improving their clinical skills necessary to practice medicine, and serve patients in a safe and satisfactory way, thereby, guarantee the improvement and the maintaining of the international standard of practice and knowledge of medical practice in Afghanistan.
This program consists of three semesters as follows:

- Ghalib University policies related to Medical Internship Program
- An-introduction to Medical Internship Program.
- Procedures of Medical Internship Program.

Section 1: Ghalib University policies related to medical internship program
There are nine underlying policies of Ghalib University support the interns to complete Medical Internship Program and achieve the certificate:

I. Medical Fairness

1. ***If at any time during the internship*** program the intern develops a disease, his/her condition will be reviewed by a chosen committee to decide on the possibility of continuation of the program or not. This process will be followed- for both communicable and non-communicable diseases.

2. ***Vaccination:***

- BCG, HBV and Tetanus vaccinations are mandatory;
- Heamophilus Influenza vaccine is optional.

3. ***Needle prick: if an intern gets a needle prick this is the procedure that should be taken:***

- The needle should be sent to the laboratory in a closed and sterile container to check for HIV and HBV;
- The prick site has to be cleaned and dressed;
- A blood sample at zero time to be taken from the intern to check for HIV and HBV and should be documented in the intern file in the department as well as with the Ghalib University- CME department;
- A second blood sample to be taken after 30 days of the needle prick to check for HIV and HBV and should be documented in the intern the in the department as well as with the Ghlaib University- CME department;
- A third sample to be taken after 6 months of the needle prick to check for HTV and HBV and should be documented in the intern file in the department as well as with the Ghalib University-CME department;
- If at any time the intern shows signs of infection with HIV or HBV, he/she should undergo immediate treatment and his training will be suspended till proven free of disease;
- If the needle was found to have traces of HTV or HBV in it (after step one) then the intern's framing will be suspended till proven free of disease;
- If the intern does not show any sign of infection after the needle prick, the internship program can be resumed with a condition to keep him under observation for signs of illness;
- If in case the intern has to change the department as part of the training program, the information of the needle prick should be handed over, to the respected head of department.

II. Dress Code:

- All interns must be dressed with white coat during all time;
- All interns must have their badges-on during all time;
- Not allowed any clothes with exposed body parts or unacceptable prints at any time;
- Not allowed sandals at any time only front closed safe shoes are permitted;
- Personal hygiene should always be followed.

III. Behaviors:

- All interns should conduct in a professional matter;
- Patients' rights must always be dealt with confidentiality;
- All interns must treat the patients and their superiors with respect. Any violation of this will be dealt with immediately from the head of department and then to inform both the hospital CME committee and the Ghalib University-CME to consider immediate termination from the program;
- Patient safety must be intern's priority and if any discovered violation will cause immediate termination;
- Personal safety of the intern should be always considered especially when dealing with bodily fluids or communicable diseases and if any violation of this is discovered this will be taken as grounds for immediate termination;

- Any violation of the above will be dealt with immediately from the head of department and then to inform both the hospital CME committee and the Ghalib University-CME to consider immediate termination from the program;
- All decisions of the head of department, the hospital CME committee and the Ghalib University-CME should be respected, and the decision of the Ghalib University-CME will be final.
- **Violation warning**
  - First violation will have a verbal warning;
  - Second violation will have a written warning;
  - Third violation will be reported to hospital CME committee; will submit a report regard these repeated violations to the Ghalib University-CME department which in turn will consider the termination of the intern from the program.

IV. Attendance:

- Daily attendance; as per the Ghalib University law is from 8:30 AM till 3:30 PM in all working days;
- Daily signature is compulsory as proof of attendance;
- It is strictly forbidden to sign in for, other people;
- **Violation Warning:**
  - First violation will have an oral warning;
  - Second violation will have a writer warning;
  - The third violation will be seen in the hospital CME committee, will send a report about these repeated violations to the Ghalib University-CME department, which will consider the termination of the intern from the program.

V. One Call Duties:

- On call duties will be provided in the beginning of each rotation to the intern by the head of department
- The on call duty rotations will be given by the head of department as per the normal process of that particular department
- An on call room will be dedicated for the on call interns taking in considerations having separate rooms for males and females. Meals will be provided for them for that on call duty
- Refusal to do duties or delaying in starting the duties or leaving the duty without a previous approval from the head of department will be considered as a violation.
- **Violation Warning**
  - First violation will have an oral warning
  - Second violation will have a written warning
  - The third violation will be seen in the hospital CME committee which in rum will send a report about these repeated violations to the GHALIB UNIVERSITY-CME department which will consider the termination of the intern from the program.

VI. Leaves

All laws of the Ghalib University in this regards should be followed concerning all leaves; annual leave, sick leave, maternity leave, etc.

a- Annual leaves

- The intern is allowed for 21 working days in total as per Ghalib University law.
- The intern should be in the program for a minimum period of 3 months before requesting any leave;
- Any leave should be substituted in the rotation in which the leave was taken.
- Annual leave has to be submitted to the head of the department before 2 weeks of the required date and the approved request must be kept in the intern's file after the approval of the hospital's CME committee;
- No SMS, E. mail or phone calls on the day of absence, will be accepted as a request for leave.

b. Hours Leave:

- If permitted by the head of department, the intern is allowed for 2 hours leave in 2 working days in each month.

c. Absence leaves

- Any day the intern does not appear for work will be considered as absence from work
- If the intern appears at work, then a written letter explaining the reason of the absence with documented proof and he/she is to be issued a warning.
- If the intern does not appear for 10 consecutive days, the head of department should inform the hospital CME committee who in turn will which will consider the immediate termination of the intern from the program.
- Any unapproved absence days will be deducted from the total leave days allowed to the intern, but if the unapproved absences were repeated 3 times or more then the head of department should inform the hospital CME committee who in turn will inform the Ghalib University-CME which will consider the immediate termination of the intern from the' program.

d. Sick leaves

- A sick leave certificate must be submitted to the internship supervisor
- A sick leave certificate must be followed by the attestation rules and regulation applied by Ghalib University human resource
- Any sick leave more or equal to 10 days has to be reviewed and accepted by a special committee.

VII- Certificate Achievement

- All interns must finish 3 semesters (54 credits) with a fixed list of rotations' (each semester meet 18 credits).
- Changes to the rotations are not allowed.
- All interns must apply the whole approved program in the accepted hospitals/ health centers of Ghalib University.

VII- Complaints

A. Against the intent:

a) Will be dealt with by the head of department.
b) If the head of department does not succeed in solving the complaint then the matter should be referred to the hospital CME committee.
c) If the hospital CME committee does not succeed in solving the complaint, then the matter should be referred to the Ghalib University-CME where a final decision will be taken.

B. From the intern:

a) Will be dealt with by the head of department.
b) If the head of department does not succeed in solving the complaint then the matter
should be referred to the hospital CME committee.
c) If the hospital CME committee does not succeed in solving the complaint then the issue
should be referred to the Ghalib University-CME where a final decision will be taken.

IX- Credit Hours:

- All interns are required to have a minimum of 20 hours of credit hours.
- The credit hours can be covered by internal activities in the Ghalib University healthcare establishments with attendance certificates.
- No internship certificate will be issued if the credit hours' requirement has not been fulfilled.

X- Certificate Collection:

- In case of completion of the internship program in the Ghalib University a request from the intern for issuing him/her a completion of internship should go to the internship supervisor who will check the requirements and will issue a letter to the hospital CME committee specifying if the intern has completed the program in a satisfactory way or not and then the committee will forward their recommendations to the Ghalib University-CME committee for issuing a certificate of completion of internship or not.
- In case of not completing the internship program a request from the intern for issuing him/her a training certificate should go to the internship supervisor with a detailed letter from the intern in which reasons for not completing the training has to be given. The internship supervisor will check the training feedback with the logbook of the intern and will issue a letter to the hospital CME committee specifying if the intern has completed the training period in a satisfactory way or not and then the committee will forward their recommendations to the Ghalib University-CME committee for issuing a certificate of completion of training or not.

Section 2: Introducing medical internship program

This Section introduces the Medical Internship Program for new graduated medical students who are recently introduced for Medical Internship Program in the medical facilities of Ghalib University.

What is medical internship program?
According to the purpose of the Medical Internship Program that is approved between the Department of Continuous Medical Education of Ghalib University; Graduated medical student is considered (Junior /Beginner Doctor) when he /she successfully completed approved training activities in a collection of specialties and to the standard of performance expected in the specialties.

How does the intern become a junior/ beginner Doctor?
The intern becomes a Junior /Beginner doctor after completed the recommended training duration and assessed against the recommended specialty skill of Ghalib University official medical internship program.

MD, Degree Internship Program Time Table
For 72 Weeks (in Surgery Specialty Selection)

No	Recommended specialties	Duration (Week)	Intern by Gender		Comments
			Female	Male	
1	Abdominal Surgery	12	12	12	
2	Thoracic Surgery	4	4	4	
3	Urology	4	4	4	
4	Neurosurgery	2	2	2	
5	Orthopedics	4	4	4	
6	Pediatrics	4	4	4	
7	Emergency Surgery	12	12	16	For male inters the specialty of Obs/Gyn (8 Week) are substituted to surgery emergency Ward
8	Obstetrics & Gynecology	4	4	None	
9	Ophthalmology	2	2	2	
10	ENT	2	2	2	
11	Infectious diseases & TB	4	4	4	
12	Internal Medicine	12	12	12	4 Week in each departments
13	Neurology & Psychiatry	2	2	2	
14	Medical Imaging	4	4	4	
Total	14 Specialties	72	78	72	24 W (24 Credit each semester

MD, Degree Internship Program Time Table For 72 Weeks (for internal medicine specialty selection)					
No	Recommended specialties	Duration (Week)	Intern by Gender		Comments
			Female	Male	
1	Internal Medicine (3 department)	24	24	24	8 Weeks in each department
2	Abdominal Surgery	6	6	6	
3	Thoracic surgery	2	2	2	
4	Urology	2	2	2	
5	Neurosurgery	2	2	2	
6	Emergency surgery	6	6	10	For male inters the specialty of Obs/ Gyn (8 Week) are substituted to surgery emergency Ward
7	Obstetrics & Gynecology	4	4	None	
8	Ophthalmology	2	2	2	
9	Pediatrics	6	6	6	
10	ENT	2	2	2	
11	Dermatology	4	4	4	
12	Infectious diseases & TB	6	6	6	
13	Neurology & Psychiatry	4	4	4	
Total	15 Specialties	72	72	72	24 W (24 Credit each semester

What Skill Standard?

In order the intern to certify as junior /beginner doctor, he/she is judged against established standards. These standards have been developed by the department of continuous medical education of Ghalib University and are called skill standard. Skill standard is the professionally and scientifically approved performance of activity that ensures the accomplishment of a patient care.

What is Evidence Collection?

Skill Assessment involves collecting evidence and the hospital CME coordinator is the person who collects the evidence and makes a judgment about whether the intern accomplished the skill recommended.

The Ghalib University -Department of CME approved evidence includes:

- Observation of the intern performance to the specialty skill standards.
- Internship supervisor verifications.

A. Intern Role

1. All interns are expected to follow all the rules and regulation of the Ghalib University and related health facilities as long as they are part of the internship program.
2. All interns are expected to take part in the morning reports of the department they are assigned in, take part in the daily morning rounds and the discussions regarding the medical cases in that department.
3. To cover the entire intern's logbook with daily documentation as per the requirements.
4. Each intern has to be under direct supervision of a working senior staff doctor who the intern has to go back to for each patient.
5. Seek help if the intern feels a certain weakness in a clinical area.
6. The intern is expected to avoid the following:
   a) It is strictly not allowed for any intern to meet, treat, advice or discharge a patient without direct supervision of a working senior staff doctor who is responsible for this with a counter signature from him.
   b) Interns are not allowed to do any invasive procedures unless there is qualified supervisor present at the bedside of the patient.
7. After the completion of the internship program, the intern has to give a request for the internship certificate to the Internship supervisor who will check the following:
   a) Completion of the program and the required periods.
   b) Completion of the intern's log book.
   c) Completion of the feedback of the intern by every respected head of department
   d) Alt me above has to be to the satisfaction of the CME committee.
   e) The Internship supervisor will inform the hospital committee which in turn will inform the Ghalib University-CME if there is a need for repeating any rotations or reviewing an intern's case.

8. In the case where it was discovered that there was a violation of the above points, this will be grounds of immediate termination of the intern from the program.

B. Role of the Head of Department:

a) To respond to the educational needs of the interns and facilitate learning.
b) To aid the intern in acquiring skills in communication, interpretation of clinical data as well as in the performance of diagnostic and therapeutic procedures, all under the direct supervision of an allocated senior staff with suitable qualifications.
c) To ensure that skills in documentation of clinical data and the methods for their retrieval and analysis are learnt and understood by the intern.
d) To ensure that the intern is able to present appropriate observations in peer groups, clinical meetings and CME Programs.
e) To attest to the acquisition of the expected level of competency by intern, at the end of the training in that particular department, and make sure of the completion of the necessary entries in the Interns' Logbook by the correct people with the completion of the feedback form about the intern and his progress in the rotation.
f) To provide opportunities for the intern to have patient contact both in the ambulatory and inpatient settings.
g) To help the intern learn the importance of getting informed consent for diagnostic therapeutic procedures and the appropriate methodology to achieve this.
h) To identify areas where the intern may not have acquired the requisite competency and suggest corrective measures. Such information should be Communicated to the intern and brought to the attention of the "internship supervisor and the hospital committee as soon as possible, ensuring enough time for corrective measures to be initiated.
i) To ensure that patient safety is paramount during procedures such as prescription of drags and any invasive interventions when they are carried out by the intern which should be always be under supervision.
j) To ensure that common precautions observed in the hospital are learnt and followed by the intern to ensure safety of self, patients and present staff and aid them in doing so.
k) To assist the intern in learning the importance of ethical procedures such as patient confidentiality.
l) To present the intern with opportunities to acquire interdisciplinary communication skills with all of the associated hospital staff.
m) To conduct an investigation as a first line authority for or against any Intern if any professional misconduct complaint arouses, and facilitates proceedings required.

The internship supervisor role

a) To have an introductory meeting with all the interns in the beginning of their program
in which the rales and regulations are explained and where any queries about the training is addressed.
b) To allocate the intern with specific place of specialty.
c) To ensure that the interns are provided with necessary educational support during their entire training period in the department.

d) To help the interns to gain access to learning resources in the hospital such as the medical records room or the library etc.
e) To collaborate with the. hospital committee at regular intervals to ensure satisfactory progress of the interns.
f) To develop learning programs consistent with the fulfillment of the learning objectives for the internship program.
g) To guide the Interns in the realization of their learning objectives. The Supervisor must give each intern individual attention.
h) To ensure that the interns fulfill the training requirements in terms of attendance and acquisition of competencies. The Supervisor should monitor the progress of the intern at regular intervals and should allocate such time "to discuss this with him/her.
i) To identify areas where the intern may not have acquired the requisite competency and suggest corrective measures,
j) To ensure that patient safety is paramount during procedures such as prescription of drugs and surgical interventions when they are earned out by the intern which should be always under supervision,
k) To ensure that common precautions observed in the hospital are learnt and followed by the intern to ensure safety of self, patients and present staff and aid them in doing so.
l) To validate the Internship logbook at regular intervals and ensure documentation of the competencies are complete,
m) To ensure that the intern have the requisite skills to access hospital services like the Medical Records, Hospital Library and IT Department in completing their learning requirements.

The Ghalib University- CME Role

To present to the Ghalib University- CME department details of the progress of the intern, and to complete the feedback and assessment reports about each intern at the end of the training period and compile a final evaluation report.

a) Provide educational support measures for the HOD/ hospital for the facilities at different hospitals of the Ghalib University which is part of his hospital as requested or required, for example to arrange rotations unavailable in that particular hospital but is found in other hospitals.
b) To coordinate any arrangements, the hospital has made for training the interns.
c) To ensure that patient safety is paramount during procedures such as prescription of drugs and surgical interventions when they are carried out by the intern which should be always under supervision.
d) To ensure that common precautions observed in the "hospital are learnt and followed by the intern to ensure safety of self, patients and present staff and aid them in doing so.
e) To conduct an investigation as a second line authority with the internship supervisor if the HOD failed to reach to' a decision for or against any Intern if any professional misconduct complaint arouse, and facilitates proceedings required.

Section 3: Procedures of Medical Internship Program

A- Beginning of Program

All interns will be given a start date which they have to adhere to.

a) On the first day of work the interns will be oriented by their internship supervisor for
b) the rules and regulations and what is expected from them, b. All interns will be allocated specific places and they are strictly forbidden from changing place of work or specialty they have been assigned to by their, intern ship supervisor.
c) The intern will proceed to start in the specified rotation and will meet with the HOD of that department, and will start immediately with the tasks allocated by the HOD.
d) Any violation will be seen in the hospital CME committee which in turn will send a report about this to the Ghalib University department which in turn will consider the termination of the intern from the program.

B- log- Books samples for internship program in faculty of Medicine

Rotation I

Name of Intern:

Department: Medicine

Obligatory requirement

1-3 Urinary catheterizations:

No	Patient file number	Date of Clerking	Observation & under supervision	Independently	Name & Signature of supervisor
1					
2					
3					
4					

2- 8 Nasogastric tube insertion

No	Patient file number	Date of Clerking	Observation & under supervision	Independently	Name & Signature of supervisor
1					
2					
3					
4					
5					
6					
7					
8					

3-10 ECG Taking and interpretation

No	Patient file number	Date of Clerking	Observation & under supervision	Independently	Name & Signature of supervisor
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					

4-5 Case of Dopamine calculation for shock patients

No	Patient file number	Date of Clerking	Observation & under supervision	Independently	Name & Signature of supervisor
1					
2					
3					
4					
5					
6					
7					
8					

5-10 Insertion of IV cannula

No	Patient file number	Date of Clerking	Observation & under supervision	Independently	Name & Signature of supervisor
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					

6-2 DC Shock (Optional)

No	Patient file number	Date of Clerking	Observation & under supervision	Independently	Name & Signature of supervisor
1					
2					

Rotation II

Name of Intern

Department: Surgery

Obligatory requirement

1-8 Full clerking patient

No	Patient file number	Date of Clerking	Observation & under supervision	Independently	Name & Signature of supervisor
1					
2					
3					
4					
5					
6					

2-10 Per-rectal examination

No	Patient file number	Date of Clerking	Observation & under supervision	Independently	Name & Signature of supervisor
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					

3-12 Suturing case

No	Patient file number	Date of Clerking	Observation & under supervision	Independently	Name & Signature of supervisor
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					

4-6 minor surgeries

No	Patient file number	Date of Clerking	Observation & under supervision	Independently	Name & Signature of supervisor
1					
2					
3					
4					
5					
6					

5-5 cases of hernia examination

No	Patient file number	Date of Clerking	Observation & under supervision	Independently	Name & Signature of supervisor
1					
2					
3					
4					
5					

6- Journal club, case studies/ 3 cases studies review

No	Patient file number	Date of Clerking	Observation & under supervision	Independently	Name & Signature of supervisor
1					
2					
3					

Rotation III
Name of Intern

Department: Pediatrics
Obligatory requirements

1-12 Full clerking of patients

No	Patient file number	Date of Clerking	Observation & under supervision	Independently	Name & Signature of supervisor
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					

2-10 intravenous needle insertion

No	Patient file number	Date of Clerking	Observation & under supervision	Independently	Name & Signature of supervisor
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					

3-5 full examination of newborn

No	Patient file number	Date of Clerking	Observation & under supervision	Independently	Name & Signature of supervisor
1					
2					
3					
4					
5					

4-4 Cases Calculation for intravenous fluid and drug doses

No	Patient file number	Date of Clerking	Observation & under supervision	Independently	Name & Signature of supervisor
1					
2					
3					
4					

5- Journal club, case studies/ 3 studies series

No	Patient file number	Date of Clerking	Observation & under supervision	Independently	Name & Signature of supervisor
1					
2					
3					
4					

6-5 Lumbar puncture/ (optional)

No	Patient file number	Date of Clerking	Observation & under supervision	Independently	Name & Signature of supervisor
1					
2					
3					
4					
5					
6					

Rotation IV
Name of Intern:

Department: OB/GYN (For Female Interns only)
Obligatory requirements:
1-10 full clerking patient

No	Patient file number	Date of Clerking	Observation & under supervision	Independently	Name & Signature of supervisor
1					
2					
3					
4					
5					
6					
7					

2- Assisting 4 Normal vaginal delivery cases

No	Patient file number	Date of Clerking	Observation & under supervision	Independently	Name & Signature of supervisor
1					
2					
3					
4					

3- Attending 4 Episiotomy cases

No	Patient file number	Date of Clerking	Observation & under supervision	Independently	Name & Signature of supervisor
1					
2					
3					
4					

4- Attending in 4 cesarean section

No	Patient file number	Date of Clerking	Observation & under supervision	Independently	Name & Signature of supervisor
1					
2					
3					
4					

5- Journal club, case studies / 3 case studies reviews

No	Patient file number	Date of Clerking	Observation & under supervision	Independently	Name & Signature of supervisor
1					
2					
3					

6- one vacuum delivery if found (optional)

No	Patient file number	Date of Clerking	Observation & under supervision	Independently	Name & Signature of supervisor
1					
2					
3					

7- Attending one forceps delivery if found (optional)

No	Patient file number	Date of Clerking	Observation & under supervision	Independently	Name & Signature of supervisor
1					

Teaching Lesson Plan Template

Ghalib University Planning lessons has two purposes: ***first***, the process of planning encourages deep thinking about the elements, of a lesson; ***second***, the plan guides you while delivering instruction. Experienced teachers may plan more informally, but novices need to create thorough plans that prevent them from delivering poor quality lessons or from forgetting crucial items. During your field of experience, your plans should contain the following elements:

Name of department

Name of teacher:

Lesson title: date:

Unit title:

Subject **Grade level:** **lesson duration:**

Section A: Lesson preparation:

Rationale - Why is it important for students to learn the content of the lesson? Description of learners - What factors must be considered in order to accommodate diversity of learners?

Objectives/learner outcomes - What knowledge, skills, and dispositions are students expected to demonstrate as a result of the lesson?

Materials/resources/technology - What materials/resources/technology are needed to support instructional procedures?

Section B: Introduction to lesson

Purpose - How will you state the purpose of the lesson?

Prior -learning - How will you make connections to prior learning?

Motivation — How will you motivate students to engage in the learning activities you have planned?

Section C: Content/procedure/sequence

Content outline /Instructional procedures/sequence of activities

Section D:

Summary of lesson — How will you bring the lesson to a close? Assignment - What independent work will be assigned?

Section E: Assessment

Student learning - How will you evaluate student outcomes? Cite planned data collection described above as well as other methods.

Lesson implementation - Was the lesson successful? Use the data mat you collected to substantiate your conclusions in this section as well as additional comments and observations.

Self-assessment and reflection - How will you evaluate your performance?

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